Red River Community College

Red River Community College Calendar 1990 - 1991
PARKING
Visitors who require parking accommodation should report to the commissionaire on duty.
Red River Community College reserves the right to make changes to the information contained in this calendar without prior notice. Although every attempt is made to ensure accuracy and adherence to course outlines and policies and procedures as stated, the college reserves the right to make changes to course content, instructional methods, fees, rules and regulations and to cancel courses when deemed necessary.

The Province of Manitoba, its officers, agents or employees assume no liability, expressed or implied, for the result of sickness or accidents involving personal injury to any student, whether in connection with the college's instruction program wherever conducted, or incidental to other activities on the college's properties or elsewhere.

Red River Community College is operated by Manitoba Education and Training with financial assistance provided by the Government of Canada.
Thank you for your interest in Red River Community College. Explore these pages for a promising future.

For 20 of the college's 52 years of service, I have had the good fortune to witness the countless success stories of our graduates.

This is not just a coincidence... we work at your success. Our caring and devoted staff and our pride are the cornerstones of that success.

This is my retirement year from Red River, and I leave knowing that people like you will continue to attract employers to the standard of excellence created by you and your predecessors.

Ray H. Newman
President
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WOMEN'S PROGRAMS:
(See ACT FOR WOMEN, PRE-TECHNOLOGY FOR WOMEN AND EMPLOYMENT ORIENTATION FOR WOMEN)
DIVISIONAL LISTING OF COURSES

### APPLIED ARTS
- ACT (Alternative Career Training) FOR WOMEN
- ADVISING ART
- CHEF TRAINING
- COMMERCIAL BAKING
- COMMERCIAL COOKING
- EMPLOYMENT ORIENTATION FOR WOMEN
- GRAPHIC ARTS
- HAIR STYLING
- HOTEL & RESTAURANT ADMINISTRATION
- INSTITUTIONAL FOOD SERVICE SUPERVISOR
- LIBRARY TECHNICIAN
- MEAT CUTTING
- PRE-TECHNOLOGY FOR WOMEN
- TEACHER EDUCATION - BUSINESS
  - INDUSTRIAL ARTS
  - VOCATIONAL INDUSTRIAL

### BUSINESS
- ADMINISTRATIVE SECRETARY - GENERAL
- ADMINISTRATIVE SECRETARY - LEGAL
- ADMINISTRATIVE SECRETARY - MEDICAL
- BUSINESS ACCOUNTANCY
- BUSINESS ACCOUNTANCY INTEGRATED
- BUSINESS ADMINISTRATION
- BUSINESS ADMINISTRATION INTEGRATED
- BUSINESS SKILLS INTEGRATED
- CLERICAL BOOKKEEPING
- COMMERCE/INDUSTRY SALES & MARKETING
- COMPUTER ANALYST/PROGRAMMER
- CREATIVE COMMUNICATIONS
- HEALTH RECORD TECHNICIAN
- LEGAL ASSISTANT
- SECRETARY

### TECHNOLOGY
- CIVIL ENGINEERING TECHNOLOGY
- COMPUTER ENGINEERING TECHNOLOGY
- CONSTRUCTION ENGINEERING TECHNOLOGY
- DOMESTIC ELECTRONICS
- DRAFTING - ARCHITECTURAL
  - ELECTRICAL
  - MACHINE
  - MECHANICAL SYSTEMS
  - STRUCTURAL
- ELECTRICAL ENGINEERING TECHNOLOGY
- ELECTRONIC ENGINEERING TECHNOLOGY
- ENGINEERING DESIGN & DRAFTING TECHNOLOGY
- INDUSTRIAL ELECTRONICS
- INSTRUMENTATION ENGINEERING TECHNOLOGY
- MECHANICAL ENGINEERING TECHNOLOGY
- POWER ENGINEERING
- STRUCTURAL ENGINEERING TECHNOLOGY
- SURVEY ENGINEERING TECHNOLOGY
- TELECOMMUNICATIONS

### TRADES
- ADVANCED WELDING
- AUTOMOTIVE SERVICE EDUCATION PROGRAM
- APPRENTICESHIP COURSES
- CARPENTRY & WOODWORKING
- DIESEL MECHANICS - TRANSPORT
- ELECTRICAL
- MACHINE SHOP PRACTICE
- MAJOR APPLIANCE SERVICE TECHNICIAN
- MASONRY
- MOTOR VEHICLE BODY REPAIR
- MOTOR VEHICLE MECHANIC
- MOTOR VEHICLE MECHANIC CO-OP
- PAINTING & DECORATING
- PIPING TRADES
- REFRIGERATION & AIR CONDITIONING
- UPHOLSTERY
- WELDING

### HEALTH, FAMILY AND APPLIED SCIENCE
- BIOENGINEERING - CHEMICAL TECHNOLOGY
- BIOLOGICAL TECHNOLOGY
- CHILD CARE SERVICES
- CHILD CARE SERVICES INTEGRATED
- COLLEGE PREPARATION FOR NURSING
- DENTAL ASSISTING - LEVEL I
- DENTAL ASSISTING - LEVEL II
- DEVELOPMENTAL SERVICES WORKER
- MEDICAL LABORATORY TECHNOLOGY
- MEDICAL RADIOLOGICAL DIAGNOSTIC TECHNOLOGY
- NURSING
- NURSING - PRACTICAL
- NURSING - REFRESHER
- RADIOTherapy TECHNOLOGY

### DEVELOPMENTAL EDUCATION
- ADULT BASIC EDUCATION (A.B.E.)
- COLLEGE PREPARATION FOR NATIVE STUDENTS
- ENGLISH AS A SECOND LANGUAGE (E.S.L.)

### CORRESPONDENCE & DISTANCE EDUCATION
- DIRECTED STUDIES - CORRESPONDENCE
- LIBRARY TRAINING PROGRAM
- COMPUTER ANALYST PROGRAMMER
- MANAGEMENT DEVELOPMENT

### STUDENT AFFAIRS
- EDUCATIONAL SUPPORT CENTRE
- PREPARATORY PROGRAM
- VISUAL LANGUAGE INTERPRETER TRAINING PROGRAM
ADMISSION & REGISTRATION
POLICIES & PROCEDURES

APPLICATION PROCEDURES

1. The main campus and primary location for processing applications and maintaining permanent student records is Red River Community College. However, registration is possible at various Extension Centres. (See College Development and Extension Services for additional information.)

2. As some programs at Red River Community College have a limited number of seats available, applications for admission to a program should be submitted as early as possible. Application forms and additional information may be obtained by writing to the college's Admissions Office, Room C306, 2055 Notre Dame Avenue, Winnipeg, Manitoba, R3H 0J9, or by telephoning 632-2327.

3. Applications must be accompanied by legible official mark statements as proof that applicants meet the necessary program prerequisites. Applicants lacking specific prerequisites will be referred for appropriate upgrading. Additional information may be required of applicants at a later date. Candidates applying to the college are required to submit all documentation with English translations. Incomplete or inaccurate information delays processing of the application.

   Please note that academic documents are not returned to applicants and that applications and documents are not retained by the college for applicants who are not accepted for training. If the applicant reapplies to the college at a future date, a new application must be completed and supporting documents resubmitted.

4. Applicants for courses other than special selection or contract training will be admitted on a first-come, first-served basis. Because acceptances are made in the order in which completed applications are received, applicants are encouraged to apply early. Applications are considered to be complete when all admission requirements have been met.

5. Selection of applicants for some medical and health science programs is conducted by the co-operating hospital or agency selection committee. Applications for these programs should be submitted directly to the college for review of the requirements prior to submission to the selection committee. Radiotherapy Technology, Medical Radiological Diagnostic Technology and Medical Laboratory Technology are external selection courses.

6. Applicants are advised in writing of their application status, described by one of the following terms:
   a) Accept. The application is complete when all admission requirements are met and a place is reserved in the program for the applicant. Acceptance is non-transferable from term to term or program to program.
   b) Conditional accept. An applicant may be conditionally accepted for a Grade 12 prerequisite course based on receipt of an official Grade 11 final transcript, Grade 12 term marks, and confirmation of enrolment in the required Grade 12 subjects. Acceptance is issued only after receipt of proof of successful completion of prerequisites by July 15.
   c) Wait list. If there are more qualified applicants than can be accommodated in a course, applicants who are not accepted will automatically have their names placed on a waiting list. This list will be kept current through periodic surveys to determine if applicants are interested in upcoming entry dates for training.
   d) Incomplete. The applicant has not provided the required information, and has been advised that no further action on the application can be taken until the documentation is received.
   e) Process. The applicant has met basic entrance requirements but must still complete additional specific requirements such as a selection interview, testing, portfolio, etc.
   f) Reject. When the applicant fails to meet full admission requirements, has not submitted the necessary information as requested by the college within the time specified, has not paid the pre-registration fee by the time specified in the acceptance letter, or has requested the application be cancelled, the application is assigned a reject status. Should rejected applicants wish to be considered for future acceptance, they must submit a new application for the next intake of their chosen program.

ADMISSION PROCEDURES

1. Definition of an Applicant
   An applicant is an individual who has applied to Red River Community College on an official college application form.
   a) Only applicants will be processed for admission.
   b) An applicant must have an acceptance letter, signed by the Director of Admissions/Registration or designate, (or a CEIC-sponsored student document) to register for a course.
   c) An applicant's acceptance by the college for training does not simply acceptance by an external agency for sponsorship.

2. Age Requirement
   Although the applicant must be at least 16 years of age, there is no upper age limit. High school students are encouraged to remain in high school to obtain the best basic education possible prior to attending college.

3. Sponsored Applicants
   A number of agencies, such as Canada Employment & Immigration Commission, Indian and Northern Affairs, Veterans Affairs, Workers' Compensation Board and several social services agencies, under a variety of arrangements, sponsor stu-
dent for training at Red River Community College. Applicants should direct requests for information on funding to the sponsoring agency. Once sponsorship arrangements have been completed, the applicant must arrange to have an official letter sent to the agency to the Admissions/Registration Office. The letter must outline which expenses are to be covered, i.e. tuition fees, Student Association fees, books and supplies. Where the Student Association Fee is not paid by the sponsoring agency, it will be the student's responsibility to pay the fee. Please note that an applicant's acceptance by the college for training does not imply acceptance by an external agency for sponsorship.

4. Applicants with Physical Disorders or Handicaps
An applicant must be capable of handling all course requirements. The physical demands in a number of training programs may prevent some students from performing satisfactorily or from functioning within college safety standards. Certain disorders could also affect employment possibilities following graduation. Some examples of conditions which may affect suitability for training include: color vision deficiency, back/leg/shoulder problems, hearing impairment, coordination problems, defective vision, allergies, skin disease, communicable diseases, epilepsy, arthritis, diabetes, cerebral palsy and spinal cord Injury.

Applicants with physical disorders or handicaps should discuss their training goals with their physicians. Additional information is available from the Resource Centre for Handicapped Students, the Health Centre and from Counselling Services.

5. Academic Requirements
Applicants must hold at least the minimum academic prerequisites specified for each course or be accepted as a mature student. As entrance requirements are subject to change, applicants should confirm prerequisites with the Admissions Office. It is to an applicant's advantage to acquire the best preparatory education possible, prior to entering a course at the college.

6. Mature Student Admission
Mature students must be 20 years of age or older by September 30 in the year of registration. Mature student applicants may submit Manitoba Education Mature Student standing or G.E.D. equivalency standing in lieu of high school credits. However, where specific subjects are required for entrance, these prerequisites must be met. Mature student applicants should include with their applications, information on related work experience or training which will assist the college in determining applicant eligibility. Age, alone, cannot substitute for academic knowledge, particularly in courses that are heavily oriented towards mathematics and the sciences. Therefore, some mature student applicants will be advised to complete those specific subjects required for entry to a course as a first step in gaining admission. Where there is some uncertainty regarding a mature student applicant's academic preparedness, testing by the college in the required subjects will likely be necessary. If an applicant is considered to be academically unprepared following testing, information on other appropriate college courses and/or sources of academic upgrading will be provided. All mature student applications are referred to the Director of Admissions/Registration for review.

7. Applicant Priority
Admissions preference will be given to applicants in the following order:

a) Canadian citizens or landed immigrants, residing in Manitoba, and participating in contract training;

b) Canadian citizens or landed immigrants, residing in Manitoba, and recipients of approved scholarships;

c) other Manitobans who are Canadian citizens or landed immigrants;

d) Canadian citizens or landed immigrants residing outside of Manitoba; and

e) others.

Each year, the college accepts a limited number of students who are citizens of other countries but who are residing in Canada. The admission of VISA applicants is subject to limitations affected by the program capacity and demand by Canadian citizens and landed immigrants. In oversubscribed programs, student places are reserved for Manitoba residents exclusively.

Please note that Red River Community College does not accept applications from outside of the country nor will it consider those individuals on visitor, work or tourist visa.

8. Special Selection Courses
Courses that do not admit applicants on a purely first-come, first-served basis are considered special selection programs and will be identified as such in the calendar course descriptions.

a) These courses sometimes require additional documentation, portfolios, testing, interviews, or demonstration of special aptitudes and skills.

b) For those applicants who meet these additional criteria, the first-come, first-served policy will apply.

c) Information on the criteria used for special selection courses is available in the calendar course descriptions and the course brochures.

d) Because some special selection courses may have an early cut-off date, applications should be submitted as early as possible.

Each applicant will be notified of the results of his or her interview or test. When an applicant is refused admission to a course, based on tests and/or an interview with a selection committee, a suitable upgrading or career alternative will be recommended or suggested.
9. English Language Proficiency
As English is the language of instruction in all courses at the college, an adequate knowledge of written and spoken English is essential for admission. All applicants will be required to demonstrate proficiency in the language by:

a) presenting proof of achievement in English at the grade level designated as the academic prerequisite for the course for which he or she is applying, or the specified equivalent; or

b) successfully completing a reading and language skills entrance test administered by Red River Community College; or

c) presenting results of a recognized test of English (TOEFL) at a minimum score level of 550. To obtain an information bulletin which outlines TOEFL world-wide test locations and application procedures, applicants should contact:

Test of English as a Foreign Language,
CN6151
Princeton, New Jersey
08541-6151 U.S.A.

10. Applicant Suitability
The college reserves the right to refuse admission to applicants who are deemed unsuitable for entry into the courses for which they have applied.

11. Part-time Students
Subject to the availability of space, subjects within a course are open to part time students who meet the course prerequisites. Persons interested in taking partial courses must have the approval of the appropriate department head or dean.

12. Senior Citizens
Although opportunities are limited, should vacancies exist in a course after all qualified fee-paying students are accommodated, qualified individuals who are 60 years of age or older who are not employed full time, will be accepted on a first-come, first-served basis and will be exempt from the payment of the course tuition fee. Any other course fees (including Student Association fees, lab fees, etc.) must be paid by the student. Proof of age will be requested.

13. Evaluation of Transcripts for Admission
The academic entrance requirements are specified in each course brochure and the course descriptions in this calendar. Educational documents originating outside Manitoba will be evaluated by the college Admissions Committee, only for the specific course for which the application has been submitted. General evaluations for purposes of employment or attendance at other educational institutions are not provided by the college Admissions Office.

14. Falsified Admissions or Education Documents
Any applicant submitting falsified documents will be referred to the appropriate authorities for prosecution under the Criminal Code of Canada. Forgery can result in a prison sentence of up to fourteen years.

15. Medical and Hospital Coverage
Medical and hospital plan coverage is a mandatory requirement for VISA students accepted by the college. Proof of coverage must be provided to the Registration Office at least three weeks prior to course start date. For information on medical and hospital plan coverage, contact the Registration Office at 632-2342.

16. Occupational Entrance High School Program
Students who have completed an Occupational Entrance High School Program may be eligible to apply for some college courses. However, applicants may be tested in the required subject in order to ensure basic skill preparation.

17. Financial Aid
The main sources of financial assistance available to college students are listed below. If students are having difficulties in obtaining assistance and need advice, they should contact the Student Awards Officer, Room C312, or a college counsellor in Room C115.

a) Manitoba Student Aid Program. This program is a source of financial assistance for any Manitoban who wants to obtain an education and whose finances are inadequate. It is intended to supplement, but not to replace, the student's own resources and those of his or her immediate family. A basic requirement for assistance is complete information about applicant's financial situation.

Applicants should note that it takes a minimum of eight weeks to process applications and should, therefore, apply immediately. Applicants do not have to be accepted by the college before applying for Student Aid. If applicants delay application for Student Aid until September, they can expect further delays in the processing of applications of up to twelve weeks or more. For further information on financial assistance and entrance scholarships, bursaries, and other awards, students should contact the Student Aid/Awards office.

b) Canada Employment and Immigration Commission Training Program (CEIC). CEIC sponsorship may be available for some courses of one year's duration or less. For full information on eligibility, applicants should contact his or her local CEIC office.

c) Scholarships and Awards. For further information, prospective applicants should refer to the Awards, Bursaries and Scholarships section in this calendar.
REGISTRATION PROCEDURES

1. Acceptance
   Applicants are notified, in writing, of their acceptance and are required to pay a course pre-registration fee to ensure a place is reserved for him or her in the course. Should the applicant subsequently decide not to register, this payment is non-refundable and non-transferable.

2. Vacancies
   Vacancies may exist in some programs or occur in others on or after registration day because of late cancellations. Applicants are selected from the wait list to fill last-minute vacancies.

3. Payment of Fees
   A statement of procedures for payment of fees is sent with the acceptance letter. Upon payment of fees, a validated tuition fee receipt is issued to the applicant to confirm that payment has been received. Applicants are cautioned that non-payment of fees by the due date may result in cancellation of the application or registration status unless other previous arrangements have been made with the appropriate dean. Please note that all fees are subject to change without notice.

4. Registration
   For official student status, accepted applicants are required to report for registration, in person, at designated areas on campus on the date and time specified in the acceptance letter. All accepted and conditionally-accepted applicants must complete the registration process.

5. Student Identification Cards
   The student ID card, issued as part of the registration package, is required to obtain instructional materials, athletic supplies, and for accessing the Library, physical education facilities, and Student Association activities. Because the student named on the card is responsible for any loss of or damage to materials used or borrowed with this card, he or she must report the loss of a card immediately to the college Security Office, Building C, Room 106A, telephone 632-2323. A charge will be made for the replacement of this card. The student ID card is not transferable.

6. Late Registration
   Applicants who, for unforeseen difficulties, are unable to register at the appointed time and date, but who still wish to take the program at that or a subsequent time, must formally advise the Director of Admissions/Registration of their intentions no later than the original registration date. Failure to notify the Director may result in cancellation of applicant status and necessitate re-application and re-processing.

7. Mark Transcripts
   The official transcript is a comprehensive, cumulative student education record. It lists all the studies that the student has undertaken to the date of issuance, and whether or not these studies were successfully completed. A transcript may be requested by a student upon completion of a Transcript Request Form, available at the Registration Office, and the payment of a nominal fee. Students should note that most educational institutions and many employers require that the transcript be mailed directly to them by the college. However, a transcript will not be issued without the written authorization of the student.

8. Confidentiality of Student Records
   The information available to the public concerning a Red River Community College student is limited to the verification of:

   a) whether or not the student attended a specific program between given dates; and

   b) whether or not the student successfully completed the program. Any additional information cannot be released without the written authorization of the student.

Please note that all policies and procedures are subject to change and will be reviewed on a regular basis.
ACADEMIC POLICIES AND PROCEDURES

1. SECURITY OF ACADEMIC RECORDS

Guidelines on the disclosure of student records information are intended to protect the individual’s right to privacy and the confidentiality of the academic records throughout the college. A student’s academic record does not include health or counselling records, as such records are kept separate from the academic records. It should be noted that certain events of a disciplinary, safety, health, or criminal nature that lead to suspension or expulsion, will be noted permanently on the college’s internal records.

2. CLASS HOURS AND TIMETABLING

Day classes for all college courses generally will be held five days per week (Monday through Friday) throughout the academic year. Classes for full-time day courses generally will be in session between 8:00 a.m. and 6:00 p.m., Monday through Friday. (These hours may be altered in accordance with training requirements and facilities and may continue into evening hours.) Each student’s timetable will indicate when and where each class will be held.

3. COURSE CONTENT

In courses taught in a lecture mode, subject outlines will be available to students at the beginning of a term or trimester. The outlines will include objectives and evaluation methods. In a course using a competency-based-learning (CBL) approach, students will receive a chart showing the competencies required for course completion, a program map, and instructional packages (compacs) that include objectives, learning activities, resources and evaluation methods.

4. ATTENDANCE/ABSENCE FROM CLASS

Regular attendance will be expected and may be mandatory for some subjects and/or courses in the various divisions. Students will be advised of attendance requirements when their classes begin. However, it should be noted that a student who remains away from classes for five (5) consecutive days without notifying the department head and obtaining approval may be considered to have discontinued training and his or her registration will be terminated. Students who receive financial assistance should also consult with the sponsoring agency to determine what special conditions may apply to attendance and other responsibilities.

5. TRANSFER BETWEEN COLLEGE COURSES

Students wishing to transfer to another course should contact their department head. An enrolled student may be permitted to transfer from one course to another provided:

(a) there is space available in the course to which transfer is requested;  
(b) the student has the prerequisite(s) for the course; and  
(c) the transfer is approved by the deans and department heads of both departments.

6. TRANSFER OF CREDITS TO RED RIVER COMMUNITY COLLEGE

Students transferring to Red River Community College from another recognized training or post-secondary educational institution may be granted some credits toward a Red River Community College certificate or diploma. The following guidelines will apply:

(a) transfer credit will be granted only to students registered in a course at Red River Community College;  
(b) normally, only subjects completed successfully with a grade of C or better will be considered for transfer. Courses using a competency-based-learning format may require higher standards of proficiency for transfer credit;  
(c) individual subjects will be evaluated for credit by the appropriate department head. For Evening/Extension Program students, the evaluation will be conducted by the Dean, Extension Services, or designate, in collaboration with the appropriate academic dean and/or department head if credit is being sought in a day course;  
(d) it will be the student’s responsibility to provide original or certified transcripts and subject descriptions to assist in the assessment of equivalency;  
(e) for the purpose of evaluating previous studies, the person conducting the evaluation may request an interview with a transfer student. If necessary, one or more instructors may also participate in the interview;  
(f) the decision of the person conducting the evaluation must be approved by the dean of the instructional area (or designate) or, in the case of evening subjects, by the Dean, Extension Services;  
(g) credits granted on a transfer basis will appear on the student’s record as CR, with no grade point value;  
(h) no student will be granted more than 50% of the credit requirements for graduation through transfer of credits. The balance must be earned through actual studies at Red River Community College.

7. EXPERIENTIAL LEARNING/CHALLENGE FOR CREDIT

In those instances where people are not able to formally document training or equivalent work experience in sufficient detail, and where this training or experience closely approximates skills taught at Red River Community College, the experiential learning process may be the method used for determining credit. The relevant instructional department will be responsible for evaluating each application for experiential
credit and determining which subjects can be challenged by examination. An applicant successfully challenging for experiential learning credits will receive either partial or full standing in the community college course challenged. The standards of attainment will be equal to the standards attained by regular students. Applicants should note that:

the purpose of experiential/challenge credit will be to allow persons to become students at Red River Community College and to successfully complete a course of studies. It must not be used as a procedure to assist an individual in making application to another educational institution or accrediting body.

students may not apply for credit by examination in any subject for which they were previously registered and in which they received a failing grade or other deficiency unless subsequent acceptable upgrading and/or experience has been obtained. The academic department will determine what is acceptable.

8. PROGRESSION IN COURSE/SCHOLASTIC PROGRESS

Students must maintain a satisfactory scholastic standing to progress from term to term or trimester to trimester in a course. Satisfactory scholastic standing will be determined by individual departments and progression requirements will be formally communicated to students at the beginning of their course. Certain course areas will be designated for mastery learning, where there are clearly defined standards of performance. To receive credit in these areas, students must demonstrate complete mastery of all knowledge and/or performance requirements.

Students who fail to make satisfactory progress and/or who show poor attendance may be placed on academic probation. Specific conditions will be identified that must be met by the student within a specific time period. If these conditions are not met, the student will be required to withdraw from the course.

9. EVALUATION

The regulations pertaining to the method of evaluation for subjects will be established by the instructional department and will be available in writing within the first two weeks after classes begin.

9.1 Evaluation In Traditional Courses

A student's final standing will be determined by achievement throughout the term, level or trimester, taking into consideration evaluation measures such as classroom test and examinations, laboratory work, essays, reports, projects, supervised practical experience, participation, and attendance. Although it will be the responsibility of instructors to formally advise students of the method of evaluation in each subject at the beginning of the instructional term, students are advised to ensure that they receive information on evaluation methods and how these will be applied in each subject.

In most subjects, terms essays, projects, reports, and tests will account for a substantial portion of the final grade. It is essential, therefore, that students apply themselves seriously to class assignments and submit their work on time. Deadlines will be established, and work submitted after these dates may receive reduced or failing grades. Students, unavoidably absent or late because of illness or some other acceptable cause, must advise their instructor and/or department head and make alternate arrangements for handing in completed assignments. Medical certificates, or other documentation, may be required.

A student found guilty of plagiarism or any other form of cheating in examinations or assignments will be subject to serious academic penalty or expulsion.

Students who register for cooperative education training courses, or in courses that have practice, must accept that evaluations may be carried out by persons who are not college instructors.

(a) Grading System - The Grading System applies to all subjects offered for credit, whether in regular day or evening/extension programs. The level of a student's achievement in each subject of a course will be denoted by a letter grade, as follows:

<table>
<thead>
<tr>
<th>LETTER GRADE</th>
<th>GRADE POINT VALUE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>4.0</td>
<td>Outstanding</td>
</tr>
<tr>
<td>A</td>
<td>4.0</td>
<td>Excellent</td>
</tr>
<tr>
<td>B+</td>
<td>3.5</td>
<td>Very Good</td>
</tr>
<tr>
<td>B</td>
<td>3.0</td>
<td>Good</td>
</tr>
<tr>
<td>C+</td>
<td>2.5</td>
<td>Above Average</td>
</tr>
<tr>
<td>C</td>
<td>2.0</td>
<td>Average</td>
</tr>
<tr>
<td>D</td>
<td>1.0</td>
<td>Marginal</td>
</tr>
<tr>
<td>F</td>
<td>0.0</td>
<td>Failure</td>
</tr>
<tr>
<td>P</td>
<td>N/A</td>
<td>Pass</td>
</tr>
<tr>
<td>DNW</td>
<td>N/A</td>
<td>Did Not Write</td>
</tr>
<tr>
<td>CR</td>
<td>N/A</td>
<td>Credit Awarded</td>
</tr>
<tr>
<td>INC</td>
<td>N/A</td>
<td>Incomplete-some requirements outstanding</td>
</tr>
<tr>
<td>PT</td>
<td>N/A</td>
<td>Prematurely Terminated from course</td>
</tr>
<tr>
<td>VW</td>
<td>N/A</td>
<td>Voluntary Withdrawal</td>
</tr>
<tr>
<td>CMP</td>
<td>N/A</td>
<td>Completed</td>
</tr>
<tr>
<td>NC</td>
<td>N/A</td>
<td>Not Completed</td>
</tr>
<tr>
<td>MR</td>
<td>N/A</td>
<td>Mark Recorded in Subsequent Terms</td>
</tr>
<tr>
<td>* * *</td>
<td>N/A</td>
<td>Mark Not Yet Recorded</td>
</tr>
</tbody>
</table>

Departments equating letter grades to percentages for subjects taught in a traditional format will establish a scale
that indicates percentage ranges.

(b) Credit Hours - Credit hours attached to a subject will reflect the relative weighting of that subject within a program of study. These credit hours will be used as the subject weighting when calculating the grade point average. Note that not all subjects are assigned credit hours.

(c) Grade Point Average - A grade point average will be calculated by multiplying the grade points achieved in each subject by the subject credit hours. The total product thus obtained will be divided by the total credit hours for the subjects taken.

\[
G.P.A. = \frac{\text{Total Grade Points Earned}}{\text{Total Credit Hours}}
\]

(d) Cumulative Grade Point Average - the Cumulative G.P.A. will be the grade point average obtained over all terms/trimesters/years of a course.

9.2 Evaluation in Competency-Based-Learning Courses

Students will be evaluated on identified course competencies on a module-by-module basis. The method of evaluation, along with achievement expectations for each module, will be set out in the learning materials provided to students. Knowledge areas will be tested by a knowledge test. The passing grade for knowledge tests will be 80%. The performance of competencies will be tested by performance tests. For the student to receive credit, all items on essential-criteria checklists must be satisfactorily performed at the standard identified.

As in traditional course areas, it is essential that students apply themselves seriously to the learning process. Program maps including time guidelines will be provided to students who should make every effort to work through the competencies according to the stipulated timelines. Instructors who work with students in their course area as student advisors will assist students in monitoring their progress and planning their approach to the next modules. Deadlines will be established for completion of a minimum level of competencies. Students, unavoidably absent because of some acceptable cause, must advise their instructors and department head and make alternate arrangements for completing course work. Medical certificates or some other documentation may be required.

A student found guilty of plagiarism or any other form of cheating in examinations or assignments will be subject to serious academic penalty or expulsion.

Students who register for cooperative education training courses, or in courses that have practica, must accept that evaluations may be carried out by persons who are not college instructors.

Grading System for CBL Courses - The following grading system will be used for all CBL programs or portions of programs. Each competency will be evaluated individually and given an individual rating. For most competencies, students will have up to three attempts to demonstrate their competency by completing a knowledge test at a minimum 80% level, and completing a performance test in which all essential criteria are achieved. Department heads and/or instructors in specific program areas may establish limitations on the number of attempts a student may make for specified competencies, and will inform students of these limitations when they enter the program.

Student grades for each competency will be recorded as follows:

<table>
<thead>
<tr>
<th>GRADE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMP</td>
<td>Completed</td>
</tr>
<tr>
<td>INC</td>
<td>Incomplete-some requirements outstanding</td>
</tr>
<tr>
<td>CR</td>
<td>Credit Awarded</td>
</tr>
<tr>
<td>NC</td>
<td>Not Completed</td>
</tr>
</tbody>
</table>

Credit (CR) is recorded for competencies awarded through experiential learning or from another recognized training or post-secondary educational institution.

9.3 Student Transcripts

All terminating students will be provided with a transcript. Each terminating student in a competency-based-learning course will be provided with a transcript of competencies attained.

Graduating students will also receive a certificate or diploma.

10. FINAL EXAMINATIONS

10.1 Absence from Examinations

(a) Students who absent themselves from examination sittings without a valid reason acceptable to the department head will receive a grade of F.

(b) A student who is unable to write a final examination because of illness or other mitigating circumstances, must notify the department head as soon as possible. Thereafter, the student must provide the department head with a written advisement within seven days of the date of the exam. Wherever possible, verification (such as a physician's certificate, etc.) will be required. The student will receive a grade of DNW (Did Not Write).

(c) If a student will miss a scheduled examination through participation in an event that has the specific written approval of the college president, it is the student's responsibility to advise the appropriate department head, in writing, well in advance of the exam sitting.

(d) If a student arrives one hour or more after an examination has started, he or she will not be allowed to write at that sitting. The student must arrange with the depart-
10.2 Supplemental Examinations

Students who receive a failing grade in a subject may write a supplemental examination if supplementals are allowed for the subject and in accordance with the following:

(a) supplementals will generally be permitted only where it is feasible to evaluate a student’s mastery of a subject by written examination;

(b) the student must have an overall term grade point average of 1.5 (in courses using a grade point system) or a term average of C (in courses using letter grades or percent ages) to receive supplemental privileges in a failed subject (NOTE: Students who fail theoretical subjects in the Trades Division will be permitted to write supplemental examinations at the end of the term, provided they have not accumulated failures in more than one related subject or more than two theoretical units of trade theory);

(c) all supplementals must be written when scheduled and under no circumstance will the period between the receipt of a failing grade and the writing of a supplemental examination exceed one year;

(d) if a failed subject is a prerequisite for a subject in the next term, a student will be allowed to proceed on a probationary basis with his or her course or practical work, until the results of the supplemental examination(s) is/are known;

(e) only one supplemental examination will be permitted in a subject unless the dean of the instructional area authorizes a second on medical or compassionate grounds;

(f) the time and location for the writing of supplemental examinations will be arranged by the dean or department head;

(g) part-time students who have failed will be allowed to write supplemental examinations within the same guidelines as full-time students. The required term average will be calculated on the basis of subjects taken during that registration period;

(h) students who fail supplemental exams have to re-take the failed subject.

When a student writes a supplemental exam, the results of this exam will be used to calculate a final subject grade by combining term marks and the supplemental mark. Both the new subject grade and original failing grade (F) will appear on the transcript. Students writing supplemental examinations in the Trades Division, or in courses using mastery, will not receive a grade greater than a pass.

10.3 Retention of Examination or Major Term Test Papers

All final exam papers will be kept by instructors for a minimum of one month into the next term (or level, in the Trades Division). Major term tests not returned to students will be kept for a minimum of one month after the test. If any challenges or academic complaints arise during the retention period, all relevant exam results and term assignments must be kept until the complaint is resolved.

11. STUDENT COMPLAINTS

Academic appeals will deal solely with academic evaluation or grading.

11.1 Students will have the right to review their examinations, term papers, projects or assignments with instructors. When a student feels that he or she has not been accurately assessed, she or he should discuss the matter directly with the Instructor(s) responsible for the evaluation.

11.2 If this less-formal approach is not satisfactory, the student should discuss the matter with the program department head, and then, if necessary, with the dean. If a successful resolution is not reached, and the student remains convinced that he or she has been incorrectly evaluated to the point where it will jeopardize his or her class standing, progress, or eligibility for academic awards, two avenues remain open:

(a) Re-reads - In the case of examinations or assignments having a value of 30% or more of a term's mark, a student may file a request for a re-read/re-appraisal, as per Manitoba Regulation 84/78. The procedure requires that a student take the following steps for each exam or assignment being re-evaluated within 10 college working days of receiving the disputed grade:
   - obtain a "Request for Re-read" form from the Students' Association office or from the office of the Vice-President, Student Affairs, Room C-717;
   - complete paragraph (a) of the form;
   - pay a fee of $20.00 to Accounts Receivable, C212, and have the re-read form validated;
   - submit the validated form to the Vice-President, Student Affairs, Room C-717.

   NOTE: The $20.00 re-read fee will be refundable only if a higher grade is awarded. The re-read mark will be the official mark (higher or lower).

(b) Academic Appeal Board - Where a student wishes to appeal an evaluation of his or her overall grades and, when discussions with the instructor, department head and dean have failed to produce a satisfactory solution, the student may file an appeal with the Academic Appeal Board. The procedure requires that the appeal be filed within 10 college working days of receiving a formal notice of evaluation (e.g., transcript) and involves the following three steps:
   - the student will submit a written letter of appeal to the chairperson of the Academic Board. (The chairper-
son is the Vice-President, Student Affairs, Room C-717). The letter may be typed or legibly written and should specifically indicate the nature of the decision that is being appealed and why the student feels that a review is warranted;

- the chairperson will investigate the written request and decide whether or not to call the Academic Appeal Board. The decision will be made within five college working days and will be binding;

- if an Academic Appeal Board is called, the student and the instructional area representative(s) will present themselves before the board and make position statements. The statements will be heard and reviewed by the board with both parties in attendance. The decision of the Academic Appeal Board will be communicated by the chairman within five college working days.

12. CLEARING OF DEFICIENT OR INCOMPLETE SUBJECTS

Students who have failed a subject or did not complete all requirements for grading must make arrangements for clearing the deficiency through the instructional department head within one year of receiving formal notice of the assessment.

13. DROPPING A SUBJECT

Voluntary withdrawal from a subject (i.e. "dropping the subject") must be done in writing and communicated to the student's department head. The deadline for withdrawals will be three weeks prior to the first day of the final trimester/semester/term examinations. Subjects dropped before the deadline will have a V withdraw registered on the transcript; those dropped after the deadline will result in an automatic grade of F. Sponsored students should consult with their agency prior to dropping subjects.

14. APPLYING FOR RE-ADMITTANCE

Students who have voluntarily or involuntarily withdrawn from a course must apply for re-admission through the department head of the instructional area at least six weeks prior to their desired re-entry date. Upon receiving the written recommendation of the department head, the Director of Admissions-Registration will re-admit the student depending upon space availability in the course.

15. WITHDRAWAL FROM THE COLLEGE

Students who wish to voluntarily withdraw from their complete program of studies must inform their department head or instructor who, in turn, will complete a form (REG-16) authorizing possible refund of tuition fees for non-sponsored students. A copy of this form and validated tuition receipts should be submitted by the student to Accounts Receivable in Building C, Room 212. Sponsored students should consult with their agency prior to withdrawing from the college.

A student who withdraws without completing the necessary procedures noted above will not be eligible for any refund of tuition and fees.

16. GRANTING OF CERTIFICATES OR DIPLOMAS

(a) Time Limitations - The maximum time period for the completion of all course requirements leading to a Red River Community College certificate or diploma will be five years from the date of initial enrollment. This reflects the fact that subject content is steadily being revised and updated to parallel developments in business, industry, and the professions.

(b) Residency Requirements - Students must attain at least 50% of their course credits at Red River Community College to be eligible for the college's diploma or certificate, except in experiential learning programs.

(c) Honours Graduation - Students achieving a cumulative grade point average of 3.5 will graduate with Honours. Only students who take a regular full course load will be eligible to graduate with Honours.

(d) Graduation Documents - Red River Community College offers four types of graduation documents, based on course type and length. In general, the following guidelines will apply:

A Diploma will be awarded to students who successfully complete a post-secondary program that requires at least two academic years of full-time study.

A Certificate will be awarded to students who successfully complete a post-secondary program that requires not less than 12 weeks of full-time study or an extension program that is not less than 240 hours of part-time study.

An Adult Basic Education Certificate will be awarded to students who successfully complete an Adult Basic Education program at the BURT, BTSD, Adult 11, Pre-Technology Adult 12 level; an occupational language or English as Second Language program; or a related upgrading program.

A Certificate of Achievement will be awarded to students who successfully complete a post-secondary program but who do not qualify for either certificates or diplomas.

(e) Issuing of Graduation Documents - Graduation documents will be issued by the Admission-Registration office to students who have satisfied all course requirements and upon the express recommendation of the department head and/or dean of the instructional area.
(f) Students transferring credits (for example, from an Extension Services program to a day course), must present their transcripts to the department head at least five working days prior to graduation day to allow for processing of the certificate or diploma.

Students whose graduation has been delayed because of ineligibility, must notify the department head within four weeks of meeting all of the requirements for the certificate or diploma.

Please note that all policies and procedures are subject to change and will be reviewed on an annual basis.
PAYMENT OF TUITION AND STUDENT FEES

Full-time Course Rate
Tuition Fees. All full-time courses are assessed at the annual rate of $615.00 (based on a 10-month course). Longer or shorter course fees will be prorated. Fees are due on or before course registration date for the enrollment period. Students are advised to pay on time.

Student Fees. The Student Fees are $60.00 per student annually, and include $4.00 per month for Student Association fees and $2.00 per month for the Student Association Building Fund. The fees are payable with the tuition fees on or before course registration dates for the enrollment period. (The Student Fee applies only to students on campus.)

Trimester Course. Tuition Fee is $205.00; Student Fee is $20.00 per trimester. Total Tuition and Student Fees are $675.00.

Two-Term Courses. Tuition Fee is $308.00 for the first term and $307.00 for the second term; Student Fee is $30.00 per term. Total Tuition and Student Fees are $675.00.

One-Term Courses. Tuition fee is $615.00 plus $60.00 Student Fee. Total Tuition and Student Fees are $675.00.

ALL RATES LISTED ABOVE ARE CALCULATED FOR A 10-MONTH ACADEMIC YEAR.

Other. Fees for courses of other than 10 months duration will be prorated based on the number of months plus $6.00 per month Student Fee, and will be assessed for the full term.

Part-Time Course Rate
Tuition Fee. The fees will be the greater of $2.50 per instructional hour or $61.50 per month of attendance. (Fees will be rounded to the next full dollar.)

Student Fees. $3.00 per month or portion thereof. (For students taking less than six hours per week, the Student Fee is $1.00 per enrollment period.)

Please note that all fees are subject to change without notice.

Timing and Collection of Tuition Fees
The Financial Policy of the Manitoba community colleges indicates the following:

1. Tuition fees are payable on or before registration date but not prior to the pre-registration period.
2. Pre-registration payments must be paid in accordance with the date indicated on the letter of acceptance.
3. Where a third party is billed for tuition fees, a letter of commitment must be provided to the Admissions/Registration Office on or before the registration date. Tuition fees are payable within thirty days from the date the third party is billed. Third-party billing should be restricted to reputable businesses and agencies.
4. Where a student registers into a term after the scheduled date for registration, tuition and student fees will be assessed as if the student had registered on the scheduled registration date. Tuition amounts for such students are due on the day the student registers.
5. Students whose tuition amounts remain unpaid after the due date the tuition is due will be given 14 calendar days grace. Students whose tuition fees are outstanding at the end of the period of grace will be issued a formal notice and are subject to a late fee of $20.00 in addition to all other amounts owing to the college. An additional 14 calendar days will be allowed for the student to make payment from the date the formal notice was mailed. Failure to do so will result in automatic termination, unless a further extension is granted by the college president or designate.
6. Formal notice shall be provided by certified letter mailed to the student address as recorded by the Registration Office. Failure to receive formal notice shall not constitute grounds for inadequate notification.
7. Students who are terminated for failure to pay tuition fees (see #5 above), and are subsequently reinstated, will be charged a reinstatement fee of $50.00 as well as the $20.00 late fee. These fees are payable in addition to the fees previously assessed. Reinstatement is not automatic.
8. Canada Student Loan recipients will have their tuition and student fees automatically deducted from their Canada Student Loans. The lending institution will forward a cheque directly to the college. A receipt will be issued to the student by the college, once payment has been processed.
9. Canada Student Loan applicants are responsible for ensuring their tuition is paid. Students whose tuition fees are outstanding 28 days after their registration date will be issued a formal notice. These students must contact the Accounting Office to make special payment arrangements. Failure to do so will result in automatic termination.

Sponsored Students
Where tuition fees are to be billed to a third party, a letter of commitment is to be provided to the Admissions/Registration Office before the registration date for the course. Tuition fees payable by a sponsor are due within 30 days from the date the sponsor is billed. Where tuition is billed to a third party, any refund shall be returned directly to the third party.

N.S.F. Cheques
A penalty fee of $20.00 will be assessed when any N.S.F. cheque has been received in payment.

REFUND POLICY

Tuition Fees
Applicants. Applicants withdrawing before course commencement will be eligible for a refund of tuition, less the non-refundable pre-registration fee.
Students. Students terminating after course commencement will be eligible for a refund of tuition paid, less the expended portion and the $75.00 non-refundable registration fee. (Example: A student who registers in September and also terminates in September will lose $61.50 + $75.00 = $136.50.)

Thus, the following refund payment schedule:

- Accepted applicants who do not register - amount paid less pre-registration fee of $75.00.
- Registered students leaving in first month - amount paid less $136.50.
- Registered students leaving in second month - amount paid less $198.00.

Student Fees

Students assessed student fees at the rate of $6.00 per month, and who terminated after course commencement are eligible for a refund of fees paid, less $12.00 if terminating during the first month, and $6.00 for each subsequent month or portion thereof.

Applying for Refund/Withdrawal Procedures

Refund requests are to be made through the Accounting Office, Room 212, 2nd Floor, Building C, Red River Community College.

Students wishing to withdraw from the college must inform their department head or instructor who will complete a REG-16 form authorizing their eligibility for a refund of tuition fees.

A copy of the completed REG-16 and tuition receipts should be submitted immediately to Accounts Receivable, Room C 212.

Please note that a student who withdraws unofficially, without completing the above procedures, will not be eligible for any refund of fees. Applications for refunds must be presented to Accounts Receivable within two months of termination date.

Refunds will be calculated on the following basis:

1. Course cancellation. In the event that a course is cancelled, a student is eligible for a full refund of tuition fees. The pre-registration fee will not be withheld.

2. Teacher Education special programs. Refunds will be given in full only to those students who notify the Teacher Education section one week or more prior to the start of the course.

3. Correspondence courses. Refunds will be granted to students if notice is provided in writing to their tutor within six weeks from the date course material was issued. Where notice is provided within the six-week period, the refundable amount shall be the tuition paid less the following:

   - a) the administration fee,
   - b) the cost of textbooks and materials, and
   - c) the cost of marking assignments that have been received by the tutor.

4. Evening courses. Students withdrawing prior to the commencement of the second class will be eligible for a refund of tuition, less the non-refundable administration fee of $25.00. Subsequent to this, refunds shall not be granted.

5. Special or high-cost courses. Refunds will be considered on the same basis as outlined in #4 above.

6. For courses to which the annual certificate and diploma rate has been applied:

   a) APPLICANTS withdrawing before course commencement will be eligible for a refund of tuition, less the non-refundable pre-registration fee.

   b) STUDENTS terminating after course commencement will be eligible for a refund of tuition paid, less the non-refundable registration fee, and the expended portion.

7. Part-time students. Refunds of tuition fees will be considered on the same basis as outlined in #8 above with the replacement of registration fee by administration fee.

8. Conditionally-accepted applicants. Pre-registration fees will be refunded to an applicant who has been conditionally accepted and pre-registered, but did not fulfill the specified conditions to the satisfaction of the Director, Admissions/Registration.

9. Students sponsored by agencies or employers or who are the responsibility of other governments. There shall be no refunds issued unless specifically provided for in an agreement or approved in writing by the college president.

10. Transfers. If a student elects to transfer to another course offered by the college or to another Manitoba community college (provided space is available), the unused portion of the tuition fees already paid may be credited toward the fees prescribed for that course.

11. Canada Student Loans. Educational institutions are required by law to forward any refund of fees which have been paid with the proceeds of a Canada Student Loan to the recipient's bank for application to his or her Canada Student Loan debt.

Other Debts

Refunds of tuition fees may be reduced by other outstanding debts, such as bookstore charges, parking fees, library fines, etc.
Conversion to CEIC Sponsorship
A Provincial Entry student who is converted to a CEIC sponsorship status will be eligible for a refund of tuition paid, less any expended months of training.
RESPONSIBILITIES OF REGISTERED STUDENTS
All students agree, by the act of registration, to be bound by the regulations of Red River Community College and of the course in which they are registered.

It is assumed that students who register at Red River Community College have made themselves familiar with the specific requirements associated with the diplomas or certificates they are seeking. Students are responsible also for ensuring that they are enrolled in all subjects required for completing course requirements and as preparation for course work experience components.

Acceptable standards of student conduct are based on common sense and common courtesy. Students who fail to conduct themselves in a socially-acceptable manner, who violate the rights of others, damage college property, or in their manner and speech attempt to discriminate against others, may be asked to discontinue their studies.

Although the college does not have a formal dress code, students are expected to follow acceptable criteria for dress and grooming, consistent with the standards of the course in which they are enrolled. Where specific requirements such as safety equipment and clothing, uniforms and course-related health and personal hygiene standards exist, students must meet these additional requirements.

SEXUAL HARASSMENT
Red River Community College has in effect a sexual harassment policy in conjunction with the Post-Secondary, Adult and Continuing Education and Training (PACE) division of Manitoba Education and Training. This policy is applicable to any incident of sexual harassment involving a college employee and a student or client, or any incident involving two students or clients.

Incidents in which both parties are employees of the province of Manitoba (i.e., employer and employee, employee and employee) will be addressed by the Civil Service Commission policy on sexual harassment.

The college recognizes its responsibility for the creation and maintenance of a safe and healthy working and learning environment and will not tolerate sexual harassment in any form, whether it occurs on campus, at off-campus locations, or in relation to college activities. A Sexual Harassment Advisor is available to provide confidential information and advice and can be contacted in Room D101 In Building D or by telephone at 632-2271.

LIVING ACCOMMODATION
There are no residential facilities at the college. The Red River Community College Students’ Association operates a housing registry from July to mid-September and should be contacted for specific information at 632-2375.

SMOKING POLICY
Red River Community College campus is designated as a non-smoking facility. Students and staff are permitted to smoke only in those areas identified for that purpose. All other areas of the college are non-smoking areas.

WITHHOLDING OF ACADEMIC RESULTS & DIPLOMAS
Transcripts, diplomas and certificates will be withheld from students who are in possession of college property, such as textbooks, equipment or supplies, or who have outstanding accounts with the college.

NON-ACADEMIC COMPLAINTS
The grievance procedure is used to seek redress for complaints on non-academic matters such as alleged misconduct, discrimination, etc.

a) Whenever possible, it is desirable for students to discuss their grievances informally with the staff member most directly involved. At any time during this procedure, students may consult the Students’ Association office regarding assistance or procedure.

b) If a resolution to the problem cannot be effected by an informal approach, the student may discuss the matter with the department head.

c) In the event that dissatisfaction still exists, the student should meet with the dean of the instructional area.

d) Thereafter, if the matter remains unresolved, the student may present the complaint to the Chairperson of the Grievance Board (Vice-President of Administration, C719). The Chairperson will review the grievance and may call the Grievance Board into session if the circumstances warrant this action. The outcome of the Chairperson’s review and the decision on whether or not to convene the Board will be communicated to the student in writing within five college working days. The decision is binding. Should the Grievance Board be held, the student will be called to appear and present his or her case. The staff person against whom the complaint has been lodged will also have the opportunity to make a presentation. The decision of the Grievance Board will be rendered by the Chairman within five college working days.

Students are advised further that:

a) the composition of the Academic Appeal Board and the Grievance Board includes representatives from the Students’ Association, college administration, the union representing faculty and support staff, and from a related area outside of the college.

b) many potential appeal and/or grievance situations can be avoided if students make every reasonable effort to advise instructors or department heads of personal difficulties or special circumstances which could affect examinations or assignments. Communication before the fact, wherever possible, is appropriate.
c) If students are unsure of their rights, or if assistance is required, the Students' Association or the college's Counseling Services are available as resources.

d) A student is considered eligible to undertake training while an academic appeal or grievance is in progress. It is to be noted that where the circumstances of the case involve a hazardous situation for the college or work experience location, training will be suspended until results of the hearing or grievance are known.

e) These are the only formal academic appeal grievance processes used by the academic divisions and College Development and Extension Services across the college.

Please note that all policies and procedures are subject to change and will be reviewed on a regular basis.
The Admissions/Registration Office is the administrative centre for the admission and registration processes, including all records, and provides the following services:

1. provision of program-related information at the college, by telephone, and by mail.
2. distribution, receipt and processing of applications.
3. review of applications, including screening for course entrance requirements, appropriate referrals and subsequent advice to applicants.
4. maintenance of student records related to admissions, academic achievement, termination and graduation.
5. issuance of mark transcripts, certificates and diplomas.
6. provision of Education Deduction Certificates for income tax purposes.
7. confirmation of student enrolment for purposes of employment, student aid and related sponsorship.
8. creation and maintenance of computerized course and subject information.

The Admissions/Registration Office is located on the third floor of Building C. The telephone number is 632-2327.

COUNSELLING SERVICES

1. For Students Enrolled at the College
The Counselling Services office at the college offers a number of services that can help students gain the maximum benefit from their college experience. These services are free and are provided to the main campus and Extension Centres. They include:

   a) Personal Counselling, which gives students an opportunity to discuss, with a professional counsellor, a broad range of personal concerns. These concerns may include such things as ways of dealing with an urgent crisis, support in time of stress, assistance in dealing with relationship problems, a need to talk about academic difficulties or a feeling that help is required in dealing with bureaucratic entanglement.

   b) Vocational Educational Counselling, whereby students are assisted in identifying interests and abilities pertinent to training and a career. Additionally, the Counselling Services office maintains an extensive file of occupational and educational information, including calendars from most Canadian colleges and universities. Interest and aptitude tests are available as need is determined and at the discretion of the student's counsellor. Individuals or groups of students can also receive assistance in job-seeking skills eg. applications, resume writing, and interview skills.

   c) Financial Counselling, which can help students plan a general budget for the academic year or assist them in applying for Student Aid, Student Social Allowances, etc.

   d) Referral. When a student has a problem or a concern that falls within the jurisdiction of a college office or a community agency, the counsellors will try to help the student get to see the right person at the right place, with as few hassles as possible. Other assistance will be provided as needed.

2. For Prospective Students
Educational guidance and career-counselling services are provided to members of the community who are interested in enrolling in courses at Red River Community College. Persons are assisted in determining interests, abilities, goals, and in formulating plans for skill development and a career. Related concerns such as financial assistance, academic upgrading, day care, etc. also can be dealt with.

All contacts with Counselling Services are voluntary and confidential. While appointments are preferred, drop-ins can sometimes be seen immediately, or after a short wait. Appointments can be made by contacting the secretary in Building C, Plaza Level, Room 115, or by telephoning 632-2335. Appointments are usually made between the hours of 8:30 a.m. and 4:00 p.m., Monday through Friday. The office is open and staffed at noon.

TUTORIAL CENTRE

The Tutorial Centre can provide academic assistance to college students who are experiencing significant difficulty with a particular subject. In addition, the Centre's instructors can assist students with study skills, reading skills, the metric system, and English as a Second Language. The Tutorial Centre is open during normal college hours, including the noon hour, Monday through Friday. While it is preferable that appointments be made, drop-ins can often be accommodated.

The Centre is located in CM 25, on the Mall Level of Building C. The telephone number is 632-2451.

BOOKSTORE

Required textbooks and equipment for most courses are available for purchase from the college Bookstore. After July 1, students are encouraged to buy books in advance to avoid line-ups on registration day. Student parking decals can be purchased at the Bookstore and course booklists also are available.

The Bookstore is located on the Mall Level of Building D, across from the Buffalo Place cafeteria. Regular store hours are 8:00 a.m. to 3:15 p.m., Monday through Friday.
LIBRARY SERVICES

The Library is located on the Mall Level across from the Tower Lounge between buildings D and F. It offers a wide range of resources and services to support course assignments and to encourage the general pursuit of knowledge, beyond specific class requirements.

The Library contains a large collection of books, magazines, newspapers, company annual reports, clippings, government publications, films, videotapes, slides, filmstrips, and audiocassettes. Audiovisual equipment is available for individual viewing and listening within the Library and also may be borrowed for classroom presentations. There are tables and individual carrels for studying.

A microcomputer area with several IBM PCs and a variety of software is located in the Library. An instructor provides basic instruction and assistance with software in this area on weekdays between 9:00 a.m. and 3:30 p.m.

Instruction on how to use the Library is given to classes when arranged by instructors. Individual instruction will be given to any student on request. A brochure outlining services and policies of the Library, and printed course-related guides designed to assist students in researching topics and in using library tools more effectively, may be picked up at the Library.

Qualified staff are available at all times to assist you in locating information and materials in the Library; in operating AV equipment; and in generally finding your way around the world of information. Don't hesitate to ask.

The Library also provides coin/card operated photocopiers and interlibrary loan service. Should the Library's collection not contain the book or article you require, the Library staff will locate the item in another library and, either refer you to that library, if it is in the city, or have it sent to the Library at the college for your use, if it is located outside the city. Red River Community College students are eligible for library cards from the University of Winnipeg and the University of Manitoba.

To borrow books, magazines and audiovisual items, students must present a valid college I.D. card. Materials are loaned for varying lengths of time depending on the demand for them. Students are responsible for returning borrowed materials by the date they are due. Late returns will be subject to fines.

Students are also responsible for the condition of the library materials that they borrow or use. If materials are lost or damaged, the borrower will be required to pay the replacement costs. Certificates or diplomas will be withheld and future registration in other courses prevented until library material is returned or replacement costs have been paid.

Hours of service are posted in the Library. For information on library hours call 632-2332. Other useful telephone numbers:
Information and Reference: 632-2233
AV Services: 632-2231

HEALTH SERVICES

The Health Centre is located on the Mall Level between Building F and Building B, across from the Assiniboia Inn. A Registered Nurse is on duty from 7:45 a.m. to 4:15 p.m., Monday through Friday.

Health services are available to all students in the college. No appointment is necessary.

Injuries occurring in the complex receive treatment in the Health Centre and, where medical aid is required outside of the college, this is arranged. Short-term care is available for ill students. Appointments are arranged with doctors and eye specialists, if these are deemed necessary.

The Health Centre offers counselling for personal and family health problems and has health information and literature available on request. Immunizations are administered to Health Science students, as required.

Students who are subject to various chronic conditions such as diabetes, epilepsy, asthma, etc., are asked to submit details to the Health Centre. This information is confidential, and does not become part of the student's permanent file. It is given voluntarily by the student and is to his or her advantage to have this information available in the event that urgent care is required.

PHYSICAL EDUCATION & RECREATION PROGRAMS

The college Physical Education programs attempt to reach the following objectives:

1. to awaken the interest of the college community in a variety of activities which will maintain a high level of physical and mental well being.
2. to provide the opportunity for the college community to gain knowledge and skills in many lifetime sports and recreational activities.
3. to provide a broad variety of Intramural programs to give students and staff the opportunity for exercise and friendly competition at a recreational level.

Credit Programs in Physical Education

Several areas in the college have in their curriculum a required "Activity for Life" physical education subject which includes sport skills as well as lectures in body mechanics, stress management, exercise physiology and nutrition. Nursing, Child Care Services and Dental Assisting courses include this requirement.

A program of courses in several lifetime sports are offered to all students and staff members each trimester. Some departments may accept these courses for option credit.
CANADA EMPLOYMENT CENTRE ON CAMPUS

The Canada Employment Centre is located in Room C211 of Building C. The Centre assists graduate and undergraduate students by providing:

- occupational and employment counselling
- current labour market information and forecasts by occupation and area
- job information and registration for permanent summer and part-time work
- an "on-campus" recruitment program that invites employers to interview graduating students. Some employers interview undergraduates for summer employment.
- an employment library with self-help manuals and company literature
- assistance in resume writing, employment applications and employment interview preparation

ALL STUDENTS, regardless of any sponsorship and including students who have enrolled on their own, are encouraged to take advantage of the services offered by contacting the office early in the academic year.

NATIVE STUDENT RESOURCE CENTRE

The Native Student Resource Centre provides a range of programming and support services for Red River Community College students including financial, personal and academic counselling; college orientation; liaison with native communities and organizations; and the Anishinabe Club.

The College Preparation Skills Development course also is delivered from the centre. This course is designed to assist students to develop mathematics, communications and assertiveness skills to pursue further education or training.

The Native Student Resource Centre is located in Building L. The telephone number is 632 2439.

EDUCATIONAL SUPPORT CENTRE

Integration of students with disabilities into various courses offered at Red River Community College is the focus of the services provided by the Educational Support Centre. These services are available to students in evening courses as well as day courses.

Career counselling provides prospective students with the opportunity to explore specific courses related to their aptitudes and interests and also to evaluate how their particular disability will impact on their vocational choices and education plans.

Liaison is maintained with community services for the disabled as well as college instructional staff. Training courses may be altered to meet individual needs. Special arrangements for examinations can be made for students who may require time extensions or oral exams because of their disability. Assistance is also provided to ensure that print-handicapped students are able to obtain instructional texts on tape.

Deaf and hard-of-hearing students enrolled in regular courses receive a variety of support services, as required, including visual and oral interpreting, notetaking, tutoring, academic and personal counselling. Career counselling and academic assessments are available to any hearing-impaired person concerned with his or her vocational future, and who may be considering training in a trade or technology.

The Educational Support Centre delivers the Visual Language Interpreter Training Program and the Preparatory Program, and coordinates and instructs sign language classes delivered through the college's Extension Services.

The Centre is located in Room D102A, on the Plaza Level of Building D. The telephone numbers are:

- 632 2381
- 632 2458
- 633 6329 (TDD line).

STUDENT AWARDS SERVICES

The Student Awards Office on campus provides a number of support services for Red River Community College students:

1. assistance to students applying for student aid;
2. assistance to students applying for college scholarships and awards;
3. assistance to students requiring short-term emergency loans;
4. liaison with Student Aid Branch and college administration;
5. information on financial assistance programs available to Manitoba students; and
6. verification and release of student aid awards.

For further information on these services, please contact the Student Awards Office, C312, telephone 632 2437.

OTHER STUDENT SERVICES

Please note the following telephone numbers which may be useful to some students:

- Day Care Centre 632-2244
- Women's Programs 632-2271
- Reading and Study Skills Centre 632-2280
AWARDS, BURSARIES AND SCHOLARSHIPS

Throughout the academic year, Red River Community College assists students by administering the awards, bursaries, and scholarships that have been donated by concerned corporations, community organizations and individuals.

These awards cover the specific requests of the donors and are intended to assist students who have shown outstanding abilities in academic or vocational areas and/or are in need of financial assistance.

For further information, contact the appropriate department head or the Student Awards Office, Building C, Room 312.

Lieutenant-Governor's Medals For Proficiency
The Lieutenant-Governor's Medals will be awarded to students in the community colleges of Manitoba who, in the opinion of the selection committee, combine, to the greatest extent, in their graduating year:
(a) academic and technical ability
(b) participation in college activities
(c) good character and personality.

The awards will be made to one student from each of the following groups at the college:
(a) Diploma course student from the science-based curricula;
(b) Certificate course student from the science-based curricula;
(c) Diploma course student from the arts-based curricula;
(d) Certificate course student from the arts-based curricula.

Addison Wesley Award
Two book awards presented, both for highest academic mark in Nursing Theory: one to a Practical Nursing/Nursing Year 1 student and the other to a Nursing Year 2 student. This award is chosen by the Nursing department head and instructors.

Advertising Association of Winnipeg Awards
Awards are presented to Creative Communications and Advertising Art students working jointly on assigned projects and displaying outstanding talent and ability.

AHS - Canlab Award
Cash award for the Medical Laboratory Technology student who attains the highest standing in Clinical Chemistry.

A.J.S. (John) Taunton Award
Funds are available for native students (Status Indian or Metis), experiencing temporary financial difficulties.

Alexander Campbell Award
Administered by the Manitoba Hotel Association. Awards of up to $4,000 are offered to Manitoba residents who have demonstrated academic proficiency as well as genuine interest and/or acceptable experience in occupations related to the hospitality industry. Applicants must be entering a degree, certificate, or diploma course in Hotel Management of not less than four years duration at a university or college in North America. For further information and applications, please contact the Manitoba Hotel Association, 1505-155 Carlton Street, Winnipeg, R3C 3H8, (phone 942-0671).

Armed Forces Communications & Electronics Association (Winnipeg Chapter) Award
Two awards of $200 each to full-time students entering second year of Computer or Electronic Engineering Technology. This award will be based on the first year's work and will be offered to students who have demonstrated above-average abilities in the academic and vocational areas of the course and who have received no other award.

ASM International Award
This award of an ASM Materials Selection Handbook is for a student entering second year of Mechanical Engineering Technology who is taking the full program load and attains the highest standing.

Assiniboine Chapter of the Sweet Adelines Scholarship
$250 presented annually to a physically-disabled student enrolled at the college.

Association for Deaf and Hearing Impaired Children of Manitoba
Two awards of $100 to hearing-impaired students for outstanding achievement in a college course.

Association of Manitoba Land Surveyors Scholarships
Two at $150 each to students entering Term 3 of Survey Engineering Technology.

Automotive Industries Association of Canada Scholarship
An award of $100 is given to the most deserving student in the Motor Vehicle Mechanic course.

Bearing Supply & Service (Canada) Limited Bursaries
Two awards of $175 each to students entering second year: one for Mechanical Engineering Technology, and one for Electronic Engineering Technology, who have displayed a high interest and aptitude in the field of industrial sales and marketing.

Birchwood G.M. - Motor Vehicle Mechanic Scholarship
$100 award and plaque for a student outstanding in theory and practical field and community involvement.

Bird Construction Company Limited
One award of $300 and one award of $100 for students entering second year of Construction Engineering Technology.

Birks Family Foundation Bursary Plan
Students whose parents or guardian are employed by Henry Birks & Sons Limited or its subsidiaries and affiliated companies ("Birks") may apply directly to the foundation for bursary assistance. Funds are also available for students experiencing temporary financial difficulties.
difficulties. Inquiries should be directed to the Student Awards Office, C312.

Bristol Aerospace Limited Scholarships
Two awards of $200 each to students entering second year of Electronic and Mechanical Engineering Technology.

C.E. Littler Memorial Award
Awarded annually in December by the Institute of Power Engineers (Manitoba area) to a student (who is a student member of the I.P.E.) in the 4th Class Power Engineering course, for demonstrated academic and technical ability.

CN Scholarship for Women
One scholarship of $600 is available to a female student on the basis of her demonstrated interest in a non-traditional career, who is entering Piping Trades, Diesel Mechanics, Welding, Electrical, Machine Shop Practice, Telecommunications, Drafting, Mechanical Engineering Technology or Power Engineering at the college. Application forms are available from the college Awards Office. Application deadline is July 31.

C.V. Mosby Award
Book award presented in recognition of an individual with the highest score in Nursing Practice, Year 2. This award is chosen by the Nursing department head and instructors.

The Canada Packers Limited Award
$100 to be awarded annually to the student in the Meatingiding course having the highest proficiency in meatcutting skills, managerial qualities, character, and potential in his or her chosen field.

Canada Safeway Limited Bursary
Three $100 awards made annually, two to outstanding students in Meatcutting, and one to an outstanding student in Commercial Baking.

The Canadian Army Welfare Fund
Bursary awarded to a student for tuition fees and textbooks. The family must be a former member of the Canadian Army and must have served between October 1, 1946 and January 31, 1966. Application forms are available from the Base Financial Counselor, CFB Winnipeg, Westwin, Manitoba, R3J 0T0, (phone 895-5379).

Canadian Food Service Executive Association
$500 bursary and trip to National Convention for Hotel and Restaurant Administration students. Good Host - $500 bursary and trip to National Convention. C.F.S.E.A. Junior Branch members only (paid directly to student). Contact C.F.S.E.A. for applications and information.

Canadian Forces Personnel Assistance Fund
Loans are available to former or serving members of the Canadian Forces with at least 10 years service to enable dependents to pursue a post-secondary education. Applications forms are available from the Base Financial Counselor, CFB Winnipeg, Westwin, Manitoba, R3J 0T0 (phone 895-5379). Deadline for applications is June 30.

Canadian Hospitality Foundation
$250 merit award for second-year Hotel and Restaurant Administration students. $2,000 C.R.F.A. Annual scholarship to first or second-year student who is or has been employed by a C.R.F.A. member. Deadline is March 15. $500 Food Service Purchasing Association of Canada Challenge award to first or second-year student. Deadline is March 15.

Canadian Information Processing Society
Two $200 awards to outstanding students in the first year of the Computer Analyst/Programmer course.

Canadian Institute of Surveying - Hans Klinkenberg Memorial Scholarship
One award of approximately $200 to a student entering second year of Survey Engineering Technology. The award will be based on academic excellence, need, and participation in student activities.

Canadian Institute of Surveying (CIS) Membership Award
An award of a two-year membership in the Canadian Institute of Surveying to a graduate in the Survey Engineering Technology program.

Canadian Life and Health Insurance Association Inc. Award
An award of $300 will be given annually to a worthy and qualified second-year Business Administration student with a minimum cumulative grade point average of 3.00. The recipient will be taking the Risk and Insurance elective and demonstrate interest in an insurance career.

Canadian Portland Cement Association Concrete Technology Award
A commorative plaque suitably inscribed and $200 will be presented annually to a student enrolled in Construction, Civil, Engineering Design & Drafting, or Structural Engineering Technology who has demonstrated the highest degree of excellence in concrete technology.

Canadian Public Relations Society - Manitoba Public Relations Scholarship
To be presented annually by the Canadian Public Relations Society - Manitoba to a Manitoba student studying public relations at the post-secondary level either on a full-time basis or as part of a recognized communications program. The selection will be based on academic achievement, creative and technical ability, involvement in student and community activities, and potential for success in the public relations profession. An award of $200 will be made by the society to assist the winner to continue studies in public relations.

Canadian Society of Club Managers - Val Mason Scholarship
Awarded to Hotel and Restaurant Administration students demonstrating affinity for the industry and academic excellence who are employed by private clubs.
Certified General Accountants Association of Manitoba Awards
Cash and tuition credit (for C.G.A.) awards totalling approximately $2500 will be awarded as follows: four awards to students in Term 6 of Business Administration; and three awards to students in Term 3 of Business Accountancy.

Champs Food Systems Award
$250 Phil Hiebert Memorial Award to a second-year student in Hotel and Restaurant Administration course.

Chemical Rubber Company Book and Scroll Award
Handbook of Chemistry and Physics and a scroll given to a first-year student in the Applied Sciences department who excels in the freshman Chemistry subject.

Chevron Canada Resources Limited Student Scholarships
Two scholarships of $700 each to students entering second year of Electrical Engineering Technology and either Civil or Structural Engineering Technology. The selection will be based on scholarship, character, personality, and a potential ability for leadership.

Clay Brick Association Scholarship
A $100 plus a medallion to a student in Engineering Design & Drafting Technology with the highest overall standing at the end of Term 6.

Codville Company Bursary
$100.00 to be awarded annually to the student in the Meatcutting course having the highest proficiency in meat-cutting skills, managerial qualities, character and potential ability to carry on in his or her chosen field.

Colin Maxwell Memorial Bursary
A $100 bursary is available to assist a needy student entering Term 1 of the Medical Radiological Diagnostic Technology course or Term 2 of the Radiotherapy Technology course.

Construction Specification Canada (CSC) Scholarship
A scholarship in the amount of $300 plus a one-year student membership in the CSC for high academic performance at the completion of the first year of the Engineering Design and Drafting, Construction Engineering or Civil Engineering Technology programs.

Coulter Electronics of Canada Limited Award
Book award for the Medical Laboratory Technology student who attains the highest standing in Hematology.

D.J. Wooster Scholarship
$200.00 scholarship awarded to a member of the Red River IEEE (Electrical, Electronic, Computer and Instrumentation Engineering Technologies) student branch who has shown high academic performance in first year and has participated in IEEE activities. The award is to be made at the beginning of the second year of the student's program.

Data Processing Management Association of Canada Award
One $300 award to a Term 4 Computer Analyst/Programmer student for outstanding work in Term 1 through Term 3.

Data Processing Management Association Student Chapter Award
Awarded annually to a deserving Computer Analyst/Programmer student in consultation with the department head.

Department of Family Services Child Care Award
Established by the Department of Family Services, an annual award consisting of a collection of children's literature will be presented to a graduating Child Care Services student. The recipient will have displayed outstanding personal growth towards professionalism. Selection will be based on academic progress, performance, practical experience and leadership involvement both in class and out.

Diesel Mechanic-Transport Awards
Three awards are issued annually to Diesel Mechanic-Transport students as selected by the Advisory Committee for the course in each of the following specialties: the trucking industry; the farm-machinery industry; and the off-road heavy-equipment industry. Awards consist of a certificate, cash award, toolbox from CP Express and tools from Kleyson Transport. The recipients are also honored on a plaque displayed in the college.

Dr. Gretta Brown Scholarship
Established by the Manitoba Child Care Association in memory of Dr. Gretta Brown and her distinguished contributions to the child care field. A cash award will be made annually to a first-year Child Care Services student entering his or her second year of the diploma program who has demonstrated professionalism and leadership - qualities that Gretta upheld in her long and distinguished career.

Doug Newton Memorial Scholarship
Awarded annually to a Clerical Bookkeeping student for demonstrated academic proficiency.

Dynamic Machine Corporation Limited Bursary
A cash award is presented annually to a student graduating from the Machine Shop Practice course based on technical ability, financial need, and having at least an average academic standing.

Edward S. Smendziluk Memorial Award
This award is presented annually to a full-time Civil Engineering Technology student in his or her graduating year and is based upon high academic standing, participation in extracurricular activities, and leadership qualities. The award honors the memory of Edward S. Smendziluk, Department Head of Civil Technology, who passed away suddenly in October of 1984.

Evelyn Bagot Memorial Scholarship
In memory of the late Mrs. Evelyn Bagot, former Manageress of the College Bookstore, a $100 award is presented annually to a regular full-time student on the basis of performance (theoretical
and practical). Secondary consideration will be financial need. Applications are available from the Student Awards Office, C312. Deadline for applications is February 15.

Federated Co-operatives Limited Award
$50 and a trophy presented annually to an outstanding student in Commercial Baking.

Fisher Scientific Award
Cash award for the Medical Laboratory Technology student who attains the highest standing in Clinical Microbiology.

Fisher Scientific Book Award
Presented to the student with the highest standing in Term 6 of Biological Technology.

Fraser Art Supplies Award
A scholarship of $100 to a student entering second year in Civil Engineering Technology, and who has displayed excellence in the subject of Engineering Graphics.

G. Allan Roeher Institute Bursaries
Bursaries are being offered to college students interested in the field of mental handicap and planning to involve themselves as volunteers or professionals and who are in need of financial assistance. Students must apply directly to Provincial Association of the Canadian Association for Community living or through their local association. Application deadline is July 1.

Garland Commercial Ranges Limited Awards
Two awards of $125 will be made to outstanding students enrolled in the Chef Training course.

George Andrew Mitchell Technical Bursary
A bursary to cover the cost of tuition and books is available to students with demonstrated financial need who are registered in any of the Industrial or Trade Improvement courses (including Graphic Arts) with the exception of Car Owner's Maintenance, Gunsmith, and Small Motors in the Extension Services (evening/Saturday) division. A complete listing of eligible programs and application forms for this bursary are available from the college Extension Services Office, C116. Application deadline is four weeks after the commencement of each trimester.

Gervin Alexander Dobbin Memorial Scholarship
A $200 scholarship has been established to honor the memory of former Evening Program Supervisor, Gervin Alexander Dobbin. The scholarship is to be awarded annually to a part-time evening/Saturday program student who is a single parent with a financial need and who is currently registered in an Extension Services Program. The scholarship is awarded during the fall trimester.

Gladys Bell Scholarship
The Gladys Bell Scholarship is awarded annually by her former associates and students to a student for academic proficiency in Clerical Bookkeeping.

Glen Huston Memorial Award
A scholarship of $100 and a plaque donated by the Technology Educators' Association of Manitoba, awarded to an Industrial Arts Teacher Education student who has completed the first three years of the course and has shown high academic achievement, good leadership abilities, and has made a professional commitment.

Griffin Canada Incorporated Scholarship
$1,000 to the following recipients entering second year: $300 each to two students and $200 to another in Instrumentation Engineering Technology; and $200 to a student in Electrical Engineering Technology.

The Grummet Memorial Fund Bursary
$500 to a Manitoba student entering a Diploma Nursing course in the province. Application forms are available from the Manitoba Association of Registered Nurses. Deadline for applications is September 30.

Gudmundur Myrdal Bursary Program
Established in tribute to Gudmundur Myrdal, first Executive Director of Seven Oaks General Hospital, to assist full-time students in the health profession with the cost of tuition fees. A letter of application may be submitted to Seven Oaks General Hospital, c/o Administration.

Hannah (Nancy) Boon Fund
Funds are available for native students (Status Indian or Metis), experiencing temporary financial difficulties. Inquiries should be directed to the Student Awards Office, C312.

Hewlett-Packard (Canada) Limited Award
A programmable calculator is awarded to a Term 4 Computer/Analyst Programmer student for outstanding achievement in Term 1 through Term 3.

Hewlett-Packard (Canada) Limited Award
An 11C calculator will be awarded to a top student in Electronic Engineering Technology who has displayed excellence in the subjects of Instruments, Circuits, and Mathematics.

Hill's Pet Product Nutrition Award
$200 award and plaque to a second-year student in the Animal Health Technology program who excels in Small Animal Nutrition Clinic.

IABC Manitoba Award
A certificate and a cash award for a Creative Communications student judged by the following criteria:
(a) leadership qualities, participation in his or her field of study and in the IABC Manitoba Student Affiliation
(b) mark and overall program standing
(c) membership in the IABC Manitoba Student Affiliation.

I.D. Engineering Scholarships
Two scholarships of $200 each to students entering second year of Civil and Structural Engineering Technology.
IEEE - Student Branch Scholarship
An award of $200 to a student member of the Red River Community College IEEE Student Branch for high academic performance in first year and participation in IEEE activities.

IKOY Partnership Architects
One annual scholarship in the amount of $200 will be awarded to an Engineering Design & Drafting Technology student having the highest standing in his or her graduate thesis.

Icelandic Festival of Manitoba Scholarship
The Wilhelm Kristjansson Memorial Scholarship of $250 is offered by the Festival to a student who has completed one year of post-secondary studies (University or Community College) in Manitoba and who will be continuing his or her studies in the upcoming year. The following criteria will be considered: Icelandic or part-Icelandic descent; academic results of the current school year; qualities of leadership and community service; and need for financial assistance. Please send a letter of application and transcript along with two letters of reference from instructors or community leaders to Dennis N. Stefanson, 39 Keats Way, Winnipeg, R3K 0S2. Deadline for applications is July 1.

Ida Mary Trotter Bursary
Funds are available for native students (Status Indian or Metis), experiencing temporary financial difficulties. Inquiries should be directed to the Student Awards Office, C312.

Imperial Oil Higher Education Awards
Imperial Oil Limited offers annually free tuition and other compulsory fees to all children or wards of employees and annuitants who proceed to higher education courses. Further information and application forms may be obtained from The Secretary, Committee on Higher Education, Imperial Oil Limited, 111 St. Clair Avenue West, Toronto, Ontario.

The Inco Metal Engineering Technology Bursaries
Six at $100 each to deserving students who are pursuing a full-time program leading to a diploma in Engineering Technology. They should be Canadian citizens or possess landed-immigrant status, have a good scholastic record and demonstrate interest in extracurricular affairs.

Ingram and Bell Scientific Award
Awarded to the Medical Laboratory Technology student who attains the highest standing in Histotechnology.

The Institute of Power Engineers (Greater Winnipeg Branch)
Two $50 awards given each June to students (who are student members of the I.P.E.) in the 3rd Class Power engineering course, for demonstrated academic and technical ability.

James S. Purvis Bursary Fund
Cash award to be presented annually to a first-year Creative Communications student on the basis of outstanding academic achievement.

Jane Ackroyd Award of Excellence
A $100 award presented annually to a graduating Food Service Supervisor student who has achieved the highest academic standing during first term and has demonstrated outstanding performance during practical training. This award is sponsored by the Manitoba Chapter of the Canadian Food Service Supervisors' Association.

Jessica Miner Scholarship
$100 awarded annually to an outstanding student in a one-year Electronic Technician program.

John Elsbury Memorial Scholarship
$300 to be awarded to a Medical Laboratory Technology student on the basis of financial need and academic performance with emphasis on marks achieved in the subject of Immunohematology. The deadline for application forms is March 31.

John Herman Memorial Prize
An annual prize of $400 will be awarded to a graduating Business Administration student for performance in Statistics and Quantitative Methods. The recipient will be a full-time student, eligible to graduate that year, with a minimum cumulative Grade Point Average of at least 3.00.

Joseph M. Scott Awards
Awards are sponsored by the Manitoba Branch of the Canadian Society of Laboratory Technology for students in Medical Laboratory Technology. Two cash awards for highest and second-highest total aggregate of marks obtained in all theoretical and practical phases of the course. One cash award for the highest technical proficiency in the practical aspects of the overall course.

Joyce Dixon Scholarship
This scholarship has been established in Joyce Dixon's honor by her former associates and students to encourage and reward excellence in secretarial training through an annual award to a student enrolled in the Secretary course who best displays the qualities and skills required by a professional secretary.

Kelly Roberts Bursary
$50 is to be awarded annually to a student in the Meatcutting course. The student should have a high proficiency in meatcutting skills, should be cooperative, show initiative, have excellent attendance, be punctual and have the potential ability to carry on in his or her chosen trade.

Lloyd McGinnis Scholarship
A $300 scholarship to be awarded to a student entering the second year of Engineering Technology displaying the greatest proficiency in oral and written communication.

M.G.E.A. Bursaries
One bursary of $500 awarded in each area available to members of the M.G.E.A. (minimum one year memberships) and dependents of M.G.E.A. members. For more information, contact the Manitoba Government Employees' Association.

Funds are available for native students (Status Indian or Metis), experiencing temporary financial difficulties. Inquiries should be directed to the Student Awards Office, C312.

Imperial Oil Higher Education Awards
Imperial Oil Limited offers annually free tuition and other compulsory fees to all children or wards of employees and annuitants who proceed to higher education courses. Further information and application forms may be obtained from The Secretary, Committee on Higher Education, Imperial Oil Limited, 111 St. Clair Avenue West, Toronto, Ontario.

The Inco Metal Engineering Technology Bursaries
Six at $100 each to deserving students who are pursuing a full-time program leading to a diploma in Engineering Technology. They should be Canadian citizens or possess landed-immigrant status, have a good scholastic record and demonstrate interest in extracurricular affairs.

Ingram and Bell Scientific Award
Awarded to the Medical Laboratory Technology student who attains the highest standing in Histotechnology.

The Institute of Power Engineers (Greater Winnipeg Branch)
Two $50 awards given each June to students (who are student members of the I.P.E.) in the 3rd Class Power engineering course, for demonstrated academic and technical ability.

James S. Purvis Bursary Fund
Cash award to be presented annually to a first-year Creative Communications student on the basis of outstanding academic achievement.
Manitoba Animal Health Technology Association Book and Plaque Award
This award is presented to the outstanding student from the first year of the Animal Health Technology program.

Manitoba Association of Broadcasters
Two cash awards and cassette recorders will be presented to graduating Creative Communications students: one award for outstanding achievement in radio production and the other for outstanding achievement in television production.

The Manitoba Association of Registered Nurses Bursary
$500 to a student entering the second year of the Diploma Nursing course. Application forms are available from M.A.R.N., 647 Broadway Avenue, Winnipeg, R3C 0X2. Deadline for applications is September 30.

Manitoba Blue Cross Scholarship/Bursary Program
The following awards are available to Manitoba students who will be enrolling as full-time students at Red River Community College and other approved post-secondary institutions in Manitoba:
- Six bursaries of $500 each to aid handicapped students
- Six Entrance Awards of $500 each to aid Grade XII students
- Six bursaries of $500 each to aid Grade XII students who have to travel more than 100 km (one way) to attend college or university.
Selection will be based on high academic standing and financial need. Application forms are available from the college Awards Office, C312. The deadline for applications is July 31.

Manitoba Community Newspaper Association (M.C.N.A.) Scholarship
Cash award of $500 to be presented annually to a second-year Creative Communications student majoring in journalism judged on the basis of: an essay or the like of about 300 words indicating why the student wants to pursue community newspaper journalism; and student interest in community newspaper journalism on completion of the course.

Manitoba Dental Association Award
Plaque presented to a student in the Dental Assisting course based on academic merit and outstanding achievement.

The Manitoba Electrical Association Scholarship
$200 for a student entering second year of Electrical Engineering Technology. Presented in alternate years to an Electrical Technology student of Assiniboine Community College.

Manitoba Hotel Association Bursary Award
Two bursaries at $1,000 each (paid $100 monthly) to second-year Hotel and Restaurant Administration students. Deadline is June 1.

Manitoba Hydro Entrance Bursaries
Bursaries of $600 each and a first option for a summer job with Manitoba Hydro following successful completion of the first year of studies are available for women, persons of native ancestry, physically disabled and members of visible minority groups entering the Civil, Computer, Electrical or Electronic Engineering Technology programs at Red River Community College. Application forms are available from the college Awards Office, C312. The deadline for applications is July 31.

Manitoba Hydro Scholarship
$200 for a student entering second year of Electrical Engineering Technology.

Manitoba Library Association Library Technician Award
The Manitoba Library Association gives an award to a full-time graduating student in the Library Technician course who has demonstrated academic excellence and career promise. The recipient's achievement is also honored on a plaque displayed in the Library at the college.

Manitoba Milk Producers' Marketing Board Award
$100 award to the student with the highest standing in the Commercial Cooking program.

Manitoba Restaurant & Food Services Association Awards
Two $300 awards offered to graduating students: one in Hotel and Restaurant Administration; the other in Chef Training. Contact department for further details.

Manitoba Schools Science Symposium Entrance Scholarships
Tuition fees for one year will be paid for two students entering any program of studies full time at the college. Selection is based on Grade 12 standings and performance at MSSS.

The Manitoba Society of Certified Engineering Technicians and Technologists Scholarships
Five scholarships of $200 each to the top student member entering second year of Civil, Mechanical and Electronic Engineering Technology.

The Manitoba Sugar Company Limited Bursary
$100 to a student entering second year of Mechanical Engineering Technology.

Manitoba Telephone System Scholarship
$200 to a student entering second year of Electronic Engineering Technology.

Manitoba Telephone System (Northern Region) Scholarships
Two scholarships of $500 and the possibility of employment are available to students graduating from a Northern Manitoba high school and entering Electronic Engineering Technology at Red River Community College. Based on performance, an additional scholarship of $500 may be awarded to cover the enrollment costs of the second year of the program.
Manitoba Veterinary Medical Association Award
$200 award to a second-year student in the Animal Health Technology program who demonstrates academic proficiency and practical technical abilities.

Max Goldin Memorial Scholarship
A cash award to a first-year Creative Communications student judged on the basis of the following:
(a) grades in Creative Writing in all three terms.
(b) Interviews with three finalists.
(c) Consideration of extra-curricular creative writing done during first year.
(d) Passing grades in all first-year subjects.

May Mulr Scholarship
Administered by the Winnipeg Chapter of Professional Secretaries International. Awarded to a student enrolled in the first term of Administrative Secretary course. Based on the academic achievement in the Secretary course.

Medical Radiological Diagnostic and Radiotherapy Technology Bursary
A bursary of $150 is available to assist a needy student entering Term 1 of the Medical Radiological Diagnostic Technology course or Radiotherapy Technology course.

Miller Award of Excellence
Awarded annually to the student with the highest standing in the first year of the Graphic Arts course.

Murray Lloy Memorial Scholarship
Three bursaries of $500 may be presented annually to Creative Communications students, on the basis of need. This award was established to honor the memory of Creative Communications graduate and instructor, Murray Lloy. A first-year student should be carrying a full course load and plan to continue into second year. A second-year student should be eligible for graduation at the time application is made. Students should apply in writing to the Creative Communications department head by February 15.

Myrta & Bruce Moorhead Memorial Award
Funds are available for students experiencing temporary financial difficulties. Inquiries should be directed to the Student Awards Office, C312.

The National Leasing Division of Birchwood Motors
Two $100 awards. Birchwood Motors awards one to the top student in the January graduating class and awards one to the top student in the June graduating class in the Motor Vehicle Body Repair course.

Neelin Wilson Construction Inc. Scholarship
Two awards of $250 each to be awarded to students entering the second year of Civil Engineering Technology who have demonstrated either highest academic achievement or greatest improvement in both written and oral communication.

Norm Bercuson Bursary
A $250 bursary to be given to a student entering second year of Instrumentation Engineering Technology.

Obsco Beauty Supply Award
A plaque presented to the Barber Styling student who demonstrates the highest academic, practical, and communicative skills in the Barber Styling program. The award plaque is also accompanied by a gift from Obsco.

Official Languages Monitor Program
Funding is available for full-time post-secondary students to enrol full-time in a post-secondary institution in another province and help students at the level assigned with the spoken language by conveying to them the real-life aspect of the language and an awareness of the culture associated with that language. The deadline for applications is mid-February.

Organon Teknika Award
Awarded to the Medical Laboratory Technology student most proficient in both theoretical and practical aspects of the overall course.

Ortho Diagnostics Award
Cash award for the Medical Laboratory Technology student who attains the highest standing in Immunohematology.

Pat Lucki Memorial Award
Established by Elmwood Day Nursery in memory of Pat Lucki, a former Child Care Services graduate at the college. A plaque will be presented annually to a graduating Child Care Services student based on personal characteristics exhibited by Pat such as enthusiasm, love, thoughtfulness, and dedication to children, as recommended by the instructors and department head of the Child Care Services Department.

Press Radio Fund
Funds are available for students experiencing temporary financial difficulties. Inquiries should be directed to the Student Awards Office, C312.

Prince of Wales/Princess Anne Bursary
Awards for registered Canadian Indians, non-status, and Metis students attending post-secondary Institutions in Manitoba. Applications are available from the Student Awards Office, C312 or the Manitoba Student Aid Branch.

Pritchard Engineering Company Limited Bursary
$300 to a student entering second year of Mechanical Engineering Technology.

Red River Writers Scholarship
Cash award of $500 and a book representing the works of the Red River Writers Club to be presented to a student graduating from the Creative Communications course. Criteria for selection will be demonstrated skills in the freelance writing field, desire to pursue a career in writing and academic progress in Freelance Writing and related subjects.
Robert Drinnan Memorial Scholarship
Established to honor the memory of Creative Communications instructor, Robert Drinnan. A certificate and cash award to a first-year Creative Communications student on the basis of academic progress, participation, attendance, and attitude.

Robin Hood Multifoods Limited
$50 annually to a student in Commercial Baking.

The Roning Group
$200 to a technology student displaying the greatest proficiency in oral and written communication, and in report writing.

The Royal Canadian Air Force Fund
Loans are available to a student for tuition and textbooks. The family must be a former member of the Canadian Air Force and must have served between October 1, 1946 and January 31, 1968. Application forms are available from the Base Financial Counselor, CFB Winnipeg, Westwin, Man., R3J 0T0 (phone 895-5379). Deadline for applications is June 30.

The Royal Canadian Navy Fund
Loans are available to a student for tuition and textbooks. The family must be a former member of the Canadian Navy and must have served between October 1, 1946 and January 31, 1968. Application forms are available from the Base Financial Counselor, CFB Winnipeg, Westwin, Man., R3J 0T0 (phone 895-5379). Deadline for applications is June 30.

S.A.M. Advertising Awards for Excellence
Cash award to a second-year Advertising Art student who achieves the highest standing and demonstrates excellence in design and professionalism. Cash award to a second-year Creative Communications student on the basis of commitment, attitude, and overall marks in advertising.

S.D.B. Manitoba Scholarship
A two-year $1,200 scholarship is available to a young woman entering one of the following engineering technologies at Red River Community College: Civil; Structural; Instrumentation; Building; Electronic; Electrical; Computer; Design and Drafting or Mechanical. Young women in Grades 11 and 12, who are planning to enter the technologies directly from high school are eligible and encouraged to apply for the scholarship. Application forms are available at the college or from S.D.B. Manitoba Inc., 1554 Wolseley Ave., W., Winnipeg, Manitoba, R3G 1J1.

Seagram's V.O. Hospitality Award
$500 award offered to a second-year Hotel and Restaurant Administration student. Deadline for applications is January. Contact department for further information.

Shell Canada Limited Scholarships
A $200 scholarship to a student entering second year of Instrumentation Engineering Technology and a $200 scholarship to a Bioengineering-Chemical Technology student who excels in the first year of the program.

Society of Management Accountants of Manitoba Awards
Awards totalling approximately $1000 are presented as follows: four awards to Term 6 Business Administration students; and three awards to Term 3 Business Accountancy students based on academic performance.

Society of Manufacturing Engineers Award
One award for excellence in manufacturing-related subjects in Mechanical Engineering Technology, to consist of one volume of the Society of Manufacturing Engineers "Tool and Manufacturers Handbook".

The Soroptomist Training Awards
$500 award offered to mature women who require financial assistance to upgrade their education, technical or academic training in order to enter or re-enter the labor market. The winner of this award is eligible for the Training Awards offered by the Western Canada Region.

Stan Helleur Memorial Award
Cash award and a certificate to a first and second-year Creative Communications student, judged by the following criteria:
(a) academic standing. A first year student should be carrying a full course load and plan to continue into second year. A second year student should be eligible for graduation.
(b) character. Students should be of good character, with the qualities of integrity, honesty, and sincerity.
(c) service to the class. Students should be congenial, involved with the course and classmates at a personal level, and participate in course-related events eg: Open House.
(d) extra-curricular activities. Students should be involved in Student Association and college activities as well as be involved in the community.

St. James-Assiniboia Chamber of Commerce Scholarship
A $250 scholarship awarded to a St. James-Assiniboia resident attending the two-year Business Administration program at Red River Community College. Criteria:
(a) completion of at least two terms of the Business Administration program.
(b) currently residing in and must have been a resident of St. James-Assiniboia for at least one year prior to the start of the program.
(c) academic standing of 3.00 G.P.A.
(d) participation in business or related clubs on or off campus.
(e) Canadian citizenship or landed immigrant status.
(f) community involvement.
(g) commitment to private enterprise and to excellence.

Students' Association Fund
Each year, the Red River Community College Students' Association makes available emergency funds to assist students experiencing temporary financial difficulties. Inquiries should be directed to the Student Awards Office, C312.
Student Design Group Award for Excellence
Established by the senior class in Advertising Art. An annual cash prize will be awarded to a graduating Red River Community College Advertising Art student for overall performance in Design. The recipient will be a full-time student, with a minimum cumulative grade point average of 3.00.

Summer Language Bursary Program
Bursaries will be granted to students across Canada to enable them to enrol in six-week immersion courses in French or English at accredited institutions, to provide them with the opportunity to learn one of Canada's official languages as their second official language. Bursaries cover the costs of tuition, instructional materials, and room and board. Deadline for applications is mid-February.

Sunspun Food Service Award
$150 given annually to an outstanding student in Commercial Cooking.

Sybil McKay Inkster Bursary
Funds are available for female Metis students experiencing temporary financial difficulties. Inquiries should be directed to the Student Awards Office, C312.

3M Canada Incorporated Bursary
Two bursaries of $500 each are available annually to full-time students attending Red River Community College. One will be awarded to a second-year Business Administration student and the other to a second-year Electrical or Electronic Engineering Technology student. The selection of recipients will be based on financial need and academic progress. Applications will be accepted until the end of October each year.

Tom O'Brien Memorial Entrance Scholarship
Students who are proceeding from a high school Grade 12 to a full-time certificate/diploma program at Red River Community College, and who are Manitoba residents, are eligible to apply for a scholarship equal to the cost of tuition and student fees for one year. Two scholarships will be awarded annually: one to a female applicant and the other to a male applicant. Criteria include demonstrated academic merit, school or community involvement and financial need. Scholarship applications, and transcripts, and letters of reference indicating school or community involvement must be received by July 31.

UMA Holdings Limited Scholarships
Two scholarships of $400 each to students entering second year of Civil and Structural Engineering Technology.

V.I.T.A. General Proficiency Award in Vocational Industrial Teacher Education
An award of $100 and a plaque given to the most outstanding Vocational Industrial Teacher Education student with good academic performance and high general proficiency.

W.B. Saunders Book Award
This award is presented to a graduating student in the Animal Health Technology program who has the highest academic and practical standing in the course.

Western Association of Broadcast Engineers Award
An annual award of $250 will be presented to a student who has completed the first year of the Electronic Engineering Technology program at the college and is entering the second year.

Westfair Foods Award
$100 awarded twice annually to outstanding Meatcutting students.

The Westinghouse Canada Student Award Plan
An award of $200 to a dependent child of a permanent employee of the company, a pensioner, or a deceased employee who died while employed. The candidate should be enrolled in the Technology Division or the Applied Arts Division and have completed the first year of a regular full-time course.

Wilfred Dychuk Award
$100 is given to a first-year student in the Applied Sciences department who demonstrates proficiency in the Analytical Chemistry Laboratory.

Winnicraft Award
The Winnipeg House of Printing House Craftsman present the Winnicraft awards of Excellence and Merit in recognition for the high calibre of work and effort put forward during the year to a Graphic Arts student.

Winnipeg Business Club Inc. Award
An award of $400 will be given annually to a deserving student based on marks and participation in the Entrepreneurship subject and the Entrepreneurship Practicum. The student must show interest in business and entrepreneurship and must maintain a minimum cumulative grade point average of 3.00.

Winnipeg Community Centre of the Deaf Award
$100 presented annually to a hearing-impaired student for outstanding achievement in a college course.

Winnipeg Construction Association Awards
One $100 award to a first-year Industrial Arts Teacher Education student for proficiency in construction at the introductory level and one $100 award to a third-year student for proficiency in construction at the advanced level.

Winnipeg Dental Assistants’ Association
Plaque presented to a student in the Dental Assisting course based on professionalism.

Winnipeg Police Association
Scholarship(s) to be awarded annually to a member of the City of Winnipeg Police Department, to members of their immediate families and/or to direct descendants of members of the department. Applicants must have completed the first year of a two-year program and must provide official mark transcripts to indicate their academic performance. Scholarship application forms are available from the Student Awards Office, C312. The deadline for applications is June 30.
Winnipeg Press Club Foundation Awards
Two $50 cash awards for the best feature stories written by first-year Creative Communications students. Two $200 cash awards for the best investigative stories written by second-year Creative Communications students.

The Winnipeg RH Institute Scholarships
Two scholarships of $250 each will be presented annually to outstanding students entering the second year of the Biological Technology and Bioengineering-Chemical Technology programs.

Winnipeg Sun Scholarships
Two $250 cash awards for outstanding achievement one to a student enrolled in the Creative Communications course and the other to a student enrolled in the Advertising Art course.

Winnipeg Women's ORT (Organization of Rehabilitation through Training)
$75 book award for the college Library to benefit all Red River Community College students.

Womens' Sales and Ad Club of Winnipeg Award
Administered by the S.A.M. Awards Committee. Cash award of $250 to be presented annually to a first-year female Advertising Art student on the basis of commitment, attitude, and overall marks in advertising.

XANA Business and Professional Women's Association Award
$200 awarded annually to a female student in the second year of a business or professional course. Deadline for applications is February 15.
EXTENSION SERVICES

A wide range of credit and non-credit part-time extension subjects and evening courses is available in five broad areas: Business and Administrative Studies, Computer Analyst/Programmer, Industrial and Technology, Health Care and Personal Services, and Applied Arts. As well, a variety of special topics, workshops, and seminars is regularly offered.

The basic extension program is divided into three trimesters per year (Fall, Winter, and Spring) each of 8-10 weeks duration. Some courses are available also during the summer. Most certificate courses can be completed in approximately two years. Enrolment is open to any adult, subject to prerequisites or specific course requirements where applicable.

For registration information, applicants should contact Red River Community College or one of the college's regional extension centres listed below.

In Winnipeg and area, write or phone:

Extension Services Office
Red River Community College
C116-2055 Notre Dame Avenue
Winnipeg, Manitoba R3H 0J9
Telephone: 694-1789

In Portage la Prairie and area, write or phone:

Portage la Prairie Regional Centre
306 Saskatchewan Avenue East
Portage la Prairie, Manitoba R1N 0K8
Telephone: 239-1533

In Interlake and area, write or phone:

Selkirk Regional Centre
Lord Selkirk Regional Secondary School
221 Mercy Street
Selkirk, Manitoba R1A 2C8
Telephone: 482-8201

In Pembina Valley or area, write or phone:

Pembina Valley Regional Centre
Box 29
Southland Mall
Winkler, Manitoba R6W 2S2
Telephone: 325-9672

DEVELOPMENTAL PROGRAMS

The college offers on a demand basis a range of special-needs courses such as Career Orientation for Learning-Disabled Adults, Career Orientation for Post-Psychiatrically Ill, Life Skills Coach Training and Job Orientation for People Labelled Mentally Handicapped.

For information on these programs, applicants should contact the Developmental Programs Office, Room C217, at the college, or call 632-2452.

DISTANCE EDUCATION

The college offers a wide variety of subjects to Manitoba adults through its Distance Education Department utilizing any combination of correspondence, television, teleconferencing, telephone tutorial and face-to-face interaction as delivery options. Fully-accredited subject offerings are available in community college programs such as Business Administration, Health and Family Services, Small Business and Management Development, Applied Arts, and Academic Upgrading.

For further information, or to request materials on the college's Distance Education offerings, please contact:

Correspondence and Telecourse Department
Red River Community College
CM 25-2055 Notre Dame Avenue
Winnipeg, Manitoba R3H 0J9
Telephone: 632-2451 or
Toll free within Manitoba 1-800-982-7401
The Marketing Centre, in consultation with an employer, can custom design training programs to meet specific company needs. Where desired, courses can include company-related examples, exercises and case histories.

Training can be conducted on site at the employer's place of business, or at the college, within a timeframe appropriate to the employer and employees.

The Marketing Centre draws upon the expertise of college instructors certified in Adult Education or, where specific needs dictate, from specialists in the field.

As well, the Marketing Centre offers a selection of regular courses designed to enhance employee skills, productivity and job satisfaction. These courses are offered twice a year and are available in the Trades; Technology; Health, Family Services and Applied Sciences; and Business and Applied Arts Divisions. An employer can contract for several employees to be trained as a group, or employees can enroll in various courses on an individualized basis. Courses vary in duration from a day or two to a week in length.

For further information on Marketing Centre training programs, please contact:

Marketing Centre
Red River Community College
227 - 530 Century Street
Winnipeg, Manitoba
R2H 0Y4
Telephone: 945-0588
Courses listed below will be offered in 1990-91. For information on these courses and others that may be available, applicants should apply directly to the college of their choice.

ASSINIBOINE COMMUNITY COLLEGE
1430 Victoria Avenue East
P.O.Box 935
Brandon, Manitoba R7A 5Z9
Telephone: 726-6600

Assiniboine Community College is located in Brandon and also operates the Parkland campus in Dauphin.

- Adult Literacy
- Agribusiness Diploma
- Agricultural Mechanics
- Animal Health Technology
- Applied Agriculture
- Architectural Drafting
- Automotive Electronics
- Broadcast Arts
- Business Accountancy
- Business Administration
- Carpentry & Woodworking
- Child Care Services
- Community Social Development Worker
- Computer Technology*
- Developmental Studies
- Electrical
- Electrical Technology
- Electronic Technician
- Electronic Technology*
- Farm Machinery Mechanics
- General Business Certificate
- Heavy Duty Mechanics
- Hospitality/Tourism Administration
- Instrumentation Technology*
- Machine Shop
- Marine & Small Power Equipment Mechanic
- Motor Vehicle Body Repair
- Motor Vehicle Mechanics
- Piping Trades
- Practical Nursing
- Recreational Vehicle Technician
- Secretarial
- Telecommunications Technology
- Welding

KEEWATIN COMMUNITY COLLEGE
Box 300
The Pas, Manitoba R9A 1M7
Telephone: 623-3416

Keewatin Community College is located in The Pas and operates regional centres in Thompson and Flin Flon.

- Band/Northern Community Administration
- Basic Cooking
- Basic Office Skills
- Business Accountancy - Flin Flon & Thompson
- Business Administration
- Business Skills Integrated
- Carpentry & Woodworking
- Child Care Services
- Child & Family Services Worker
- Clerical Bookkeeping
- College Preparation
- Dental Assisting
- Diploma Nursing
- Drug & Alcohol Abuse Counsellor
- Educational Assistant
- Health Care Aide
- Heavy Duty Mechanics - Off Highway
- Home Care Attendant
- Home Support Worker
- Law Enforcement Career Preparation
- Motor Vehicle Mechanics
- Natural Resources Management Technology
- Practical Nursing
- Pre-Employment:
  - Electrical
  - Industrial Mechanic/Machinist
  - Pipelining & Plumbing
  - Welding
- Power Engineer
- Secretarial Arts
- Small Motor Technician Integrated (Thompson only)

Apprenticeship Training
Evening Courses
Correspondence Courses
Special Programs

*First year only - second year at Red River Community College
RED RIVER COMMUNITY COLLEGE COURSES

ACT (Alternative Careers Training) FOR WOMEN
ADMINISTRATIVE SECRETARY - GENERAL
ADMINISTRATIVE SECRETARY - LEGAL
ADMINISTRATIVE SECRETARY - MEDICAL
ADULT BASIC EDUCATION (A.B.E.)
ADVANCED WELDING
ADVERTISING ART
AUTOMOTIVE SERVICE EDUCATION PROGRAM
APPRENTICESHIP COURSES
BARBER/STYLING (see HAIRSTYLING)
BIOTECHNOLOGY - CHEMICAL TECHNOLOGY
BIOTECHNOLOGY
BUSINESS ACCOUNTANCY
BUSINESS ACCOUNTANCY INTEGRATED
BUSINESS ADMINISTRATION
BUSINESS ADMINISTRATION INTEGRATED
BUSINESS SKILLS INTEGRATED
CARPENTRY & WOODWORKING
CHEF TRAINING
CHILD CARE SERVICES
CHILD CARE SERVICES INTEGRATED
CIVIL ENGINEERING TECHNOLOGY
CLERICAL BOOKKEEPING
COLLEGE PREPARATION FOR NATIVE STUDENTS
COLLEGE PREPARATION FOR NURSING
COMMERCE/INDUSTRY SALES & MARKETING
COMMERCIAL BAKING
COMMERCIAL COOKING
COMPUTER ANALYST/PROGRAMMER
COMPUTER ENGINEERING TECHNOLOGY
CONSTRUCTION ENGINEERING TECHNOLOGY
CREATIVE COMMUNICATIONS
DENTAL ASSISTING - PHASE I
DENTAL ASSISTING - PHASE II
DEVELOPMENTAL SERVICES WORKER
DIESEL MECHANICS - TRANSPORT
DISTANCE EDUCATION COURSES
DOMESTIC ELECTRONICS
DRAFTING - ARCHITECTURAL
DRAFTING - ELECTRICAL
DRAFTING - MACHINE
DRAFTING - MECHANICAL SYSTEMS
DRAFTING - STRUCTURAL
EDUCATIONAL SUPPORT CENTRE
PREPARATORY PROGRAM
ELECTRICAL
ELECTRICAL ENGINEERING TECHNOLOGY
ELECTRONIC ENGINEERING TECHNOLOGY
EMPLOYMENT ORIENTATION FOR WOMEN
ENGINEERING DESIGN & DRAFTING TECHNOLOGY
ENGLISH AS A SECOND LANGUAGE (ESL)
GRAPHIC ARTS
HAIRSTYLING
HEALTH RECORD TECHNICIAN
HOTEL & RESTAURANT ADMINISTRATION
INDUSTRIAL ELECTRONICS
INSTITUTIONAL FOOD SERVICE SUPERVISOR
INSTRUMENTATION ENGINEERING TECHNOLOGY
LEGAL ASSISTANT
LIBRARY TECHNICIAN
MACHINE SHOP PRACTICE

MAJOR APPLIANCE SERVICE TECHNICIAN
MASONRY
MEAT CUTTING
MECHANICAL ENGINEERING TECHNOLOGY
MEDICAL LABORATORY TECHNOLOGY
MEDICAL RADIOLOGICAL DIAGNOSTIC TECHNOLOGY
MOTOR VEHICLE BODY REPAIR
MOTOR VEHICLE MECHANIC
MOTOR VEHICLE MECHANIC CO-OP
NURSING
NURSING - PRACTICAL
NURSING - REFRESHER
PAINTING & DECORATING
PIPEFITTING TRADES
POWER ENGINEERING
PREPARATORY PROGRAM FOR HEARING-IMPAIRED STUDENTS (see EDUCATIONAL SUPPORT CENTRE PREPARATORY PROGRAM)
PRE-TECHNOLOGY FOR WOMEN
PRE-TRADE TRAINING FOR WOMEN (See ACT FOR WOMEN)
RADIOTHERAPY TECHNOLOGY
REFRIGERATION & AIR CONDITIONING
SECRETARY
STRUCTURAL ENGINEERING TECHNOLOGY
SURVEY ENGINEERING TECHNOLOGY
TEACHER EDUCATION - BUSINESS
TEACHER EDUCATION - INDUSTRIAL ARTS
TEACHER EDUCATION - VOCATIONAL INDUSTRIAL
TELECOMMUNICATIONS
UPHOLSTERY
VISUAL LANGUAGE INTERPRETER TRAINING PROGRAM
WELDING
Please note that ACT for Women (Alternative Careers Training for Women) was formerly called Pre-Trades Training for Women.

PURPOSE
To familiarize women with non-traditional occupations, including the trades, so that they may make informed career choices in these areas.

COURSE
ACT (Alternative Careers Training) for Women is a 12-week course with two entry dates: January and April. ACT for Women is designed to help a woman realistically appraise her skills and abilities for non-traditional training and/or employment, and to plan a route such as upgrading, pre-employment training or apprenticeship, to become a skilled person in her chosen occupation.

ENTRANCE REQUIREMENTS
Although there are no formal academic entrance requirements, good fundamental reading and writing skills are essential for success in this course.

EMPLOYMENT POTENTIAL
Graduates of this course have found themselves more self-confident and better prepared for training or employment in non-traditional occupations. Some graduates found jobs as railway yardpersons, transit bus drivers or in construction work. Other graduates went on to enroll in specific trades courses and are now employed as plumbing estimators, electricians, machinists, carpenters and in other non-traditional occupations.

Please note that this program is designed to familiarize women with training and employment in non-traditional fields, not to be an academic upgrading program. Those students successfully completing the ACT for Women course must still meet the stipulated entrance requirements for skill-training courses.

COURSE OUTLINE
B25-J101 Classroom Component
B25-J102 Laboratory Component
B25-J103 Work Experience Component

SUBJECT DESCRIPTIONS
B25-J101 CLASSROOM COMPONENT
The classroom component focuses on exploring various non-traditional occupations and planning a route to become a skilled person in a chosen occupation. Improving communication skills and building self-confidence are objectives to ease the entry into a traditionally-male area of training or employment. Job search techniques, including interview procedures and resume preparation, are also included. Math skills are upgraded and a weight-training program is included to build the body strength required in some non-traditional jobs.

B25-J102 LABORATORY COMPONENT
Hands-on experience includes electricity, electronics, small motors, drafting, construction, manufacturing, printing, photography and computers.
PURPOSE
To develop advanced communication, organization, and administrative skills in preparation for an administrative office career.

COURSE
Administrative Secretary-General is a ten-month diploma course with a September entry date. The instructional program emphasizes a high degree of secretarial-skill training, including advanced secretarial procedures, administrative skills, word processing, data processing and general business subjects.

EMPLOYMENT POTENTIAL
Graduates have found employment as secretaries in large or small offices working for one or several executives. You may find employment with federal or provincial governments or with private business. Promotion to administrative positions may be available after gaining work experience.

ENTRANCE REQUIREMENTS
- Successful completion of the 10-month Secretary Certificate course at Red River Community College, or its equivalent, with a documented minimum typing speed of 50 w.p.m.;
- 20 credits (Manitoba Grade 12 or equivalent secondary school preparation) with an emphasis on Business Education. This should include the following subjects: Typing 302 (minimum 50 w.p.m.), Office Procedures 302 (including filing, machine transcription, and electronic calculator), Accounting 302; Mathematics 200 or 301; and English 300, 301, or Business English 305.

SUBJECT DESCRIPTIONS
B12-E470 ECONOMICS I
This is the first part of a two-part introductory course in economic principles. The emphasis is on providing a solid foundation in micro-economic principles with demonstrations of the application of economic reasoning to the problems facing Canada today. Demand, supply, and elasticity, as well as firms in various types of competition, and analysis policies to regulate non-competitive industries and assure workable competition in the world of business.

B12-L561 BUSINESS LAW I
This course provides an introduction to our legal system, to the administration of justice, to the law of tort, and to the basic elements of contract law.

B13-M619 SUPERVISION I
This course is concerned with the study of individual and group behaviour and the role of the supervisor in organization. Its major goals are to: a) increase self understanding; b) increase the understanding of principles of human behaviour; c) provide means of developing interpersonal skills; d) examine current women's issues and women's roles in the work environment; and e) increase the understanding of the role of the supervisor.

B13-M620 SUPERVISION II
This course is a continuation of B13-M619 above.

B13-S503 INTRODUCTION TO SOCIOLOGY
This course is an introduction to the perspective of sociology and how it helps us to understand our social existence. It calls attention to the continuous interplay between the individuals and the social context in which they live out their lives. Emphasis is placed on the presentation of a historical, theoretical and cross-cultural perspective of Canadian society in a time of rapid change.
B15-S404 INTRO TO DATA PROCESSING
Introduction to Data Processing provides a general overview of the computer field. It covers history and fundamentals, hardware, software, and the application of computers to solving business-related problems using spreadsheet software.

B16-E311 REPORT WRITING
The course is designed to familiarize the student with the variety of report formats in use today. Concise, correct and clear usage is stressed, as is the proper development of report themes, conclusions and recommendations. The course involves three hours per week, one lecture and two workshop periods. During the workshop periods, students are expected to conduct primary and secondary research, in addition to a certain amount of in-class supervised writing. These workshop periods make up the bulk of the course; it is essential that students make full use of them in order to develop basic report-writing skills.

B17-A254 ACCOUNTING
Principles of internal control, inventory accounting, accounting for partnerships, corporation accounting, receivables and bad debts, basic concepts of budgeting, recording costs and depreciation of plant and equipment.

B17-B551 INTRODUCTION TO BUSINESS
The intent of this course is to provide students with a basic overview of the Canadian business system and its importance in the economy and in society. The main objective of the program is to familiarize students with such topics as: business ownership, organization and management; business decision-making processes; personnel management and the effects of technology on workers; labour relations; and the political environment. Emphasis will be placed on the student's future working role in the business environment and background considerations affecting day-to-day operations of business firms.

B17-E241 BUSINESS COMMUNICATIONS REFRESHER
This course is designed to upgrade each student to the level achieved by those enrolled in the one-year Secretary course in terms of grammar, punctuation, spelling, vocabulary development and correspondence practices.

B18-C224 ORAL COMMUNICATIONS
This course is designed, through student participation, to enhance one's ability to communicate verbally on a one-to-one basis and in group situations. Emphasis will be placed on vocabulary development, listening skills, small-group discussions as well as extemporaneous and prepared speeches.

B18-S235 SECRETARIAL PROCEDURES I
The training of an efficient secretary, her role in human and public relations, office procedures, protocol and responsibilities, advanced dictatyping, making travel arrangements, preparing financial records (expense accounts, petty cash, banking, etc.).

B18-R234 RECORDS MANAGEMENT
This course is designed to enable students to: a) gain an understanding of records management within the administrative structure of an organization; b) identify the objectives of an organized records management program; c) identify the elements of a formally established and totally integrated records management program; and d) determine the areas of responsibility of records managers and administrators.

B18-S204 SHORTHAND SPEED (Optional)
Prerequisite: B18-P103 or B18-S103. A continuation of shorthand training, with emphasis on speed development and transcription skill. A speed of 80 wpm on four minutes of dictation is to be achieved.

B18-S205 SHORTHAND SPEED II (Optional)
Prerequisite: B18-S204. A continuation of shorthand training with an emphasis on speed development and transcription skill. A speed of 90 wpm on four minutes of dictation is to be achieved.

B18-S234 ADVANCED SHORTHAND SPEED I (optional)
Advanced shorthand is a continuation of shorthand training with an emphasis on speed development and transcription skill. Students will become proficient in transcribing materials of varying degrees of complexity throughout terms 4, 5 and 6. A speed of 100 wpm is to be achieved.

B18-T234 EXECUTIVE TYPING I
Prerequisite 50 wpm. This course is a continuation of typewriting training with an emphasis on improving speed and accuracy. Students will become proficient in producing typewritten projects e.g. letters, tables, manuscripts, fill-in forms, with increasing degrees of complexity through terms 4, 5 and 6. Required speed is 55 wpm, five-minute timing.

B18-T235 EXECUTIVE TYPING II
Continuation of B18-T234. Decision-making skills are introduced on a gradual scale, as well as coordination and organization of typewriting activities. Required speed is 60 wpm, five-minute timing.

B18-T246 SPECIALIZED TYPING
Continuation of B18-T235. Designed to develop the decision-making skills through working with items of varying importance. A lot of composition work is necessary. Required speed is 65 wpm, seven-minute timing.

B18-W205 COOPERATIVE WORK EXPERIENCE
Co-operative work experience is a two-week period in the sixth semester where students are assigned secretarial work projects with progressive business offices in the community. This program is designed to be an on-the-job learning experience and is followed up by oral and written presentations. Evaluation of student performance is a cooperative effort on the part of participating businesses and the coordinating instructor.

B18-W525 WORD PROCESSING - THEORY
This course is designed to introduce the student to the concepts of word processing. Topics included are input, output, reprographicics, distribution, systems, career paths.
B18-W535 WORD PROCESSING - PRACTICAL
This course is designed to familiarize the student with the basic operations of a screen-based word processor. The following topics are covered: keyboarding, formatting, editing, locating, printing, filing, and merging forms with variables.

B18-W556 ADVANCED WORD PROCESSING
Advanced practical course in word processing. Using the knowledge gained from Word Processing-Practical (B18-W535), students expand their knowledge and understanding of the advanced functions offered on the Decmate Word Processor. Topics covered include: wide rulers, hyphenation, searches, subscripts and superscripts, sort, simple and tabular multicolumn documents, library documents, user-defined keys, and communication with a host computer.
ADMINISTRATIVE SECRETARY - LEGAL

PURPOSE
To develop advanced communication, organization, and administrative skills in preparation for an administrative office career. Legal office requirements are emphasized.

COURSE
Administrative Secretary - Legal is a ten-month diploma course with a September entry date. The instructional program emphasizes a high degree of secretarial-skills training including advanced secretarial procedures, administrative skills, word processing, data processing and general business subjects.

ENTRANCE REQUIREMENTS
- Successful completion of the 10-month Secretary Certificate course at Red River Community College, or its equivalent, with a documented minimum typing speed of 50 w.p.m.;
- 20 credits (Manitoba Grade 12 or equivalent secondary school preparation) with an emphasis on Business Education. This should include the following subjects: Typing 302 (minimum 50 w.p.m.); Office Procedures 302 (including filing, machine transcription, and electronic calculator); Accounting 302; Mathematics 200 or 201; and English 300, 301, or Business English 305.

CREDENTIALS for equivalent standing must be assessed by the Department Head, Business Education Skills. Applicants may be required to attend refresher classes in prerequisite subjects.

Mature Student Admission. Mature students may submit one of Adult Basic Education 11B, Manitoba Education Mature Student Grade 12 Diploma, or G.E.D. 12 standing in lieu of 20 credits; however they must also have a specific and equivalent business skills background, as outlined above, which is acceptable to the instructional department. Mature students must be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred by the Director of Admissions/Registration to the Department Head, Business Education Skills, for review.

EMPLOYMENT POTENTIAL
You are not restricted to working in a legal office as the course is sufficiently general to allow you to work in almost any type of office. Graduates have found employment as secretaries in large or small offices working for one or several executives. You may find employment with the federal or provincial governments or with private business. Promotion to administrative positions may be available after gaining work experience.

COURSE OUTLINE
Term 1
B12-E470 Economics I
B17-A254 Accounting
B17-E241 Business Communications (Refresher)
B18-C224 Oral Communications
B18-R234 Records Management
B18-S204 Shorthand Speed (optional)
B18-T234 Executive Typing I
B18-W525 Word Processing - Theory
B18-W535 Word Processing - Practical

Term 2
B12-L460 Business Law I
B13-M619 Supervision I
B15-S404 Intro To Data Processing (Admin. Sec.)
B18-L254 Legal Office Procedures I
B18-O235 Secretarial Procedures I
B18-S205 Shorthand Speed II (optional)
B18-T235 Executive Typing II

Term 3
B12-L561 Business Law II
B13-M620 Supervision II
B13-S503 Introduction To Sociology
B16-E311 Report Writing
B18-L288 Legal Office Procedures II
B18-O236 Secretarial Procedures II
B18-S234 Advanced Shorthand Speed I (optional)
B18-W206 Cooperative Work Experience

SUBJECT DESCRIPTIONS
B12-E470 ECONOMICS I
This is the first part of a two-part introductory course in economic principles. The emphasis is on providing a solid foundation in micro-economic principles with demonstrations of the application of economic reasoning to the problems facing Canada today. Demand, supply, and elasticity, as well as firms in various types of competition, and analysis of their costs. Concluding this coverage are laws and government policies to regulate non-competitive industries and assure workable competition in the world of business.

B12-L460 BUSINESS LAW I
This course provides an introduction to our legal system, to the administration of justice, to the law of tort, and to the basic elements of contract law.

B12-L561 BUSINESS LAW II
This course provides an introduction to the litigating elements associated with contracts, to the discharge and breach of contracts, and to the nature and effect of sale of goods contracts, their enforcement and the rights of the parties thereto.

B13-M619 SUPERVISION I
This course is concerned with the study of individual and group behaviour and the role of the supervisor in organization. Its major goals are to: a) increase self understanding; b) increase the understanding of principles of human behaviour; c) provide means of developing interpersonal skills; d) examine current women's issues and women's roles in the work environment; and e) increase the understanding of the role of the supervisor.

B13-M620 SUPERVISION II
This course is a continuation of B13-M619 above.

B13-S503 INTRODUCTION TO SOCIOLOGY
This course is an introduction to the perspective of sociology and how it helps us to understand our social existence. It calls attention to the continuous interplay between the individuals and the social context in which they live out their lives. Emphasis is placed on the presentation of a historical, theoretical and cross-cultural perspective of Canadian society in a time of rapid change.
B15-S404 INTRO TO DATA PROCESSING
Introduction to Data Processing provides a general overview of the computer field. It covers history and fundamentals, hardware, software, and the application of computers to solving business-related problems using spreadsheet software.

B18-E311 REPORT WRITING
The course is designed to familiarize the student with the variety of report formats in use today. Concise, correct and clear usage is stressed, as is the proper development of report themes, conclusions and recommendations. The course involves three hours per week, one lecture and two workshop periods. During the workshop periods, students are expected to conduct primary and secondary research, in addition to a certain amount of in-class the course; it is essential that students make full use of them in order to develop basic report-writing skills.

B17-A254 ACCOUNTING
Principles of internal control, inventory accounting, accounting for partnerships, corporation accounting, receivables and bad debts, basic concepts of budgeting, recording costs and depreciation of plant and equipment.

B17-E241 BUSINESS COMMUNICATIONS REFRESHER
This course is designed to upgrade each student to the level achieved by those enrolled in the one-year Secretary course in terms of grammar, punctuation, spelling, vocabulary development and correspondence practices.

B18-C224 ORAL COMMUNICATIONS
This course is designed, through student participation, to enhance one's ability to communicate verbally on a one-to-one basis and in group situations. Emphasis will be placed on vocabulary development, listening skills, small-group discussions as well as extemporaneous and prepared speeches.

B18-L254 LEGAL OFFICE PROCEDURES I
This course is designed to provide students with the opportunity to explore the duties and procedures performed by the legal secretary in the Province of Manitoba. Includes vocabulary, general legal office procedures, and correspondence.

B18-L286 LEGAL OFFICE PROCEDURES II
This course is designed to provide students with the opportunity to explore the duties and procedures performed by the legal secretary in the Province of Manitoba. Covers typing applications in the legal office, including completely typed documents, pre-printed forms (miscellaneous instruments), court papers, and wills.

B18-0235 SECRETARIAL PROCEDURES I
The training of an efficient secretary, her role in human and public relations, office procedures, protocol and responsibilities, advanced dictating, making travel arrangements and preparing financial records (expense accounts, petty cash, banking, etc.).

B18-0236 SECRETARIAL PROCEDURES II
A continuation of B18-0235. The training of an efficient secretary, and her role in the office as a supervising secretary, planning in-service seminars, preparing and organizing meetings including the taking of minutes, and preparing material for audio-visual presentations, interview techniques and employee testing.

B18-R234 RECORDS MANAGEMENT
This course is designed to enable students to: a) gain an understanding of records management within the administrative structure of an organization; b) identify the objectives of an organized records management program; c) identify the elements of a formally established and totally integrated records management program; and d) determine the areas of responsibility of records managers and administrators.

B18-S204 SHORTHAND SPEED (Optional)
Prerequisite: B18-P103 or B18-S103. A continuation of shorthand training, with emphasis on speed development and transcription skill. A speed of 80 wpm on four minutes of dictation is to be achieved.

B18-S205 SHORTHAND SPEED II (Optional)
Prerequisite: B18-S204. A continuation of shorthand training with an emphasis on speed development and transcription skill. A speed of 90 wpm on four minutes of dictation is to be achieved.

B18-S234 ADVANCED SHORTHAND SPEED (Optional)
Advanced shorthand is a continuation of shorthand training with an emphasis on speed development and transcription skill. Students will become proficient in transcribing materials of varying degrees of complexity throughout terms 4, 5 and 6. A speed of 100 wpm is to be achieved.

B18-T234 EXECUTIVE TYPING I
Prerequisite: 50 wpm. This course is a continuation of typewriting training with an emphasis on improving speed and accuracy. Students will become proficient in producing typewritten projects e.g. letters, tables, manuscripts, fill-in forms, with increasing degrees of complexity through terms 4, 5 and 6. Required speed is 55 wpm, five-minute timing.

B18-T235 EXECUTIVE TYPING II
Continuation of B18-T234. Decision-making skills are introduced on a gradual scale, as well as coordination and organization of typewriting activities. Required speed is 60 wpm, five-minute timing.

B18-T246 SPECIALIZED TYPING
Continuation of B18-T235. Designed to develop the decision-making skills through working with items of varying importance. A lot of composition work is necessary. Required speed is 85 wpm, seven-minute timing.

B18-W206 COOPERATIVE WORK EXPERIENCE
Cooperative work experience is a two-week period in the sixth semester where students are assigned secretarial work projects with progressive business offices in the community. This program is designed to be an on-the-job learning experience and is followed up by oral and written presentations. Evaluation of student performance is a cooperative effort on the part of participating businesses and the coordinating instructor.

B18-W525 WORD PROCESSING - THEORY
This course is designed to introduce the student to the concepts of word processing. Topics included are: input, output, reprographics, distribution, systems, career paths.
B18-W535 WORD PROCESSING - PRACTICAL
This course is designed to familiarize the student with the basic operations of a screen-based word processor. The following topics are covered: keyboarding, formatting, editing, locating, printing, filing, and merging forms with variables.
ADMINISTRATIVE SECRETARY - MEDICAL

PURPOSE
To develop advanced communication, organization, and administrative skills in preparation for an administrative office career. Medical office requirements are emphasized.

COURSE
Administrative Secretary - Medical is a ten-month diploma course with a September entry date. The instructional program emphasizes a high degree of secretarial-skill training, including advanced secretarial procedures, administrative skills, word processing, data processing and general business subjects. The medical office procedures subjects have been designed in conjunction with the requirements of the medical office as determined through consultation with working medical secretaries.

EMPLOYMENT POTENTIAL
You are not restricted to working in a medical office as the course is sufficiently general to allow you to work in almost any type of office. Graduates have found employment as secretaries in large or small offices working for one or several executives. You may find employment with federal or provincial governments or with private business. Promotion to administrative positions may be available after gaining work experience.

ENTRANCE REQUIREMENTS
- Successful completion of the 10-month Secretary Certificate course at Red River Community College, or its equivalent, with a documented minimum typing speed of 50 w.p.m.;
- 20 credits (Manitoba Grade 12 or equivalent secondary school preparation) with an emphasis on Business Education. This should include the following subjects: Typing 302 (minimum 50 w.p.m.); Office Procedures 302 (including filing, machine transcription and electronic calculator); Accounting 302; Mathematics 200 or 201; and English 300, 301, or Business English 305.

Credentials for equivalent standing must be assessed by the Department Head, Business Education Skills. Applicants may be required to attend refresher classes in prerequisite subjects.

Mature Student Admission. Mature students may submit one of Adult Basic Education 11B, Manitoba Education Mature Student Grade 12 Diploma, or G.E.D. 12 standing in lieu of 20 credits; however they must also have a specific and equivalent business skills background, as outlined above, which is acceptable to the instructional department. Mature students must be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred by the Director of Admissions/Registration to the Department Head, Business Education Skills, for review.

COURSE OUTLINE
Term 1
B12-E470 Economics I
B17-A254 Accounting
B17-E241 Business Communications (Refresher)
B18-C224 Oral Communications
B18-M254 Medical Terminology I
B18-R234 Records Management
B18-S234 Shorthand Speed (optional)
B18-T234 Executive Typing I

Term 2
B12-L460 Business Law I
B13-M619 Supervision I
B15-S404 Intro To Data Processing (Admin. Sec.)
B18-M255 Medical Terminology II
B18-C235 Secretarial Procedures I
B18-S205 Shorthand Speed II (optional)
B18-T235 Executive Typing II
B18-W225 Word Processing - Theory
B18-W235 Word Processing - Practical

Term 3
B12-L561 Business Law II
B13-M620 Supervision II
B13-S503 Introduction To Sociology
B16-E311 Report Writing
B18-M256 Medical Office Procedures
B18-C236 Secretarial Procedures II
B18-S234 Advance Shorthand Speed I (optional)
B18-T246 Specialized Typing
B18-W206 Cooperative Work Experience

SUBJECT DESCRIPTIONS
B12-E470 ECONOMICS
This is the first part of a two-part introductory course in economic principles. The emphasis is on providing a solid foundation in micro-economic principles with demonstrations of the application of economic reasoning to the problems facing Canada today. Demand, supply, and elasticity, as well as firms in various types of competition, and analysis of their costs. Concluding this coverage are laws and government policies to regulate non-competitive industries and assure workable competition in the world of business.

B12-L460 BUSINESS LAW I
This course provides an introduction to our legal system, to the administration of justice, to the law of tort, and to the basic elements of contract law.

B12-L561 BUSINESS LAW II
This course provides an introduction to the litigating elements associated with contracts, to the discharge and breach of contracts, and to the nature and effect of sale of goods contracts, their enforcement and the rights of the parties thereto.

B13-M619 SUPERVISION I
This course is concerned with the study of individual and group behaviour and the role of the supervisor in organization. Its major goals are to: a) increase self understanding; b) increase the understanding of principles of human behaviour; c) provide means of developing interpersonal skills; d) examine current women's issues and women's roles in the work environment; and e) increase the understanding of the role of the supervisor.

B13-M620 SUPERVISION II
This course is a continuation of B13-M619 above.
INTRODUCTION TO SOCIOLOGY
This course is an introduction to the perspective of sociology and how it helps us to understand our social existence. It calls attention to the continuous interplay between the individuals and the social context in which they live out their lives. Emphasis is placed on the presentation of a historical, theoretical and cross-cultural perspective of Canadian society in a time of rapid change.

B15-S404 INTRO TO DATA PROCESSING
Introduction to Data Processing provides a general overview of the computer field. It covers history and fundamentals, hardware, software, and the application of computers to solving business-related problems using spreadsheet software.

B16-E311 REPORT WRITING
The course is designed to familiarize the student with the variety of report formats in use today. Concise, correct and clear usage is stressed, as is the proper development of report themes, conclusions and recommendations. The course involves three hours per week, one lecture and two workshop periods. During the workshop periods, students are expected to conduct primary and secondary research, in addition to a certain amount of in-class supervised writing. These workshop periods make up the bulk of the course; it is essential that students make full use of them in order to develop basic report writing skills.

B17-A254 ACCOUNTING
Principles of internal control, inventory accounting, accounting for partnerships, corporation accounting, receivables and bad debts, basic concepts of budgeting, recording costs and depreciation of plant and equipment.

B17-E241 BUSINESS COMMUNICATIONS REFRESHER
This course is designed to upgrade each student to the level achieved by those enrolled in the one-year Secretary course in terms of grammar, punctuation, spelling, vocabulary development and correspondence practices.

B19-C224 ORAL COMMUNICATIONS
This course is designed, through student participation, to enhance one's ability to communicate verbally on a one-to-one basis and in group situations. Emphasis will be placed on vocabulary development, listening skills, small-group discussions as well as extemporaneous and prepared speeches.

B18-M254 MEDICAL TERMINOLOGY I
An introduction to the technical language of medical science through the study of combining forms, roots, stems, prefixes, suffixes, derivatives, synonyms, homonyms, common disease terms and specialty classifications.

B18-M255 MEDICAL TERMINOLOGY II
Prerequisite B18-M254. A continuation of the study of word elements, medical abbreviations, diseases relevant to each body system, drug classifications. Practical application through the transcription of medical and surgical reports to develop skill accuracy and speed.

B18-M256 MEDICAL OFFICE PROCEDURES
The purpose of this course is to familiarize the future medical secretary with the operation of a medical office. Content will include professional behavior, medical code of ethics stressing confidentiality of patient records, patient relationships, legal aspects of medical care, preparing and keeping medical records, health insurance programs, workers' compensation. This course will allow students to apply their knowledge of word processing through a "hands-on" module of medical applications.

B18-O235 SECRETARIAL PROCEDURES I
The training of an efficient secretary, her role in human and public relations, office procedures, protocol and responsibilities, advanced dictating, making travel arrangements, preparing financial records (expense accounts, petty cash, banking, etc.).

B18-O236 SECRETARIAL PROCEDURES II
A continuation of B18-O235. The training of an efficient secretary, and her role in the office as a supervising secretary, planning in-service seminars, preparing and organizing meetings including the taking of minutes, and preparing material for audio-visual presentations, interview techniques and employee testing.

B18-R234 RECORDS MANAGEMENT
This course is designed to enable students to: a) gain an understanding of records management within the administrative structure of an organization; b) identify the objectives of an organized records management program; c) identify the elements of a formally established and totally integrated records management program; and d) determine the areas of responsibility of records managers and administrators.

B18-S204 SHORTHAND SPEED (Optional)
Prerequisite: B18-P103 or B18-S103. A continuation of shorthand training, with emphasis on speed development and transcription skill. A speed of 80 wpm on four minutes of dictation is to be achieved.

B18-S205 SHORTHAND SPEED II (Optional)
Prerequisite: B18-S204. A continuation of shorthand training with an emphasis on speed development and transcription skill. A speed of 90 wpm on four minutes of dictation is to be achieved.

B18-S234 ADVANCED SHORTHAND SPEED I (Optional)
Advanced shorthand is a continuation of shorthand training with an emphasis on speed development and transcription skill. Students will become proficient in transcribing materials of varying degrees of complexity throughout terms 4, 5 and 6. A speed of 100 wpm is to be achieved.

B18-T234 EXECUTIVE TYPING I
Prerequisite 50 wpm. This course is a continuation of typewriting training with an emphasis on improving speed and accuracy. Students will become proficient in producing typewritten projects e.g. letters, tables, manuscripts, fill-in forms, with increasing degrees of complexity through terms 4, 5 and 6. Required speed is 55 wpm, five-minute timing.

B18-T235 EXECUTIVE TYPING II
Continuation of B18-T234. Decision-making skills are introduced on a gradual scale, as well as coordination and organization of typewriting activities. Required speed is 60 wpm, five-minute timing.
B18-T248 SPECIALIZED TYPING
Continuation of B18-T235. Designed to develop the decision-making skills through working with items of varying importance. A lot of composition work is necessary. Required speed is 85 wpm, seven-minute timing.

B18-W206 COOPERATIVE WORK EXPERIENCE
Co-operative work experience is a two-week period in the sixth semester where students are assigned secretarial work projects with progressive business offices in the community. This program is designed to be an on-the-job learning experience and is followed up by oral and written presentations. Evaluation of student performance is a cooperative effort on the part of participating businesses and the coordinating instructor.

B18-W525 WORD PROCESSING - THEORY
This course is designed to introduce the student to the concepts of word processing. Topics included are: input, output, reprographics, distribution, systems, career paths.

B18-W535 WORD PROCESSING - PRACTICAL
This course is designed to familiarize the student with the basic operations of a screen-based word processor. The following topics are covered: keyboarding, formatting, editing, locating, printing, filing, and merging forms with variables.
PURPOSE
To upgrade academic skills in mathematics, English, physical science and related subjects for enhanced education or employment opportunities.

COURSE
Adult Basic Education courses are approximately five months in length and have varied entry dates. Basic Training for Skill Development (BTSD) is offered on a continuous basis, with the Adult 5-10 part-time course having September and February entry dates. Adult 11A, 11B and 11C also have September and February entry dates. Adult 12 has a February entry date only. (The Adult 5-10 course also may be available on a part-time basis, two evenings per week. Please contact the Adult Basic Education office at 633-4570 for further information.)

Adult 3-5 will assist you in acquiring the mathematics and communication skills required for entry into the 5-10 upgrading course.

Adult 5-10 will give you the opportunity to acquire sufficient academic skills to meet Adult 10 entrance requirements for Manitoba community college courses. Although mathematics and communications will be emphasized, science will be taught when required for occupational goals.

Adult 11. There are three Adult 11 courses: Adult 11A, which is science-based; Adult 11B, which is arts-based; and Adult 11C. Each course has been designed as a preparation for a different educational and occupational goal. To ensure that you choose the appropriate Adult 11 course, you first should confirm the entrance requirements for the college course you wish to eventually enter.

Adult 11A will prepare you to enter the one-year science-based courses at the college.

Adult 11B will prepare you to enter the one-year and two-year Business and Applied Arts courses at the college.

Adult 11C will prepare you to enter the Dental Assisting and Institutional Food Service Supervisor courses at the college.

Adult 12 is a science-based course and is a follow-up to the Adult 11A science-based course. It will prepare you to meet the entrance requirements of the two-year technology courses at the college.

ENTRANCE REQUIREMENTS
A - completion of Level Placement Test to determine the appropriate upgrading entrance level
B - applicants must be at least 17 years of age

EMPLOYMENT POTENTIAL
After successful completion of appropriate academic upgrading, former students have gone on to enroll in the community college courses of their choice. Others have found that the ABE courses opened up new employment opportunities for them. An additional benefit for many has been the personal development and self-esteem that have grown from their increased knowledge and skills.
S02-S133 Algebra
S02-S134 Graphs
S02-S135 Square Root & Hypotenuse Rule
S02-S136 Geometry
S02-S137 Solving Problems Algebraically
S02-S138 Core
S02-S139 Matter
S02-S140 Energy
S02-S141 Heat Energy
S02-S142 Electrical Energy
S02-S143 Mechanical Energy
S02-S144 Life Science
S04-C100 Writing Skills
S04-C110 Grammar Supplement
S04-C111 Reading Skills
S04-C112 Spelling-Core
S04-C113 Spelling-Supplement
S04-M108 Mathematics-Core
S04-M109 Mathematics-Supplement
S04-S100 Science-Core
S04-S113 Science-Supplement

SUBJECT DESCRIPTIONS

S02-C100 WRITING SKILLS
Sentence and paragraph construction; expository paragraph writing; usage and mechanics; punctuation and capitalization.

S02-C110 GRAMMAR SUPPLEMENT
Parts of speech; sentence patterns.

S02-C111 READING SKILLS
Reading speed and comprehension development; vocabulary development; study skills.

S02-C112 SPELLING-CORE
Lessons 1 - 14 consist of a list of commonly-used and commonly-misspelled words in the English language; rules to assist in developing spelling skills.

S02-C113 SPELLING-SUPPLEMENT
Lessons 15 - 22 consist of a review and elaboration of the first 14 spelling lessons; review of spelling rules.

S02-C120 COMPUTER AWARENESS TRAINING-CORE
An introduction to the knowledge and use of computers.

S02-C121 COMPUTER AWARENESS TRAINING-KEYBOARDING
Ability to keyboard to predetermined rate and accuracy.

S02-M108 MATHEMATICS-CORE
Development of problem-solving skills using whole numbers, fractions, decimals and percent, ratio and proportion; and measurements.

S02-M109 MATHEMATICS-SUPPLEMENT
Positive and negative numbers; square root; introductory algebra and geometry; and solving problems algebraically.

S02-S100 SCIENCE-CORE
Scientific method; metric measurements.

S02-S113 SCIENCE-SUPPLEMENT
Temperature; heat; pressure; density; work; electricity; anatomy and physiology; problem solving.

S02-S114 SENTENCE STRUCTURE
Verbs and their subjects; sentences and fragments; clauses.

S02-S115 SENTENCE STRUCTURE
Sentences, fragments, and run-ons; coordination and subordination.

S02-S116 PUNCTUATION & CAPITALIZATION
Sentence types, punctuation and capitalization.

S02-S117 SENTENCE WRITING
Combining given notes into single sentences.

S02-S118 PARAGRAPH WRITING
Combining given notes into a paragraph.

S02-S119 USAGE
Subject-verb agreement, irregular verbs.

S02-S120 GRAMMAR-SUPPLEMENT
Parts of speech, sentence patterns.

S02-S121 SPELLING-CORE
Lessons 1 - 14 Lab. (Units 1 - 14 Adult 8 Word List.)

S02-S122 SPELLING-SUPPLEMENT
Lessons 15 - 22 Lab. (Units 1 - 14 Adult 10 Word List.)

S02-S123 WORD ATTACK
Sight vocabulary, context, dictionary skills.

S02-S124 VOCABULARY
Word power and context.

S02-S125 COMPREHENSION
Literal, interpretative, rate.

S02-S126 STUDY SKILLS
Study habits, test taking, textbooks.

S02-S127 WHOLE NUMBERS
Reading, writing, rounding off, addition, subtraction, multiplication, division, averages, order of operation, problem solving.

S02-S128 FRACTIONS
Reading, writing, addition, subtraction, order of operation, problem solving.

S02-S129 DECIMALS
Reading, writing, rounding off, addition, subtraction, multiplication, division, order of operation, problem solving.
S02-S130 RATIO AND PROPORTION
Ratio, proportion, rates.

S02-S131 PERCENT
Operations, problem solving, simple interest.

S02-S132 MEASUREMENT
Time, distance, liquid, weight, distance conversion, liquid conversion, weight conversion.

S02-S133 ALGEBRA
Integers, terminology, monomials, exponents, polynomials, equations.

S02-S134 GRAPHS
Linear, bar, broken line, circle.

S02-S135 SQUARE ROOT & HYPOTENUSE RULE
Square root, hypotenuse rule.

S02-S136 GEOMETRY
Line, plane circle, angles, polygons, parallel lines, identification plane and solids, perimeter, areas of planes, volume, surface and area of solids.

S02—S137 SOLVING PROBLEMS ALGEBRAICALLY
Number and age problems, rectangle and digit problems, mixture and ratio problems, money problems.

S02-S138 CORE
Scientific method, measurement.

S02-S139 MATTER
States, composition, properties, other groupings, changes.

S02-S140 ENERGY
Kinds, conversions, sources.

S02-S141 HEAT ENERGY
A and B Sources, domestic heat energy management, C Measurement.

S02-S142 ELECTRICAL ENERGY
Stats, from chemical reaction, circuits, measurement, magnetism relationship, applications.

S02-S143 MECHANICAL ENERGY
Work, efficiency, power mechanical advantage lever, inclined plane, wheel and axle, pulley, wedge, screw, examples, applications.

S02-S144 LIFE SCIENCE
A cells, viruses, bacteria fungus, bugs, worms. B body systems, organs, functions.

S03-S1002 MATHEMATICS
See S03-S1001.

S03-S1003 COMMUNICATIONS
See S03-S1001

S03-S1004 SCIENCE
Designed for students who are preparing to enter Dental Assisting. Life science, introduction to chemistry, chemical substances, atomic organization and chemical reaction.

S03-S1001 SCIENCE (PHYSICS)
Matter and energy, force measurement, motion, atomic structure, energy and machines, etc.

S03-S1001 COMMUNICATIONS
Writing Skills: review of grammar, development of writing, writing of paragraphs, letters and summaries. Reading skills: speed and comprehension, vocabulary development, study skills.

S03-S1003 READING AND STUDY SKILLS
Develop reading flexibility, improve reading efficiency, learn skimming and scanning techniques, increase general and technical vocabulary, develop comprehension skills, use the S03R study system, control your time, improve your ability to concentrate and to remember facts, take useful notes from lectures, get involved in class discussions and prepare for examinations.

S03-S1004 KEYBOARDING
Designed to prepare students to use touch-typing techniques on a typewriter keyboard. It concentrates on familiarizing students with letters, symbols, and numbers of the typewriter keyboard.

S03-S1001 MATHEMATICS
Personal finance, loans and investments, taxation, business organization.

S03-P101 BUSINESS AND CONSUMER FUNDAMENTALS
Levels of government, distribution of power, types of business and labour organizations, national income, supply and demand, monetary and banking systems, etc.

S03-Q101 COMMUNICATIONS
Grammar; usage; sentence structure; mechanics; paragraph writing; reading; and spelling.

S03-R101 MATHEMATICS
Equations, factoring, exponents, quadratics, solving simultaneous equations and formula manipulation, mensurational and analytic geometry, trigonometry and logarithms.

S03-S101 SCIENCE (PHYSICS)
Kinetic theory; vectors; electromagnetism; radioactivity and electromagnetism; universal gravitation.

S03-S102 SCIENCE (CHEMISTRY)
Introduction to chemistry; atomic structure and periodic table; chemical composition and reaction; acids; bases; salts; solutions; organic chemistry.
S04-C100 WRITING SKILLS
See S02-C100.

S04-C110 GRAMMAR-SUPPLEMENT
See S02-C110.

S04-C111 READING SKILLS
See S02-C111.

S04-C112 SPELLING-CORE
Reading speed and comprehension development, vocabulary
development, study skills.

S04-C113 SPELLING-SUPPLEMENT
See S02-C113.

S04-M108 MATHEMATICS-CORE
See S02-M108.

S04-M109 MATHEMATICS-SUPPLEMENT
See S02-M109.

S04-S100 SCIENCE-CORE
See S02-S100.

S04-S113 SCIENCE-SUPPLEMENT
See S02-S113.
ADVANCED WELDING

PURPOSE
To upgrade practical welding skills and techniques to meet the certification requirements of Manitoba Labour and/or the Canadian Welding Bureau.

COURSE
The Advanced Welding course has a continuous entry, from September to June. The length of the course for the individual applicant will be determined by the time required to obtain a maximum of two successive tickets. This program has been designed to provide a facility and instruction for qualifying welders to practice in preparation for certification examinations. Participants will spend five hours each day (8:00 a.m. to 1:00 p.m. or 1:00 p.m. to 6:00 p.m.), Monday through Friday, in the development of skills and procedures required for the various classes of certification.

Please note that because Workers Compensation regulations stipulate that steel-toed footwear must be worn in industrial workplaces, students are required to provide and wear appropriate safety footwear in welding and machine shops.

ENTRANCE REQUIREMENTS
To be eligible to test under Manitoba Labour, applicants must prove a minimum of three years welding experience in manual arc welding with flux-coated electrode (SMAW).

Eligibility under the Canadian Welding Bureau requires two years of SMAW welding experience; or completion of a recognized welding training course, plus SMAW experience equal to two years, or sponsorship of a CWB member employer.

Certification from other jurisdictions (e.g. apprenticeship programs, other provinces) may be accepted. Eligibility to test is determined solely by the testing authority.

Applicants must prove eligibility to test under:

- Welding Examiner
  Manitoba Labour
  Mechanical and Engineering Branch
  501 - 401 York Avenue
  Winnipeg, Manitoba R3C 0P8
  Telephone 945 3374 or 945 4138

98 Paramount Road (test facility)
Telephone 945-1276

and/or

- Canadian Welding Bureau (CWB)
  50 Paramount Road
  Winnipeg, Manitoba R2X 2W3
  Telephone 632 6316

EMPLOYMENT POTENTIAL
Welders who have enrolled in Advanced Welding generally have found that development and upgrading of welding skills to meet certification requirements have enhanced their employment qualifications and job opportunities.

COURSE OUTLINE
S07-W101 Advanced Welding

SUBJECT DESCRIPTIONS
S07-W101 ADVANCED WELDING
Basic principles in theory and practical as required in production welding.
ADVERTISING ART

PURPOSE
To develop innovative and creative ideas in design and illustration for the print media, with reference to strict advertising and promotional guidelines.

COURSE
Advertising Art is a two-year diploma course with a September entry date. The course offers a balanced program of art instruction and academic subjects. It is designed to develop the technical skills and knowledge essential to professional competence, and to encourage creativity, imagination and a sense of aesthetic discrimination.

ENTRANCE REQUIREMENTS
A - 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation); or
- Adult Basic Education 11B;

B - A specified portfolio of art work. (Portfolio requirements are released in January each year and sent to the applicant after receipt of the application and supporting education documents. Note that portfolio specifications are changed annually;)

C - An interview with the Advertising Art Selection Committee.

This is a special selection course. The Selection Committee interviews applicants who have completed entrance requirements (A) and (B) and whose portfolios are considered acceptable to the Committee. The Committee selects candidates who have the ability to express themselves in graphic form (i.e. have talent in drawing) and who are interested in earning their living through the practice of graphic design.

Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits. Mature students must meet entrance requirements (B) and (C) above and be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

EMPLOYMENT POTENTIAL
Graduates of this course have found employment as production artists, designers, illustrators and art directors in retail stores, advertising agencies, design and production studios, as well as with newspapers and magazine publishers. Others are working in television and film studios, and some are employed as free-lance artists.

COURSE OUTLINE

YEAR 1

Term 1
B01-A101  Basics of Form
B01-A102  Principles of Drawing
B01-A103  Basic Art Production Techniques I
B01-A106  Introduction to Photography
B01-A108  History of Graphic Design
B10-C109  Introduction to Advertising

Term 2
B01-A202  Life Drawing
B01-A203  Basic Art Production Techniques II
B01-A206  Advertising Design
B01-A207  Graphic Design
B01-A208  Reproduction Methods & Materials
B01-A209  Introduction to Studio Photography
B01-A211  History of Graphic Design
B10-C209  Introduction to Advertising

Term 3
B01-A306  Advertising Design
B01-A307  Graphic Design
B01-A308  Reproduction Methods & Materials
B01-A310  Sketching for Illustration
B01-A313  Advanced Production
B01-A314  Photography in Advertising
B01-A315  History of Graphic Design
B01-A316  Work Experience I
B10-C309  Introduction to Advertising

YEAR 2

Term 4
B01-A406  Advertising Design (optional)
B01-A407  Graphic Design
B01-A409  Advertising Illustration (optional)
B01-A411  Rendering Techniques
B01-A417  Advanced Photography in Advertising
B01-A418  Electronic Publishing
B01-A419  History of Graphic Design
B01-A420  Work Experience II

Term 5
B01-A506  Advertising Design (optional)
B01-A507  Graphic Design
B01-A509  Advertising Illustration (optional)
B01-A510  Rendering Techniques
B01-A515  Audio Visual Productions (optional)
B01-A516  Computer Graphics (optional)
B14-M231  Basic Marketing

Term 6
B01-A608  Advanced Advertising Design (optional)
B01-A609  Advanced Advertising Illustration (optional)
B01-A611  Advanced Rendering Techniques
B01-A615  Audio Visual Production (optional)
B01-A616  Advanced Graphic Design Problems
B01-A617  Portfolio Presentation
B01-A618  Computer Graphics II (optional)
B14-M632  Advanced Marketing

SUBJECT DESCRIPTIONS
B01-A101  BASICS OF FORM
Study of the elements of design; point, line, plane, texture and spatial relationships are investigated.

B01-A102  PRINCIPLES OF DRAWING
Students work from still life compositions, models, natural and man-made environments. The program will develop a basic understanding of contour line, gesture drawing, form, tone, and
spatial relationships. Students will enlarge their powers of perception through drawing from direct observation.

B01-A103 BASIC ART PRODUCTION TECHNIQUES I
Basic Art Production Techniques I will introduce the student to the preparation of mechanical artwork for the reproduction of print media material. Emphasis will be placed on the care and use of equipment. Basic skills used in the production of mechanical art will be developed.

B01-A106 INTRODUCTION TO PHOTOGRAPHY
An introduction to the black-and-white photographic process. The theory and practice of film development, printing, and the presentation of photographs will be taught. The learner will develop skills through a number of practical assignments.

B01-A108 HISTORY OF GRAPHIC DESIGN
An introduction to the History of Graphic Design, this subject will explore the evolution of graphic communication. This presentation will deal with communication from prehistoric times through to ancient Egypt and Medieval civilizations up to the invention of movable typographic printing.

B01-A202 LIFE DRAWING
Techniques involving the drawing of the human form from life, both as an anatomical study and as a basis for future sketching in such areas as illustration and design. A variety of poses, quick sketches, and rendering techniques are involved together with the use of a variety of media.

B01-A203 BASIC ART PRODUCTION TECHNIQUES II
Basic Art Production Techniques II will introduce the student to the preparation of mechanical artwork for the reproduction of print media material. Emphasis will be placed on the practice of techniques and methods used by the advertising artist, enabling the student to produce work at a professional level.

B01-A206 ADVERTISING DESIGN
An exploration of the production of advertising art and design in relation to the needs and requirements of the industry.

B01-A207 GRAPHIC DESIGN
An introduction to designing, using tonal relationships and colour. Emphasis is placed on the understanding of colour theory, mixing and application.

B01-A208 REPRODUCTION METHODS & MATERIALS
A comprehensive study of photomechanical and direct-printing procedures. Areas covered are: photogravure, letterpress, gravure and offset printing, screen processes and multicolour printing.

B01-A209 INTRODUCTION TO STUDIO PHOTOGRAPHY
The learner is introduced to studio lighting and a way of "seeing" in studio photography. Assignments address the forms of light and the placement of objects in relation to each other and the camera. Black-and-white photography is used. Prerequisite is B01-A106.

B01-A307 GRAPHIC DESIGN
An introduction to type as a fundamental element of design. The history of the development of the letterform as a means of communication and exercises using type as the main design element, form the basis of this course.

B01-A308 REPRODUCTION METHODS & MATERIALS
The development of proper techniques for the preparation of mechanical art for reproduction. Emphasis is placed on ruling, masking, windows and the preparation of overlays for colour printing.

B01-A314 PHOTOGRAPHY IN ADVERTISING
The learner will work to simple layouts in product advertising. The basics of working with a large format (4 x 5) camera is covered along with perspective control, film processing, and printing large format negatives. Black and white photography is used. Prerequisite is B01-A314.

B01-A315 HISTORY OF GRAPHIC DESIGN
A continuing introduction to the History of Graphic Design, this subject will explore the effects of the industrial revolution on graphic design. The invention of photography; Victorian era graphics; the arts and crafts movement; Art Nouveau; and graphic design at the turn of the 20th century will be discussed. History of Graphic Design B01-A211 is a prerequisite for this subject.

B01-A316 WORK EXPERIENCE I
The learner will participate in a two-week work experience placement while enrolled in the first year of the Advertising Art program. This work placement will be at the end of the Spring term. The learner will work in a graphic design studio, advertising agency or printing house and will gain first-hand knowledge of the operation, procedures and expectations of the industry.

B01-A406 ADVERTISING DESIGN
The student will be presented with up-to-date practical assignments in design for print media formats. The instructor will act as art director and will give specific instructions on how a problem is to be approached. Particular attention is placed on the development of ad series and campaigns considering the use of illustrative or photographic visual material.
B01-A407 GRAPHIC DESIGN
Graphic design, lettering and typographic design as applied to layout, packaging and poster design.

B01-A408 ADVERTISING ILLUSTRATION
The student will be presented with up-to-date practical assignments in illustration for print media formats. The instructor will act as an art director and will give specific instructions on how a problem is to be approached. The student will be asked to solve illustration problems in a variety of styles and mediums. All illustrations will include layout and typographic and problems to achieve a total visual concept.

B01-A411 RENDERING TECHNIQUES
Techniques, methods and materials used for rendering in layouts.

B01-A417 ADVANCED PHOTOGRAPHY IN ADVERTISING
The learner will work with more complex layouts. Using medium and large-format cameras, the learner will fine tune techniques in studio photography to add the "just right" touches to the photograph. Black and white materials are used in the studio and on location. 35mm copying techniques will be taught. Prerequisite is B01-A314.

B01-A418 ELECTRONIC PUBLISHING
The learner will be introduced to electronic publishing hardware and software. With constant reference to the traditional design skills, emphasis will be placed upon the manipulation of page-creation software. Through a series of hands-on assignments, students will be able to produce work at a professional level, using a variety of hardware devices.

B01-A419 HISTORY OF GRAPHIC DESIGN
A continuing introduction to the History of Graphic Design, this subject will explore the development and growth of graphic design as it was influenced by modern art and the Bauhaus through to post-modernism. History of Graphic Design B01-A315 is a prerequisite for this subject.

B01-A420 WORK EXPERIENCE II
The learner will participate in a three-week work experience placement while enrolled in the second year of the Advertising Art program. This work placement will take place during the Winter term. The learner will work in a graphic design studio, advertising agency or printing house and will gain first-hand knowledge of the operation, procedures and expectations of the industry.

B01-A506 ADVERTISING DESIGN
Further design problems and an exploration of new applications. Joint assignments and specialized projects.

B01-A507 GRAPHIC DESIGN
A study of the approach to and development of a graphic symbol. Corporate image and the formation of identities, corporate image and the formation of design reports.

B01-A508 ADVERTISING ILLUSTRATION
Continuation of previous term with emphasis placed on illustration for advertising. Particular attention is paid to various media and their appropriate techniques.

B01-A510 RENDERING TECHNIQUES
Illustration geared to the fashion market with art produced for reproduction.

B01-A515 AUDIO VISUAL PRODUCTIONS OPTION
This course teaches the production of visual aids. Communication theory and basic AV techniques involving photography and prepared graphics in the production of AV presentations.

B01-A516 COMPUTER GRAPHICS
The student of advertising art will develop skills and techniques used in basic presentation graphics. The hardware and software for desktop graphics will be taught using IBM compatible and Amiga computers. Advanced skills in electronic publishing will also be developed.

B01-A605 ADVANCED ADVERTISING DESIGN
Advanced techniques in a variety of applications, to involve the student in as many design areas as possible. Professional standards are adhered to.

B01-A609 ADVANCED ADVERTISING ILLUSTRATION
Continuation of previous term with emphasis on editorial and storybook illustration.

B01-A611 ADVANCED RENDERING TECHNIQUES
Emphasis on specific techniques for specialized requirements. Practical experimentation with a variety of media applied to assignments.

B01-A615 AUDIO VISUAL PRODUCTION
An exploration of animation, achieved by both drawing directly on film and with cells. Particular attention is paid to the mechanics of animation and its place in the advertising industry.

B01-A616 ADVANCED GRAPHIC DESIGN PROBLEMS
Each student will be required to complete a major term project under the direction of the course instructor. A cooperative assignment will be undertaken with other disciplines from within the college and/or advertising agencies or studios from the industry. Students will be required to make a project presentation to a panel of representatives selected from the industry. Students will be instructed in presentation and job-search techniques.

B01-A617 PORTFOLIO PRESENTATION
A portfolio of work completed in year two will be presented to an examining panel made up of instructors and others knowledgeable in visual communication. The student will be required to demonstrate an acceptable level of professional preparedness in design and/or illustration. The student will be evaluated on the quality of work presented, technical knowledge, communication skills and general professional attitude.

B01-A618 COMPUTER GRAPHICS II
Students will develop advanced skills and techniques used in presentation graphics and electronic publishing. Basic computer animation using Amiga hardware will be introduced.

B10-C109 INTRODUCTION TO ADVERTISING
This subject is designed to develop a full awareness of the advertising business. Special emphasis is on the purposes and
kinds of advertising, the part played by social sciences, and the organisation of ad agencies and departments. Two hours per week.

**B10-C209 INTRO TO ADVERTISING - AD ART**
Continues the general survey of advertising principles and procedures. Relationship of copy to art, with major attention given to copywriting, its functions, and the various kinds.

**B10-C309 INTRO TO ADVERTISING - AD ART**
Concludes the general survey of advertising principles and procedures. This term covers the relative merits of all advertising media, as well as sales promotion techniques.

**B14-M231 BASIC MARKETING**
An introduction to basic marketing, with emphasis on the application of marketing principles in advertising art. The course includes an introduction to the marketing concept, the functions of marketing, markets, marketing mix, and the marketing institutions.

**B14-M632 ADVANCED MARKETING**
Advanced marketing focuses on applications of marketing theories introduced in Term 5 Basic Marketing. Special emphasis is placed on the design, development and evaluation of alternative promotional strategies and their applications in today's business environment.
APPRENTICESHIP COURSES

PURPOSE
To work with men or women and employers to produce journeypersons fully qualified in a skilled trade through study of related subjects and on-the-job training.

COURSE
Annual training courses for indentured apprentices in the designated trades are offered by Manitoba Labour in full-time day classes at the college.

These courses are at graduate levels and are attended at set intervals throughout the apprenticeship term. In most trades, the apprentice is required to attend three or four courses averaging six weeks in length.

The courses provide instruction in practice and theory of the trade together with necessary related subjects, such as mathematics, science, blueprint reading and, in some trades, welding and machine shop. These courses, coupled with on-the-job training, are designed to make the apprentice a fully competent journeyperson.

The apprentice agrees to attend regularly at the place of employment, to serve the employer faithfully, honestly and diligently, and to make an honest effort to learn the trade. The apprentice also agrees to attend all classes and sit for examinations as required by the Director of Apprenticeship.

The employer agrees to provide adequate training for the apprentice in all branches of the trade. The employer agrees to keep the apprentice employed as long as work is available, and also to cooperate with the Apprentice Training Division to ensure that the apprentice attends trade courses regularly.

The following Manitoba Labour Apprenticeship courses are offered in cooperation with Red River Community College:

- Boiler Maker
- Bricklayer
- Cabinet Maker
- Carpenter
- Construction Electrician
- Cook
- Interior Systems Mechanic
- Machinist
- Motor Vehicle Body Repair
- Motor Vehicle Body Repair (Paint)
- Motor Vehicle Mechanic
- Painter and Decorator
- Plumber
- Power Electrician
- Refrigeration & Air Conditioning
- Sheet Metal Worker
- Sprinkler & Fire Protection Installer
- Steamfitter
- Tool & Die Maker

ENTRANCE REQUIREMENTS
Minimum age of 16 years and the approval of the Director of Apprenticeship, Manitoba Labour.

EMPLOYMENT POTENTIAL
A person who successfully completes an apprenticeship is granted a certificate of qualification in one's trade. This certificate identifies the holder as a male or female journeyperson, and is recognized by employers and the public as a trained and competent tradesperson. In several trades, the certificates are officially recognized across Canada.

For further information on apprenticeship training at Red River Community College, please see the Apprenticeship Courses brochure or contact:

Office of Director
Apprenticeship Division
Manitoba Labour
816 Norquay Building
401 York Avenue
Winnipeg, Manitoba R3C 0P8
Telephone: (204) 945-3337
PURPOSE
To develop the skills and knowledge needed to assemble and produce working drawings, manually and computer-generated, as required by the architectural, structural, mechanical-systems or electrical design and construction industries.

COURSE
Architectural Drafting, Structural Drafting, Mechanical Systems Drafting and Electrical Drafting are ten-month certificate courses. Each course focuses on the development of both traditional manual drafting skills and high-technology methods using computer-assisted drafting systems. The drafting courses emphasize the use of acceptable drafting equipment, techniques and conventions.

All students enroll in a common first term of Architectural Drafting. Prior to starting the second term, students will choose between the Architectural, Structural, Mechanical Systems or Electrical options. As the second-term option may be restricted by numbers, final selection will be made in consultation with the department head and, if necessary, will be based on first-term grade point averages.

ENTRANCE REQUIREMENTS
- 14 high school credits (Manitoba Grade 11 or equivalent secondary school preparation) with one of Mathematics 200 or 201*. Standing in Physics 200 or Physical Science 201 is strongly recommended;
  or
- Adult Basic Education 11A

Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. standing (scores on each of the five tests must be 43 or higher) in lieu of 14 credits; however, they must have successfully completed one of Mathematics 200, 201, 290 academic, or 911*. Formal credit in one of Physics 200 or 290 or Physical Science 201 is recommended. Mature students must also be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

* Mathematics 200, or its academic equivalent, is advised. A strong background in mathematics is essential to the drafting field.

EMPLOYMENT POTENTIAL
Architectural Drafting graduates have found employment as junior draftsmen in architectural, consulting engineering, town planning, surveying and building subtrades drafting offices. After gaining experience, some graduates are employed as estimators, building inspectors, specification writers, technical representatives, construction supervisors or salespeople of building product lines.

Job opportunities for Structural Drafting graduates have been found with steel fabricators, structural engineering consultants and steel detailing drafting offices.

Mechanical Systems Drafting graduates have found jobs with mechanical engineering consultants, suppliers and manufacturers of mechanical equipment, and mechanical contractors.

Electrical Drafting graduates are working as junior draftsmen with electrical engineering consultants, power distribution utilities, electrical contractors, and with electrical suppliers.

COURSE OUTLINE
Term 1 (common to the four options listed below)
T03-A101 Fundamentals of Delineation
T03-A102 Applied Architectural Drafting I
T03-A103 Computer-Aided Drafting I
T13-M510 Drafting Math I

Architectural Drafting Option
Term 2
T03-A201 Quantity Take-Off
T03-A202 Applied Architectural Drafting II
T03-A203 Computer-Aided Drafting II
T03-A204 Building Code Analysis
T13-M614 Drafting Math II

Term 3
T03-A301 Surveying & Topographical Drawing
T03-A302 Applied Architectural Drafting III
T03-A303 Computer-Aided Drafting III
T03-A304 Specifications
T14-R504 Communications

Electrical Drafting Option
Term 2
T03-E201 Electrical Lab-Material Identification & Usage
T03-E202 Electrical Drafting I
T03-E203 Computer-Aided Drafting II
T13-M614 Drafting Math II
T14-R504 Communications

Term 3
T03-E301 Surveying & Topographical Drawing
T03-E302 Electrical Drafting II
T03-E303 Computer-Aided Drafting III

Mechanical Systems Drafting Option
Term 2
T03-S202 Mechanical Systems Drafting I
T03-S203 Computer-Aided Drafting II
T13-M614 Drafting Math II

Term 3
T03-S301 Surveying & Topographical Drawing
T03-S302 Mechanical Systems Drafting II
T03-S303 Computer-Aided Drafting III
T03-S304 Quantity Take-Off
T14-R504 Communications

Structural Drafting Option
Term 2
T03-D201 Applied Strength of Materials I
T03-D202 Fundamentals of Structural Steel Detailing Drafting
T03-D203 Computer-Aided Drafting II
T03-D204 Applied Structural Engineering Drafting
T13-M614 Drafting Math II
T14-R504 Communications
Term 3
T03-A301 Surveying & Topographical Drawing
T03-D301 Applied Strength of Materials II
T03-D302 Applied Structural Steel Detailing Drafting
T03-D303 Computer-Aided Drafting III

SUBJECT DESCRIPTIONS
T03-A101 FUNDAMENTALS OF DELINEATION
Practice in the use of architectural, engineering and metric scales, basic letter forms, linework techniques, material symbols, architectural conventions and techniques, orthographic and pictorial drawing.

T03-A102 APPLIED ARCHITECTURAL DRAFTING I
A study of common building practices, and the production of working drawings for industrial buildings and residential dwellings. Introduction to computers and computer-aided drafting, geometric input modes, coordinate types, drawing creation and manipulation, dimensioning, bookkeeping functions, output (plotting), production of drawings using Terak Minn-Draft software.

T03-A103 COMPUTER-AIDED DRAFTING I
Introduction of AutoCAD computer-aided drafting system. Including geometric entities, input modes, coordinate types, drawing creation, drawing editing and manipulation, block creation and use, layer concept and output to printer and plotter.

T03-A201 QUANTITY TAKE-OFF
Development of a systematic approach used to establish quantity and cost of common building materials used in commercial and industrial building construction. Emphasis placed on standard units of measurement used for pricing purposes.

T03-A202 APPLIED ARCHITECTURAL DRAFTING II
A study of commercial building construction practices, light wood frame construction and stair design, and the production of working drawings for the same.

T03-A203 COMPUTER-AIDED DRAFTING II
Same as T03-D203.

T03-A204 BUILDING CODE ANALYSIS

T03-A301 SURVEYING & TOPOGRAPHICAL DRAWING
Practice in the use of the transit and level, the plotting of cuts and contours, and the techniques of topographical drawing.

T03-A302 APPLIED ARCHITECTURAL DRAFTING III
A study of commercial building construction practices and the production of working drawings for the same, including perspective and presentation drawings.

T03-A303 COMPUTER-AIDED DRAFTING III
Same as T03-D303

T03-A304 SPECIFICATIONS
Interpretation of tendering procedures, division of trades and responsibilities, writing a partial specification using a computer-based editing system for the architectural and structural divisions of a selected building project.

T03-A304 SPECIFICATIONS

T03-D201 APPLIED STRENGTH OF MATERIALS I
Basic course in Strength of Materials, including stress and deformation, and the application of these concepts in the analysis of steel and timber beams.

T03-D202 FUNDAMENTALS OF STRUCTURAL STEEL DETAILING DRAFTING
A study of the fundamentals of shop detailed fabrication drawings.

T03-D203 COMPUTER-AIDED DRAFTING II
Instruction in advanced commands of AutoCAD drafting system including moving and duplicating objects, array, modifying and maneuvering, notes and specifications, blocks, library creation and attributes.

T03-D204 APPLIED STRUCTURAL ENGINEERING DRAFTING
A study of commercial reinforced concrete and structural steel buildings. Using standard structural drafting conventions and techniques, the student will produce a complete set of working structural engineering drawings.

T03-D301 APPLIED STRENGTH OF MATERIALS II
Basic course in strength of materials, including bolted and welded joints, shear and moments in beams and the application of these concepts in the selection of steel and timber beams.

T03-D302 APPLIED STRUCTURAL STEEL DETAILING DRAFTING
A study of design and shop detailed fabrication drawings using standard structural steel detailing conventions and techniques, the student will produce a complete set of detailed shop drawings for a commercial steel building, which will include beams, columns, bracing and trusses.

T03-D303 COMPUTER-AIDED DRAFTING III
Use of AutoCAD to produce advanced discipline-related working drawings. AutoCAD 3D and Introduction to AutoLISP programming.

T03-E201 ELECTRICAL LAB-MATERIAL IDENTIFICATION & USAGE
A practical introduction to the various materials and components used in the electrical field with particular emphasis on those used in residential and commercial wiring. Materials are shown and their use demonstrated. Whenever possible and practical, hands-on experience is provided.

T03-E202 ELECTRICAL DRAFTING I
Essential electrical theory and practice in electrical drafting techniques. Various projects in residential, industrial and motor control areas give the student exposure to the typical circuitry, symbols, and components used. Pictorial, diagrammatic, schematic and one-line diagrams are drawn as appropriate. In the course of the projects, the student becomes familiar with the requirements of the Electrical Code and other applicable standards.
T03-E203 COMPUTER-AIDED DRAFTING II
Instruction in advanced commands of AutoCAD drafting system including moving and duplicating objects, array, modifying and maneuvering, notes and specifications, blocks, library creation and attributes.

T03-E301 QUANTITY TAKE-OFF
The techniques used by an electrical estimator are explained and practiced by a project utilizing an actual set of prints.

T03-E302 ELECTRICAL DRAFTING II
Further projects in more complex motor control drawings advance the students' capabilities in this area. Techniques used in sheet-metal drawing for cabinets and components are introduced, with a review of the applicable orthographic and isometric conventions. A major commercial project gives experience in integrating the electrical with other disciplines in a set of drawings, in three-phase wiring and in lighting layout. Special materials for presentation of display work and modeling are used in a group project situation for display to the public.

T03-E303 COMPUTER-AIDED DRAFTING III
Use of AutoCAD to produce advanced discipline-related working drawings. AutoCAD 3D and Introduction to AutoLISP programming.

T03-S202 MECHANICAL SYSTEMS DRAFTING I
A study of heat loss calculations for "residential" and "institutional" buildings, the incorporation of these calculations into a variety of heating and ventilating systems and the production of working drawings for the same. Familiarization with the Manitoba Plumbing Code and components of the plumbing systems for production of plumbing working drawings in "residential" and "institutional" buildings. Familiarization with the Canadian Underwriters' Association standard for the installation of sprinkler systems for production of sprinkler working drawings in "institutional" buildings.

T03-S203 COMPUTER-AIDED DRAFTING II
Instruction in advanced commands of AutoCAD drafting system including moving and duplicating objects, array, modifying and maneuvering, notes and specifications, blocks, library creation and attributes.

T03-S204 MECHANICAL SYSTEMS DRAFTING II
A study of air conditioning system loads including heat loss, cooling load and ventilation requirements. The incorporation of these calculations into a variety of air-conditioning systems, equipment selection and the production of working drawings for the same. Advanced study of the Manitoba Plumbing Code, fixture selection and design of plumbing system for commercial buildings.

T03-S303 COMPUTER-AIDED DRAFTING III
Use of AutoCAD to produce advanced discipline-related working drawings. AutoCAD 3D and Introduction to AutoLISP programming.

T03-S304 QUANTITY TAKE-OFF
Development of fundamental concepts for a systematic approach to material take-off of mechanical components for commercial buildings.

T13-M510 DRAFTING MATH I
Solution of architectural and engineering-related problems using basic mathematical operations, ratio and proportion and scientific notation.

T13-M514 DRAFTING MATH II
Solution of architectural and engineering-related problems using algebra, geometry and trigonometry.

T14-R504 COMMUNICATIONS
The course of instruction develops career-related communication skills, knowledge and behavior. The purpose is to enable students to send and receive messages more effectively and efficiently through writing, speaking and listening.
AUTOMOTIVE SERVICE EDUCATION PROGRAM

PURPOSE
To develop the knowledge and skills required to prepare potential automotive technicians for a career in the automotive field.

COURSE
The Automotive Service Education Program is an 80-week apprenticeship program with entry dates determined by applicant demand. The student spends 40 weeks at Red River Community College and 40 weeks with a sponsoring General Motors of Canada dealership on an eight-week alternating basis. Upon successful completion of both the in-college and dealership training, and a two-year period of employment in a G.M. dealership, the graduate will be entitled to write the Inter-Provincial Standards Examination. The course is designed to develop basic generic knowledge and skills for all phases of vehicle repair; specialized knowledge and skills on General Motors design maintenance repair; and high standards in workmanship, safety and customer consideration.

Please note that although the Automotive Service Education Program is similar to the college’s Motor Vehicle Mechanic Co-op course, the entrance requirements are higher and the amount of time required to earn apprenticeship credits is shorter.

ENTRANCE REQUIREMENTS
- 20 high school credits (Manitoba Grade 12) and
- successful completion of a prescribed reading skills test.

EMPLOYMENT POTENTIAL
Because this course is a relatively new program, there is no graduate employment experience to date.

COURSE OUTLINE

Level 1
T01-A101 Safety - Theory
T01-A102 Shop Tools - Theory
T01-A103 Service Manual & Bulletins - Theory
T01-A104 Engine Principles - Theory
T01-A105 Electrical Basics
T01-A106 Electrical Circuits - Theory
T01-A107 Electrical Engine - Theory
T01-A108 Special Electronics Training
T01-A109 Practical - Term I
T01-A110 Science
T01-A112 Communications
T01-A114 Mathematics

Level 2
T01-A201 Electrical Review - Theory
T01-A202 Introduction to Computer Systems - Theory
T01-A203 Introduction to Fuels And Systems
T01-A204 Carburation Basics - Theory
T01-A205 Carburation Feedback - Theory
T01-A206 Throttle Body & Port Injection - Theory
T01-A207 Windshield Wiper Systems - Theory
T01-A208 Introduction to Automatic Transmissions - Theory
T01-A209 Automatic Transmission Overhaul 125C Fwd - Theory
T01-A210 Automatic Transmission Overhaul 180C Fwd - Theory
T01-A212 Passenger Car & L.D. Truck Brakes - Theory
T01-A214 Practical - Term II

T01-A216 Welding

Level 3
T01-A301 Suspension - Theory
T01-A302 Steering Gears - Theory
T01-A303 Power Rack & Pinion - Theory
T01-A304 Wheels & Tires - Theory
T01-A305 Alignment 2 And 4 Wheel - Theory
T01-A306 Intro to Clutches & Manual Transmissions - Theory
T01-A307 Manual Transmission Overhaul 290 Rwd - Theory
T01-A308 Manual Transmission Overhaul 282 Fwd - Theory
T01-A309 Intro to Differentials & Transfer Case - Theory
T01-A310 K Truck 4 W.D. - Theory
T01-A312 Practical - Term III

Level 4
T01-A401 A.C. & Heating Manual Controls - Theory
T01-A402 Cruise Control - Theory
T01-A403 "M" Car Turbo - Theory
T01-A404 Diesel Engine Fuel & Emissions - Theory
T01-A405 Diesel Electric - Theory
T01-A406 Diesel Electronic Control - Theory
T01-A407 Automatic Transmission Overhaul 700R4 Rwd - Theory
T01-A408 Automatic Transmission Overhaul 440Fm Fwd - Theory
T01-A409 Antilock Brake Systems Teves - Theory
T01-A410 Air Brakes - Theory
T01-A412 Vehicle Pre-Delivery Inspection - Theory
T01-A414 Practical - Term IV

SUBJECT DESCRIPTIONS

T01-A101 SAFETY - THEORY
Understand importance of developing safe working habits to avoid injury to self and fellow workers, and to prevent damage to equipment and customers’ vehicles.

T01-A102 SHOP TOOLS - THEORY
Demonstrate the ability to select and use the proper tool for each specific job.

T01-A103 SERVICE MANUAL AND BULLETINS - THEORY
Develop skill in locating and extracting information from service manuals, drawings, schematics, and service bulletins.

T01-A104 ENGINE PRINCIPLES - THEORY
Understand the principles of operation and the function and relation of component parts of the internal combustion engine. Includes classification of engines, engine terminology, components, engine lubrication, and cooling.

T01-A105 ELECTRICAL BASICS
Establish a basic understanding of electricity regarding generating, regulating, usage, storage, and measuring.

T01-A107 ELECTRICAL ENGINE - THEORY
Understand electricity relating to charging, starting, and ignition circuits.

T01-A108 SPECIAL ELECTRONICS TRAINING
Apply electrical fundamentals to advanced electrical and electronic circuitry and systems.
T01-A109 PRACTICAL - TERM I
On-the-job training for subjects taken in Term I.

T01-A110 SCIENCE
Demonstrate a basic knowledge of matter, solids, simple machines, gears, pulleys, electricity, heat, friction, lubrication, and pressure.

T01-A112 COMMUNICATIONS
Enable students to send and receive messages through effective writing, speaking, and listening: to prospective employers; to co-workers, supervisors, and customers; and to union and government agencies.

T01-A114 MATHEMATICS
Demonstrate the ability to function (at a minimum level of 60%) in the mathematic operations required by the automotive trade.

T01-A201 ELECTRICAL REVIEW - THEORY
All electrical terms, usage, circuits, symbols, and meter usage.

T01-A202 INTRODUCTION TO COMPUTER SYSTEMS - THEORY
Understand the function, servicing, and testing of the board computer along with its input and output devices.

T01-A203 INTRODUCTION TO FUELS AND SYSTEMS
Qualify fuels and fuel systems improving performance and economy while lowering emission levels.

T01-A204 CARBURATION BASICS - THEORY
Outline basic carburetor operation and identify major assemblies and circuits.

T01-A205 CARBURATION FEEDBACK - THEORY
Understand the operation, testing and servicing of a feedback carburetor.

T01-A206 THROTTLE BODY AND PORT INJECTION - THEORY
Understand the operation of throttle body and port injection. Explain the operation and identify the components of throttle body and port injection.

T01-A207 WINDSHIELD WIPER SYSTEMS - THEORY
Understand the operation testing and repair of various motors and controls used on G.M. vehicles.

T01-A208 INTRODUCTION TO AUTOMATIC TRANSMISSIONS-THEORY
Understand the construction, operation, service, repair, and diagnostic procedures relating to automatic transmissions.

T01-A209 AUTOMATIC TRANSMISSION OVERHAUL 125C FWD-THEORY
Demonstrate ability to disassemble, inspect, adjust, and repair an automatic transmission following procedures outlined in the service manual.

T01-A210 AUTOMATIC TRANSMISSION OVERHAUL 180C RWD-THEORY
Demonstrate the ability to disassemble, inspect, adjust, and repair an automatic transmission following procedures outlined in the service manual.

T01-A212 PASSENGER CAR & L.D. TRUCK BRAKES - THEORY
Understand the design and operation of hydraulic service brakes and gain knowledge to carry out quality repair of various systems.

T01-A214 PRACTICAL - TERM II
On-the-job training for subjects taken in Term II.

T01-A216 WELDING
Demonstrate a basic knowledge of oxyacetylene welding, flames, fusion welding, welding rods, types of welds, non-fusion welding, and cutting.

T01-A301 SUSPENSION - THEORY
Understand the design, operation, and repair of suspension and steering gear to provide safe comfortable handling of a vehicle.

T01-A302 STEERING GEARS - THEORY
Describe the operation, service adjustments of a recirculating ball steering gear. Disassemble, inspect, adjust, and reassemble a unit following service manual procedures.

T01-A303 POWER RACK & PINION - THEORY
Identify the parts and describe the characteristics and operation of rack-and-pinion steering. Disassemble, inspect, adjust and reassemble a rack-and-pinion unit.

T01-A304 WHEELS & TIRES - THEORY
Identify wheel design and construction. Identify tire types, sizes, tread wear, heat resistance, and traction. Demonstrate proper balancing technique.

T01-A305 ALIGNMENT TWO AND FOUR WHEEL - THEORY
Understand the importance of and procedures to restore vehicle to factory specifications. Set up alignment machine and follow procedures accomplishing a proper alignment.

T01-A306 INTRODUCTION TO CLUTCHES & MANUAL TRANSMISSIONS - THEORY
Understand procedures involved with checking, adjusting, or repairing a clutch assembly and a manual transmission.

T01-A307 MANUAL TRANSMISSION OVERHAUL 290 RWD - THEORY
Undertake the disassembly inspection repair and reassembly of a manual transmission following service manual procedure.

T01-A308 MANUAL TRANSMISSION OVERHAUL 282 FWD - THEORY
Undertake the disassembly inspection repair and reassembly of a manual transmission following service manual procedure.
T01-A309 INTRODUCTION TO DIFFERENTIALS AND TRANSFER CASE - THEORY
Understand the purpose, operation and diagnostic procedures relating to differentials and transfer case.

T01-A310 K TRUCK 4 W.D. - THEORY
Disassemble, inspect, repair, and reassemble K truck differential using special tools and procedures.

T01-A312 PRACTICAL - TERM III
On-the-job training for subjects taken in Term III.

T01-A401 A.C. & HEATING MANUAL CONTROLS - THEORY
Comprehend the operation of refrigeration and heating components along with manual vacuum and electric controls to enable proper diagnoses and repair.

T01-A402 CRUISE CONTROL - THEORY
Understand the operation, diagnostic, and repair procedures relating to cruise systems.

T01-A403 "M" CAR TURBO - THEORY
Understand the ECM, fuel, ignition, and emissions systems of the "M" Car.

T01-A404 DIESEL ENGINE FUEL & EMISSIONS - THEORY
Comprehend the operation of the diesel engine, fuel, and electrical systems along with emission control devices to enable systematic diagnosis and repair.

T01-A405 DIESEL ELECTRIC - THEORY
Understand the operation of the diesel electrical systems to enable systematic diagnosis and repair. Identify electrical devices associated with engine operation.

T01-A406 DIESEL ELECTRONIC CONTROL - THEORY
Review purpose and operation of ECM. List system sensors and explain sensor operation and testing.

T01-A407 AUTOMATIC TRANSMISSION OVERHAUL 700R4 RWD - THEORY
Demonstrate ability to disassemble, inspect, adjust, and repair an automatic transmission following procedures outlined in the service manual.

T01-A408 AUTOMATIC TRANSMISSION OVERHAUL 440THM FWD - THEORY
Demonstrate ability to disassemble, inspect, adjust, and repair an automatic transmission following procedures outlined in the service manual.

T01-A409 ANTILOCK BRAKE SYSTEMS TEVES - THEORY
Comprehend the advantage, operation, diagnosis, and repair of the Teves Antilock Brake system.

T01-A410 AIR BRAKES - THEORY
Understand the operation of the air brake system along with the purpose and function of the basic valves and components.

T01-A412 VEHICLE PRE-DELIVERY INSPECTION - THEORY
Understand the proper procedure involved with a pre-delivery inspection including both performance and appearance considerations.

T01-A414 PRACTICAL - TERM IV
On-the-job training for subjects taken in Term IV.
BIOENGINEERING - CHEMICAL TECHNOLOGY

PURPOSE
To develop the knowledge and skills required to work with scientific equipment, and chemical and biological materials, in both laboratories and industrial plants.

COURSE
Bioengineering - Chemical Technology is a two-year diploma course with a September entry date. The course deals with the applications of genetic engineering and other aspects of molecular biology in medicine, agriculture, energy, and the environment.

ENTRANCE REQUIREMENTS
- 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation) with Mathematics 300, English 300 or 301, and two of Chemistry 300, Biology 300, or Physics 300
- Adult Basic education Pre-Technology program (Adult 12) completion.
- If you lack one of the required subjects, you may be eligible for a provisional acceptance, providing that you acquire the credit through an adult education program prior to the registration date. The college Extension Division (evening programs) offers foundation courses in chemistry and reading skills. These courses are designed to provide an applicant with the academic background in the required subjects.

Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits; however, they must have specific credits in mathematics, English, and two sciences as noted above. Mature students must be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

EMPLOYMENT POTENTIAL
Graduates are employed as technologists in many industries, from food processing and mining, to aerospace and pharmaceutical companies. They are employed by all levels of government for environmental testing, geological surveys, and in research. Some graduates work as lab assistants in schools, colleges and universities. Other graduates who have acquired substantial experience now work as supervisors, plant managers and heads of research teams.

COURSE OUTLINE
Term 1
- H09-B102 General Chemistry I
- H09-B103 Lab Safety
- H09-B104 Organic Chemistry I
- H09-B107 Instrumental Principles I
- H09-B110 Introductory Biology
- H09-B117 Mathematics
- H09-B126 Communications

- H09-B207 Instrumental Principles II
- H09-B212 Introductory Genetics
- H09-B213 Anatomy & Physiology
- H09-B217 Computer Awareness
- H09-B220 Lab Animal Management

Term 2
- H09-B202 General Chemistry II
- H09-B204 Organic Chemistry II
- H09-B302 Analytical Chemistry I
- H09-B304 Organic Chemistry III
- H09-B305 Instrumentation I
- H09-B314 Biochemistry I
- H09-B315 Microbiology I
- H09-B317 Statistics I

Term 3
- H09-B402 Analytical Chemistry II
- H09-B403 Industrial Hygiene
- H09-B405 Instrumentation II
- H09-B414 Biochemistry II
- H09-B415 Microbiology II
- H09-B417 Statistics II
- H09-B418 Tissue Culture

Term 4
- H09-B505 Instrumentation III
- H09-B510 Molecular Biology
- H09-B513 Industrial Processes
- H09-B514 Biochemistry III
- H09-B517 Quality Assurance
- H09-B519 Immunology/Virology

Term 5
- H09-B602 Advanced Analytical Chemistry
- H09-B605 Instrumentation IV
- H09-B610 Projects
- H09-B615 Applied Microbiology
- H09-B618 Physical Testing
- H09-B619 Biotechnology Applications
- H09-B626 Interpersonal Skills/Communications

SUBJECT DESCRIPTIONS
H09-B102 GENERAL CHEMISTRY I
This is an introductory course designed to give students a general knowledge of the role that the atom plays in the understanding of the reactions and properties of the elements in the Periodic Table.

H09-B103 LAB SAFETY
This course will expose the student to some basic lab safety rules - how to use fire extinguisher, eye-wash, showers; how to look up safety information; how to dispose of chemicals. Various government legislation will be identified, and the WHMIS Act will be applied to lab situations.

H09-B104 ORGANIC CHEMISTRY I
This course introduces first concepts in modern organic chemistry. Theoretical concepts underlying structure of hydrocarbon compounds, reactions of organic molecules and mechanisms of certain classes of reactions are treated. The accompanying laboratory is designed to familiarize students with common techniques used in separations, purifications and preparations.
H09-B107 INSTRUMENTAL PRINCIPLES I
Mechanics, Heat, & Radiation - Kinematics, dynamics, energy (work and heat), temperature, specific heat, heat transfer, basal metabolic ratio, photoelectric effect. Basic principles of radioactivity and the biological effects of radioactivity. Prerequisite: Physics 300.

H09-B110 INTRODUCTORY BIOLOGY
This course is to introduce the student to various aspects of biology. Topics include the characteristics of living cells such as structure, metabolism, cell division, etc. The student will also be introduced to the Protista, fungi, plants and animals.

H09-B117 MATHEMATICS
A review and extension of high school algebra, trigonometry, linear equations, quadratic, exponents and logarithms. A short introduction to calculus will also be included.

H09-B126 COMMUNICATIONS
The overall goal of this subject is to develop effective communication skills required by the technologist who will eventually be employed in a scientific or industry field. The course will concentrate on oral and written communication appropriate to technical and business applications.

H09-B202 GENERAL CHEMISTRY II
This is a continuation of the H09-B102 course and is designed to study the states of matter.

H09-B204 ORGANIC CHEMISTRY II
This second course in organic chemistry introduces aromatic character and cyclic structure of organic molecules. The general properties, preparations and common reactions of arenes, aldehydes, ketones, acids, amines, phenols and aryl halides are treated. IUPAC and common names of each class of compound are stressed. The accompanying laboratory utilizes the techniques learned in the introductory course to prepare compounds of the classes referred to above.

H09-B207 INSTRUMENTAL PRINCIPLES II
Light & Electricity — simple geometric optics, prism, refraction, camera, microscope, interference, diffraction, spectra; electrostatics, basic AC & DC circuits, circuit elements such as resistors, capacitors, inductors, diodes, transistors, and IC's. Emphasis is on the use of electronic meters and the oscilloscope. Prerequisite: Instrumental Principles I.

H09-B212 INTRODUCTORY GENETICS
An introduction to the science of genetics. It includes an introduction to the study of cell division, chromosome morphology and aberrations. Patterns of inheritance using examples from plants and animals are included.

H09-B213 ANATOMY & PHYSIOLOGY
This course is designed to further the student's knowledge of comparative anatomy and physiology. It will deal with all major body systems of the vertebrates.

H09-B217 COMPUTER AWARENESS
This course deals with an introduction to computer systems with emphasis on microcomputers, the IBM PC DOS commands, an introduction to computer programming using the BASIC language, and selected software for data base, spreadsheet, and wordprocessing. Besides getting hands-on experience on microcomputers, students will also work on the VAX computer network to familiarize themselves with the system for application software (BMDP & SAS) to be used in statistical analysis.

H09-B220 LAB ANIMAL MANAGEMENT
An introduction to the basic principles of animal nutrition, breeding, housing and care of the more common laboratory animal species.

H09-B302 ANALYTICAL CHEMISTRY I
This course introduces the student to qualitative and quantitative wet chemistry. Topics will include Qualitative Analysis, Chemical Equilibrium, Solubility, Acids and Bases, and Volumetric Analysis.

H09-B304 ORGANIC CHEMISTRY III
This third course in organic chemistry is presented to Bioengineering students only. Special reactions, properties and preparations are introduced in this course. Condensation reactions, di-carboxylic acids, polymerization, polynuclear aromatic compounds, heterocyclic compounds and conjugate addition to unsaturated carbonyls are discussed. IUPAC and common nomenclature is stressed for all classes of compounds. The accompanying laboratory will involve the preparation of classes of molecules as indicated above.

H09-B305 INSTRUMENTATION I
This course deals with the principles of ultra-violet, visible and infra-red spectrophotometry, including instrumentation and application to a variety of different analytes. Students will learn to operate a number of spectrophotometers such as the Spectronic 20 & 21, Beckman 3600, Spectronic 601, Unica, SP 1800, and Beckman Acculab 9.

H09-B314 BIOCHEMISTRY I
This is an introduction course designed to give students a general understanding of the chemistry of carbohydrates, lipids, proteins and nucleic acids.

H09-B315 MICROBIOLOGY I
This course deals with fundamental aspects of microbiology. It includes the scope of microbiology; a taxonomic survey of microorganisms; basic techniques used in the observation, cultivation and identification of microorganisms; and the structure of prokaryotic and eukaryotic cells.

H09-B317 STATISTICS I
This course is an introduction to the handling of scientific data using the methods of parametric statistical analysis. It is also a prerequisite for further courses in advanced statistics and quality assurance.

H09-B402 ANALYTICAL CHEMISTRY II
Topics include Gravimetric Analysis, Redox Reactions, Basic Electrochemistry, Complexing Agents. Includes a study of sample collection and preparation techniques. Prerequisite: Analytical Chemistry I.

H09-B403 INDUSTRIAL HYGIENE
This course is designed to familiarize the student with instruments
and techniques that help make the workplace safe.

**H09-B405 INSTRUMENTATION II**
This course provides instruction in the principles of atomic absorption spectrophotometry (including graphite furnace and cold-vapor methods), spectrofluorometry emission spectroscopy (including inductively coupled plasma) and mass spectrometry. Students will operate a Perkin Elmer 2380 AAS with HGA, Turner Fluorometer and spectrofluorometer and an EM600 mass spectrometer.

**H09-B414 BIOCHEMISTRY II**
This is a continuation of the H09B314 course and is designed to study how enzymes function and the role of RNA and DNA in protein biosynthesis.

**H09-B415 MICROBIOLOGY II**
This course includes chemical and physical methods in microbial control; fundamental aspects of microbial metabolism; genetics; states of immunity; and methods used in the control of infectious diseases.

**H09-B417 STATISTICS II**
This course is designed to investigate aspects of experimental design, and advanced statistical analysis topics such as analysis of variance and regression as applied to biological and chemical research. It will cover topics such as Factorial and Nested ANOVA, Multiple Range Tests, Experimental Designs, Simple/Multiple Linear Regression, Curve Fitting and Optimization. Students will also get hands-on experience with modern software available for sophisticated statistical analysis.

**H09-B418 TISSUE CULTURE**
A practical treatment of basic techniques used in the in vitro culture and manipulation of plant and animal tissues.

**H09-B505 INSTRUMENTATION III**
This course deals principally with all aspects of chromatography, such as the instrumentation, the operation, application and optimization of parameters in gas chromatography (GSC, GLC and GBC), and high performance liquid chromatography (HPLC, LSC, LBC, ION-exchange, and elution). In addition to gaining experience with typical GC's with a variety of detectors, students will use high resolution GC with an open tubular column and will also gain experience in gradient elution HPLC.

**H09-B510 MOLECULAR BIOLOGY**
This course is designed to give the student both a strong theoretical and working knowledge of techniques in recombinant DNA technology including cloning, use of viral and plasmid vectors, gene transfer, gene mapping and future applications.

**H09-B513 INDUSTRIAL PROCESSES**
The Technologist must understand that chemistry and biochemistry are applied to produce a great many products for consumers and other industries. Large scale production reactions are frequently quite different than laboratory reactions. Chemical Process Industries are as diverse as preparing low density plastics or molecular sieves; petrochemicals, paints and dyes; alcohol from biomass; agrochemicals; pharmaceuticals; food chemistry; and many more. This course will familiarize the student with historical and current economic facts, current statistical information and key technical details about Chemical Process Industries of great importance to Manitoba.

**H09-B514 BIOCHEMISTRY III**
This subject is designed to give students an understanding of the inter-relationships of carbohydrates, lipids, proteins and nucleic acids in cellular metabolism.

**H09-B517 QUALITY ASSURANCE**
This course provides instruction in the principles of quality assurance and quality control as applied to a laboratory devoted to chemical analysis in today's demanding society. Current requirements for lab accreditation by the Standards Council of Canada will be discussed and students will work on their own Quality Assurance Manual using the guidelines set forth by the Standards Council of Canada. Students will use a popular software package for Quality Control, called Forecast Plus. Advanced statistical concepts such as smoothing, robustness, autocorrelation, filtering and Box-Jenkins analysis will also be covered.

**H09-B519 IMMUNOLOGY/VIROLOGY**
This course is designed to give the student a strong theoretical foundation in the application of monoclonal antibodies, immunological screening, gene regulation, oncogenes and viral vectors.

**H09-B602 ADVANCED ANALYTICAL CHEMISTRY**
This course will deal with new advances in analytical chemistry. It will cover the background theory to such new techniques such as ICP emission spectroscopy, GC-MS, scanning electron microscopy, surface analysis techniques, radiochemical methods of analysis, ion chromatography, y spectrometry, nuclear activation analysis, x spectrometry, and FTIR (Fourier transform infrared spectroscopy). The course will also investigate the role of microprocessors and microcomputers in the modern laboratory and study available software for computer-aided analysis. Since most of the equipment is not available at the present time, students will participate in seminars and demonstrations of the various instruments by experts in various facilities who use the equipment.

**H09-B605 INSTRUMENTATION IV**
This course deals with electrometric methods of analysis, thermal analysis, nuclear magnetic resonance (NMR), and X-Ray diffraction and fluorescence. Students will operate various pH meters, an automatic potentiometric titrator, a polarograph, conductivity meter, a differential scanning calorimeter, an EM360 NMR and a Philips XRD and XRF spectrometer.

**H09-B610 PROJECTS**
This subject affords the student an opportunity to investigate, evaluate, plan, cost, and do the necessary experimentation of a project of their selection under the guidance of a staff member. The student will also be required to submit a formal report and present their findings at a seminar.
H09-B615 APPLIED MICROBIOLOGY
A study of the characteristics, isolation and identification of the more commonly encountered micro-organisms in foods, water, soils and air. The role of micro-organisms used in the manufacture of major classes of products of industrial importance is included.

H09-B618 PHYSICAL TESTING
This course will include theoretical and practical aspects of bomb calorimetry, viscosity measurement, densitometry, polarimetry, refractive index measurement, use of flash point apparatus. Basic corrosion tests, basic metallographic techniques, and typical mineral identification will also be discussed.

H09-B619 BIOTECHNOLOGY APPLICATIONS
This course is designed to introduce the student to the applications of recombinant DNA, molecular biology and immunology in the fields of medicine agriculture, energy, waste management, food industry, the environment and future developments in industrial biotechnological processes.

H09-B626 INTERPERSONAL SKILLS/COMMUNICATIONS
This subject will aid the student develop his/her personal management skills as they relate to his/her work environment with respect to time management, prioritization of work, interpersonal relationships, stress etc. Within the context of this subject, the student will further enhance his/her communication skills by producing a major formal report and delivering an oral presentation in a manner befitting his/her discipline.
BIOLOGICAL TECHNOLOGY

PURPOSE
To develop the knowledge and skills required for biological research, environmental studies and related industry employment.

COURSE
Biological Technology is a two-year diploma course with a September entry date. The course is designed to give you a broad yet thorough understanding of the principles of the biological sciences. The course deals with the applications of genetic engineering and other aspects of molecular biology in medicine, agriculture, energy and the environment. The fundamental principles of chemistry, physics and mathematics, as applied to the biological sciences also are included.

- 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation) with Mathematics 300 or 301, English 300 or 301, and two of Chemistry 300, Biology 300 or 301, Physics 300, or Physical Science 301.

Please note that effective September 1992, you will require the following prerequisites: 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation) with Mathematics 300, English 300 or 301, and two of Chemistry 300, Biology 300 or 301, Physics 300.

- Adult Basic Education Pre-Technology program (Adult 12) completion

or

- If you lack one of the required subjects, you may be eligible for a provisional acceptance, providing that you acquire the credit through an adult education program prior to the registration date. The college Extension Division (evening programs) offers foundation courses in chemistry, and reading skills. These courses are designed to provide an applicant with the academic background in the required subjects.

Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits; however, they must have specific credits in English, and two sciences as noted above. Mature students must be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

EMPLOYMENT POTENTIAL
Graduates are employed in a wide variety of industries, from food processing to health and pharmaceutical companies. They are employed by all levels of government for environmental studies, natural resource surveys, plant and animal disease testing and in research. Some graduates work as lab assistants in schools, colleges and universities. Other graduates, who have acquired substantial experience, now work as supervisors, plant managers and heads of research teams.

COURSE OUTLINE
Term 1
H09-B102 General Chemistry I
H09-B103 Lab Safety
H09-B104 Organic Chemistry I
H09-B107 Instrumental Principles I

H09-B110 Introductory Biology
H09-B117 Mathematics
H09-B126 Communications

Term 2
H09-B202 General Chemistry II
H09-B204 Organic Chemistry II
H09-B208 Botany
H09-B212 Introductory Genetics
H09-B213 Anatomy & Physiology
H09-B217 Computer Awareness
H09-B220 Lab Animal Management

Term 3
H09-B302 Analytical Chemistry I
H09-B305 Instrumentation I
H09-B309 Zoology
H09-B314 Biochemistry I
H09-B315 Microbiology I
H09-B317 Statistics I

Term 4
H09-B403 Industrial Hygiene
H09-B405 Instrumentation II
H09-B413 Environmental Sampling Techniques
H09-B414 Biochemistry II
H09-B415 Microbiology II
H09-B417 Statistics II
H09-B418 Tissue Culture

Term 5
H09-B505 Instrumentation III
H09-B510 Molecular Biology
H09-B514 Biochemistry III
H09-B515 Microtechniques/Histology
H09-B517 Quality Assurance
H09-B519 Immunology/Virology

Term 6
H09-B609 Taxonomy
H09-B610 Projects
H09-B615 Applied Microbiology
H09-B616 Pathological Techniques
H09-B619 Biotechnology Applications
H09-B625 Natural Resource Management
H09-B626 Interpersonal Skills/Communications

SUBJECT DESCRIPTIONS
H09-B102 GENERAL CHEMISTRY I
This is an introductory course designed to give students a general knowledge of the role that the atom plays in the understanding of the reactions and properties of the elements in the Periodic Table.

H09-B103 LAB SAFETY
This course will expose the student to some basic lab safety rules: how to use fire extinguisher, eye-wash, showers; how to look up safety information; how to dispose of chemicals. Various government legislation will be identified, and the WHMIS Act will be applied to lab situations.
H09-B104 ORGANIC CHEMISTRY I
This course introduces first concepts in modern organic chemistry. Theoretical concepts underlying structure of hydrocarbon compounds, reactions of organic molecules and mechanisms of certain classes of reactions are treated. The accompanying laboratory is designed to familiarize students with common techniques used in separations, purifications and preparations.

H09-B107 INSTRUMENTAL PRINCIPLES I
Mechanics, Heat, & Radiation - Kinematics, dynamics, energy (work and heat), temperature, specific heat, heat transfer, basal metabolic ratio, photoelectric effect. Basic principles of radioactivity and the biological effects of radioactivity. Prerequisite: Physics 300.

H09-B110 INTRODUCTORY BIOLOGY
This course is to introduce the student to various aspects of biology. Topics include the characteristics of living cells such as structure, metabolism, cell division, etc. The student will also be introduced to the Protista, fungi, plants and animals.

H09-B117 MATHEMATICS
A review and extension of high school algebra, trigonometry, linear equations, quadratic, exponents and logarithms. A short introduction to calculus will also be included.

H09-B126 COMMUNICATIONS
The overall goal of this subject is to develop effective communication skills required by the technologist who will eventually be employed in a scientific or industry field. The course will concentrate on oral and written communication appropriate to technical and business applications.

H09-B202 GENERAL CHEMISTRY II
This is a continuation of the H09-B102 course and is designed to study the states of matter.

H09-B204 ORGANIC CHEMISTRY II
This second course in organic chemistry introduces aromatic character and cyclic structure of organic molecules. The general properties, preparations and common reactions of arenes, aldehydes, ketones, carboxylic acids, amines, phenols and aryl halides are treated. IUPAC and common names of each class of compound are stressed. The accompanying laboratory utilizes the techniques learned in the introductory course to prepare compounds of the classes referred to above.

H09-B206 BOTANY
A study of the basic principles of anatomy and morphology of flowering plants. It includes the application of processes such as photosynthesis, and respiration and principles of plant nutrition and water absorption to selected horticultural practices.

H09-B212 INTRODUCTORY GENETICS
An introduction to the science of genetics. It includes an introduction to the study of cell division, chromosome morphology and aberrations. Patterns of inheritance using examples from plants and animals are included.

H09-B213 ANATOMY & PHYSIOLOGY
This course is designed to further the student's knowledge of comparative anatomy and physiology. It will deal with all major body systems of the vertebrates.

H09-B217 COMPUTER AWARENESS
This course deals with an introduction to computer systems with emphasis on microcomputers, the IBM PC DOS commands, an introduction to computer programming using the BASIC language, and selected software for data base, spreadsheet, and wordprocessing. Besides getting hands-on experience on microcomputers, students will also work on the VAX computer network to familiarize themselves with the system for application software (BMDP & SAS) to be used in statistical analysis.

H09-B220 LAB ANIMAL MANAGEMENT
An introduction to the basic principles of animal nutrition, breeding, housing and care of the more common laboratory animal species.

H09-B302 ANALYTICAL CHEMISTRY I
This course introduces the student to qualitative and quantitative wet chemistry. Topics will include Qualitative Analysis, Chemical Equilibrium, Solubility, Acids and Bases, and Volumetric Analysis.

H09-B305 INSTRUMENTATION I
This course deals with the principles of ultra-violet, visible and infra-red spectrophotometry, including instrumentation and application to a variety of different analytes. Students will learn to operate a number of spectrophotometers such as the Spectronic 20 & 21, Beckman 3600, Spectronic 601, Unica, SP 1800, and Beckman Acculab 9.

H09-B309 ZOOLOGY
The course deals with the anatomy and physiology of both the invertebrates and vertebrates and is the foundation for more advanced studies in animal science.

H09-B314 BIOCHEMISTRY I
This is an introductory course designed to give students a general understanding of the chemistry of carbohydrates, liquids, proteins and nucleic acids.

H09-B315 MICROBIOLOGY I
This course deals with fundamental aspects of microbiology. It includes the scope of microbiology; a taxonomic survey of microorganisms; basic techniques used in the observation, cultivation and identification of micro-organisms and the structure of prokaryotic and eukaryotic cells.

H09-B317 STATISTICS I
This course is an introduction to the handling of scientific data using the methods of parametric statistical analysis. It is also a prerequisite for further courses in advanced statistics and quality assurance.

H09-B403 INDUSTRIAL HYGIENE
This course is designed to familiarize the student with instruments and techniques that help make the workplace safe.

H09-B405 INSTRUMENTATION II
This course provides instruction in the principles of atomic absorption spectrophotometry (including graphite furnace and cold vapor methods), spectrofluorometry emission spectroscopy (including
H09-B413 ENVIRONMENTAL SAMPLING TECHNIQUES
This course deals with a statistical approach to sampling techniques of the both abiotic environment such as soil, water, and air and biotic environment (plants and animals). Basic ecological principles will also be covered.

H09-B414 BIOCHEMISTRY II
This is a continuation of the H09-B314 course and is designed to study how enzymes function and the role of RNA and DNA in protein biosynthesis.

H09-B415 MICROBIOLOGY II
This course includes chemical and physical methods in microbial control; fundamental aspects of microbial metabolism; genetics; states of immunity and methods used in the control of infectious diseases.

H09-B417 STATISTICS II
This course is designed to investigate aspects of experimental design, and advanced statistical analysis topics such as analysis of variance and regression as applied to biological and chemical research. It will cover topics such as Factorial and Nested ANOVA, Multiple Range Tests, Experimental Designs, Simple/Multiple Linear Regression, Curve Fitting and Optimization. Students will also get hands-on experience with modern software available for sophisticated statistical analysis.

H09-B418 TISSUE CULTURE
A practical treatment of basic techniques used in the invitro culture and manipulation of plant and animal tissues.

H09-B505 INSTRUMENTATION III
This course deals principally with all aspects of chromatography, such as the instrumentation, the operation, application and optimization of parameters in gas chromatography (GC), liquid chromatography (HPLC), high-performance liquid chromatography (HPLC), ion-exchange, and exclusion). In addition to gaining experience with typical GC’s with a variety of detectors students will use high resolution GC with an open tubular column and will also gain experience in gradient elution HPLC.

H09-B510 MOLECULAR BIOLOGY
This course is designed to give the student both a strong theoretical and working knowledge of techniques in recombinant DNA technology including cloning, use of viral and plasmid vectors, gene transfer, gene mapping and future applications.

H09-B514 BIOCHEMISTRY III
This subject is designed to give students an understanding of the inter-relationships of carbohydrates, liquids, proteins and nucleic acids in cellular metabolism.

H09-B516 MICROTECHNIQUES/HISTOLOGY
A course in the theoretical and practical aspects of preparing biological material for histological examination. It includes the use of microscopes, basic and standard histological procedures, as well as other methods used to prepare specimens for observation.

H09-B517 QUALITY ASSURANCE
This course provides instruction in the principles of quality assurance and quality control as applied to a laboratory devoted to chemical analysis in today’s demanding society. Current requirements for lab accreditation by the Standards Council of Canada will be discussed and students will work on their own Quality Assurance Manual using the guidelines set forth by the Standards Council of Canada. Students will use a popular software package for Quality Control, called Forecast Plus. Advanced statistical concepts such as smoothing, robustness, autocorrelation, filtering and Box-Jenkins analysis will also be covered.

H09-B519 IMMUNOLOGY/VIROLOGY
This course is designed to give the student a strong theoretical foundation in the application of monoclonal antibodies, immunological screening, gene regulation, oncogenes and viral vectors.

H09-B610 PROJECTS
This subject affords the student an opportunity to investigate, evaluate, plan, cost, and do the necessary experimentation of a project of their selection under the guidance of a staff member. The student will also be required to submit a formal report and present his or her findings at a seminar.

H09-B615 APPLIED MICROBIOLOGY
A study of the characteristics, isolation and identification of the more commonly encountered micro-organisms in foods, water, soils and air. The role of micro-organisms used in the manufacture of major classes of products of industrial importance is included.

H09-B616 PATHOLOGICAL TECHNIQUES
An introduction to the concepts and techniques of animal and plant pathology. Animal pathology investigations include clinical laboratory procedures. Plant disease investigations include the isolation and examination of infective agents in plant disease.

H09-B619 BIOTECHNOLOGY APPLICATIONS
This course is designed to introduce the student to the applications of recombinant DNA, molecular biology and immunology in the fields of medicine, agriculture, energy, waste management, food industry, the environment and future developments in industrial biotechnological processes.

H09-B625 NATURAL RESOURCE MANAGEMENT
This course deals with various techniques that are used in wildlife management, and fisheries management.

H09-B620 INTERPERSONAL SKILLS/COMMUNICATIONS
This subject will aid the student develop his or her personal management skills as they relate to their work environment with respect to time management, prioritization of their work, interpersonal relationships, stress etc. Within the context of this subject, the student will further enhance their communication skills by producing a major formal report and delivering an oral presentation in a manner befitting their discipline.
BUSINESS ACCOUNTANCY

PURPOSE
To develop a thorough working knowledge of fundamental financial and cost accounting. Graduates are capable of maintaining a complete set of accounting records in a business environment with the use of a microcomputer.

COURSE
Business Accountancy is a ten-month certificate course with a September entry date. The course is designed to provide a thorough working knowledge of accounting systems and procedures to enable the graduate to maintain a complete set of records for most types of businesses.

ENTRANCE REQUIREMENTS
- 14 high school credits (Manitoba Grade 11 or equivalent secondary school preparation) with English 200 or 201 and Mathematics 200 or 201;
- or
- Adult Basic Education 11B;
- Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. standing (scores on each of the five tests must be 43 or higher) in lieu of 14 credits; however, they must have successfully completed one of English 200, 201, 280 or 911 and one of Mathematics 200, 201, 290, or 911 at a minimum. Mature students must be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

EMPLOYMENT POTENTIAL
Employment opportunities will vary, depending upon your personal preferences, ability and prior work experience. Most graduates have found employment as accounting technicians in wholesale, retail, or manufacturing firms, in financial departments of banks and trust companies, or in private clubs, schools or professional sports associations. Some graduates have been accepted for positions as full-fledged accountants, and others have been hired by public accounting firms.

Graduates may be eligible to receive some advanced standing in programs offered by the Society of Management Accountants and the Certified General Accountants’ Association (Manitoba).

COURSE OUTLINE
Term 1
B11-A103 Business Mathematics B U A C
B11-A161 Financial Accounting A
B12-L159 Business Law I
B12-O333 Principles of Organization & Management
B17-E841 Business Communications

B11-A361 Financial Accounting C
B11-A492 Microcomputer Accounting Applications
B15-S204 Computer Applications in Business
B17-E843 Business Communications

SUBJECT DESCRIPTIONS
B11-A103 BUSINESS MATHEMATICS B U A C
Review of basic fundamentals, application of percentage, profit and loss, trade discounts, retail selling, mark up, inventory turnover, banking, discounting note, collection charges, installment buying, partnership, compound interest, statistics and graphs, annuities, amortization, sales tax, insurance, finance and depreciation.

B11-A161 FINANCIAL ACCOUNTING A
A thorough working knowledge of double-entry bookkeeping, adjustments and work sheets for preparation of financial statements pertaining to sole proprietorships and partnerships; special journals; subsidiary ledgers and controlling accounts; cash and accounts receivable; inventories internal control procedures.

B11-A204 COST ACCOUNTING A
An introduction to the procedures and techniques utilized in accounting for a manufacturing concern, preparation of a cost of goods manufactured and sold statement, work flow and cost flow through a job-order cost system, preparing and following the paper work for the recording and controlling of new materials, direct labour, manufacturing overhead, department overhead cost and setting overhead rates.

B11-A261 FINANCIAL ACCOUNTING B
Application of accounting principles, procedures and techniques as they apply to plant, inventories and equipment, intangible assets, partnership accounting, formation of corporations, share capital and retained earnings, and concepts.

B11-A304 COST ACCOUNTING B
Accounting for the recovery and sale of high and low value scrap, recording the cost flow through accounts in a process cost system, preparation of a complete cost of production report, costing for y-products and joint products, preparation of financial budgets.

B11-A361 FINANCIAL ACCOUNTING C
Accounting for corporation-share capital and retained earnings, long-term liabilities, accounting principles and concepts and personal income tax considerations.

B11-A492 MICROCOMPUTER ACCOUNTING APPLICATIONS
Using ACCPAC Software, the students will format their own accounts and financial statements, and enter transactions from a set of comprehensive case studies.

B12-L159 BUSINESS LAW I
Business Law I is an introductory course emphasizing the basic elements of Business Law. The topics covered in order of presentation will be: The Machinery of Justice; The Law of Torts; Contracts specifically: Offer and Acceptance, Consideration, Capacity, Legality of Object. The remaining elements of contract will be completed in Business Law II.
B12-L269 BUSINESS LAW II
This course provides an introduction to our legal system and the administration of justice, to the law of tort, to the laws of contract and sale of goods.

B12-O333 PRINCIPLES OF ORGANIZATION & MANAGEMENT
Functions of the Canadian economy; forms of Canadian business organization; the role of government in Canadian business; the finance activity; labor relations; production cycle; purchasing; inventory control; marketing; administrative organization.

B15-S102 INTRO TO DATA PROCESSING
Introduction to Data Processing provides a general overview of the computer field. It covers history and fundamentals, hardware, software, and the application of computers to solving business-related problems using flow-chart techniques and the BASIC programming language.

B15-S204 COMPUTER APPLICATIONS IN BUSINESS
Subject consists of word processing, spreadsheet, and business application software.

B17-E841 BUSINESS COMMUNICATIONS
The objective is to provide a foundation in the fundamentals of grammar and vocabulary usage. This term's content lays the groundwork for the second and third terms' writing objectives.

B17-E843 BUSINESS COMMUNICATIONS
This course is designed to provide the student with the skills needed to compose business documents and to assist the student while preparing to seek employment. The program will be enhanced by the student's acquiring skills in oral strategies.

B17-E852 BUSINESS COMMUNICATIONS
This course is designed to provide the student with the fundamentals of writing unified and coherent exposition - writing skills related to sentence structure and paragraph writing; resumes are also covered. The course content will provide the skills necessary prior to learning to compose effective business documents and to prepare for seeking employment.
BUSINESS ACCOUNTANCY INTEGRATED

PURPOSE
To develop a thorough working knowledge of fundamental financial and cost accounting. Graduates are capable of maintaining a complete set of accounting records in a business environment with the use of a microcomputer.

COURSE
Business Accountancy Integrated is a twelve-month certificate course with a December entry date. This integrated course is designed for applicants who do not meet the entrance requirements for the ten-month Business Accountancy course, and integrates the required academic subjects to bring the student to an Adult 11 level. The modified pace in the first three terms allows additional time for meeting individual needs. Term 4 will be identical in pace and content to the ten-month Business Accountancy's final term.

The course is designed to provide a thorough working knowledge of accounting systems and procedures to enable the graduate to maintain a complete set of records for most types of businesses.

ENTRANCE REQUIREMENTS
A - 7 high school credits (Manitoba Grade 10 or equivalent secondary school preparation) with Mathematics 100 or 101 and English 100 or 101; or
- Adult Basic Education 7-10 program with supplemental mathematics and communications modules; and
B - acceptable performance on entrance tests, administered by the college, which survey basic skills in mathematics, language, and reading.

Mature Student Admission. Mature students may submit other academic equivalents, including G.E.D. standing (scores on each of the five tests must be 41 or higher) or successful completion of English (100, 101, 190, or Adult English I and II) and Mathematics (100, 101, 190, or Practical Mathematics-Elementary/Junior High Level). Mature students must also meet requirement (B) above and be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

EMPLOYMENT POTENTIAL
Employment opportunities will vary, depending upon your personal preferences, ability and prior work experience. Most graduates have found employment as accounting technicians in wholesale, retail, or manufacturing firms, in financial departments of banks and trust companies, or in private clubs, schools or professional sports associations. Some graduates have been accepted for positions as full-fledged accountants, and others have been hired by public accounting firms.

Graduates may be eligible to receive some advanced standing in programs offered by the Society of Management Accountants and the Certified General Accountants' Association (Manitoba).

COURSE OUTLINE
Term 1
B11-A102 Basic Reading & Study Skills
B11-A105 Business Mathematics

B11-A162 Introductory Accounting
B17-E651 Business Communications
B18-T100 Keyboarding for Information Processors

Term 2
B11-A106 Business Mathematics
B11-A163 Introductory Accounting
B11-A205 Cost Accounting Principles & Applications
B12-O333 Principles of Organization & Management
B17-E652 Business Communications

Term 3
B11-A206 Cost Accounting Principles & Applications
B11-A262 Introductory Accounting
B12-L199 Business Law I
B15-S204 Computer Applications in Business
B15-S208 Introduction to Data Processing I
B17-E653 Business Communications

Term 4
B11-A304 Cost Accounting B
B11-A361 Financial Accounting C
B11-A492 Microcomputer Accounting Applications
B12-L299 Business Law II
B17-E843 Business Communications

SUBJECT DESCRIPTIONS

B11-A102 BASIC READING AND STUDY SKILLS
This course is designed to improve comprehension, rate, and vocabulary along with developing study, test-writing and note-taking skills.

B11-A105 BUSINESS MATHEMATICS (Term I)
This course begins with a review of basic calculations with business applications such as averages, inventory valuation and depreciation. Other topics include algebra, ratio and proportion, commercial discount, markup and markdown.

B11-A106 BUSINESS MATHEMATICS (Term II)
This course looks at simple and compound interest, negotiable instruments and annuities.

B11-A162 INTRODUCTORY ACCOUNTING (Term I)
The work of an accountant, accounting principles and concepts, balance sheet equation, effects of transactions on the accounting equation, accounting statements (Income Statement and Balance Sheet), the effect of revenue and expenses, Asset, Liability and Owner's Equity accounts, revenue and expense accounts, recording transactions in the general journal, posting to the ledger, debit and credit, mechanics of double-entry accounting, the trial balance, adjusting the accounts, adjusted trial balance, preparing statements and classified balance sheet, preparing a work sheet and its use thereof, closing entries, the post-closing trial balance, the accounting cycle.

B11-A163 INTRODUCTORY ACCOUNTING (Term II)
Sales, purchases, cost of goods sold, gross profit, worksheet for a merchandising concern, closing entries for a merchandising concern, debit and credit memos, sales journal, cash receipts and cash disbursements journal, purchases journal, control accounts, subsidiary ledgers, sales and purchase returns, internal control
principles and procedures, controlling purchases, voucher system and control, voucher register, petty cash fund, control over cash, bank reconciliation, accounting for notes receivable and accounts receivable, discounting notes receivable, dishonoured notes receivable, bad debts and allowance for doubtful accounts.

**B11-A205 COST ACCOUNTING PRINCIPLES AND APPLICATIONS (Term II)**

Students will acquire a basic working knowledge of the job order method of cost accounting, including accounting for materials costs, and direct labour costs.

**B11-A206 COST ACCOUNTING PRINCIPLES AND APPLICATIONS (Term III)**

The course material is a continuation of the job order method of cost accounting covered in Cost Accounting B11-A205.

**B11-A262 INTRODUCTORY ACCOUNTING (Term III)**


**B11-A304 COST ACCOUNTING B**

Accounting for the recovery and sale of high and low value scrap, recording the cost flow through accounts in a process cost system, preparation of a complete cost of production report, costing for by-products and joint products, preparation of financial budgets.

**B11-A361 FINANCIAL ACCOUNTING C**

Accounting for corporation-share capital and retained earnings, long-term liabilities and investments, accounting principles and concepts, analyzing financial statements, flow of funds and cash flows, tax considerations in business decisions.

**B11-A492 MICROCOMPUTER ACCOUNTING APPLICATIONS**

Using ACCPAC Software, the students will format their own accounts and financial statements, and enter transactions from a set of comprehensive case studies.

**B12-L199 BUSINESS LAW I**

The course is eleven weeks in duration and consists of five 50-minute periods per week involving lecture, problem solving and discussion. It is meant to be an introduction to the laws of business.

**B12-L299 BUSINESS LAW II**

The course is eleven weeks in duration and consists of five 50-minute periods per week involving lecture, problem solving and discussion. It will include a continuation of the basic principles of contract law.

**B12-C333 PRINCIPLES OF ORGANIZATION & MANAGEMENT**

Functions of the Canadian economy; forms of Canadian business organization; the role of government in Canadian business; the finance activity; labor relations; production cycle; purchasing; Inventory control; marketing; administrative organization.

**B15-S204 COMPUTER APPLICATIONS IN BUSINESS**

Subject consists of word processing, spreadsheet, and business application software.

**B15-S208 INTRODUCTION TO DATA PROCESSING I**

Introduction to Data Processing provides a general overview of the field. It covers history and fundamentals, hardware, software, and the application of computers to solving business-related problems using flow-chartsing techniques and the BASIC programming language.

**B17-E651 BUSINESS COMMUNICATIONS (Term I)**

This course deals with writing definitions which contain the word defined, a general category, and a specific description. Students learn to write paragraphs of: a) definition, b) example and description, c) comparison and contrast, d) cause and effect. They will write these paragraphs from information supplied as well as from their own research. Students will learn to use correctly, and distinguish between, a selected list of words arranged in sets e.g. course, coarse; assent, ascent; etc.

**B17-E652 BUSINESS COMMUNICATIONS (Term II)**

Students learn to write definitions which contain the word defined, a general category, and a specific description. Students learn to write paragraphs of: a) definition, b) example and description, c) comparison and contrast, d) cause and effect. They will write these paragraphs from information supplied as well as from their own research. Students will learn to use correctly, and distinguish between, a selected list of words arranged in sets e.g. course, coarse; assent, ascent; etc.

**B17-E653 BUSINESS COMMUNICATIONS (Term III)**

This course deals with writing memoranda and various types of business letters including requests, collections, and refusal. Vocabulary is also included.

**B17-E843 BUSINESS COMMUNICATIONS**

This course is designed to provide a foundation in the fundamentals for punctuation, use of capitals, abbreviations, figures, further vocabulary enrichment, proper sentence and paragraph writing, proper organization and presentation of research materials in report forms, and effective job applications.

**B18-T100 KEYBOARDING FOR INFORMATION PROCESSORS**

This course is designed to prepare students to use touch-typing techniques on a typewriter keyboard. Concentrates on familiarizing students with letters, symbols, and numbers of the typewriter keyboard. (These keys are identical with most microcomputer and word processor keyboards.) Numerous word and sentence drills develop accuracy and speed. A minimum keyboarding speed of 20 words per minute is required (or must be achieved).
BUSINESS ADMINISTRATION

PURPOSE
To develop a potential for supervision and management through the study of business-related subjects and practical projects.

COURSE
Business Administration is a two-year diploma course with a September entry date. The program is designed to provide a broad general business background so that the graduate may choose a career from a variety of job opportunities in the business community.

ENTRANCE REQUIREMENTS
- 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation) with English 300 or 301 and Mathematics 300 or 301. (Standing in Mathematics 300 is recommended);
  
or
- Adult Basic Education 11B, with supplemental mathematics modules.

Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits; however, they must have specific credits in Mathematics 300 or 301 and English 300 or 301. Mature students must be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director, Admissions/Registration for review.

EMPLOYMENT POTENTIAL
Many graduates have been accepted into management-training programs with department stores, banks, insurance companies and financial institutions. Graduates interested in accounting have found work in federal and provincial finance and taxation departments. Others have found rewarding careers in small businesses. Some graduates have even gone on to start their own enterprises.

Please see the Business Administration course brochure for information regarding transfer of credit to university and certified accounting programs.

COURSE OUTLINE
YEAR 1
Term 1
B11-A191 Introductory Accounting A
B12-E171 Economic Principles I
B13-M612 Introduction to Business
B13-R713 Business Mathematics
B15-S301 Intro to Data Processing
B16-E221 Basic Business Communications

Term 2
B11-A291 Introductory Accounting B
B12-E272 Economic Principles II
B13-R703 Financial Mathematics
B14-M101 Basic Marketing
B15-S502 Computer Applications in Business
B16-E121 Oral Communications

Term 3
B11-A391 Introductory Accounting C
B12-E373 Economic Principles III
B13-R706 Statistics I
B13-S513 Human Behavior In Organizations
B14-M202 Basic Marketing
B16-E313 Report Writing

Term 4
Compulsory subjects:
B12-L360 Business Law
B13-R707 Statistics II
Students will elect any four of the following subjects:
B11-A491 Intermediate Accounting A
B11-A492 Microcomputer Accounting Applications
B12-E472 International Economics & Business
B12-E470 Public Finance
B13-R708 Business Finance
B13-S501 Psychology
B14-C401 Consumer Behavior
B14-S401 Personal Selling

Term 5
Compulsory subjects:
B12-P555 Entrepreneurship
B13-M624 Politics and Government in Canada
Students will elect any four of the following subjects:
B11-A505 Cost Accounting A
B11-A591 Intermediate Accounting B
B12-E471 Economic Issues in Canada
B12-L466 Business Law II
B13-M613 Personnel Studies
B13-R701 Production Management
B13-R705 Quantitative Methods
B13-R709 Securities Investment
B13-S544 Sociology
B14-M601 Merchandising
B14-R602 Marketing Research

Term 6
Compulsory subjects:
B12-P666 Entrepreneurship Practicum
B13-M502 Management
Students will elect any four of the following subjects:
B11-A605 Cost Accounting B
B11-A691 Intermediate Accounting C
B12-E580 Industrial Relations
B12-E575 Manitoba Economic Perspectives
B12-I491 Risk and Insurance
B13-M614 Canadian Real Estate
B13-M618 Credit Management
B13-M623 Cooperative Enterprise
B13-S515 Contemporary Social Issues in Canada
B14-A501 Advertising
B14-A502 Retail Financial Management
B15-S601 Microcomputer Data Base

Please note that not all elective subjects listed are offered each year.
SUBJECT DESCRIPTIONS

B11-A191 INTRODUCTORY ACCOUNTING A
Double-entry bookkeeping routine, adjustments and work sheet for preparation of financial statements, financial statements pertaining to sole proprietorship, special journals, subsidiary ledgers and controlling accounts, control procedures for cash and receivables payrolls.

B11-A291 INTRODUCTORY ACCOUNTING B
Accounting for inventories and their valuation, procedures and techniques in the treatment of plant and equipment transactions, accounting principles and concepts, accounting for partnerships, departmentalization.

B11-A391 INTRODUCTORY ACCOUNTING C
Accounting procedures, methods and techniques as they apply to limited companies, share capital, retained earnings, consolidations, long-term liabilities and investments.

B11-A491 INTERMEDIATE ACCOUNTING A
Involved accounting information that is useful to management in the decision-making process. It begins with a complete review of accounting information processing cycles, the reporting process and financial statements. The course continues with an in-depth study of principles and techniques as applied to cash, temporary investments, receivables and inventories.

B11-A492 MICROCOMPUTER ACCOUNTING APPLICATIONS
Using ACCPAC Software, the students will format their own accounts and financial statements, and enter transactions from a set of comprehensive case studies.

B11-A505 COST ACCOUNTING A
This course is an introduction to the problems involved in accounting for a manufacturing concern. Topics covered are financial statements, the manufacturing cycle, job order cost system, analysis of variances in factory overhead, labour and material costs, and simple process cost of production reports.

B11-A591 INTERMEDIATE ACCOUNTING B
This course involves an in-depth study of tangible fixed assets, acquisitions, retirement, depreciation, intangible fixed assets, corporations contributed capital, retained earnings, quasi-reorganizations, long-term investments and long-term liabilities.

B11-A605 COST ACCOUNTING B
This is a continuation of Cost Accounting A beginning with more advanced applications of process costing. Other topics include an in-depth study of budget preparation and standard costing procedures. Prerequisite: B11-A505.

B11-A691 INTERMEDIATE ACCOUNTING C
This involves changes in accounting methods, estimating errors, incomplete records, statements of change in financial position comparative statements and ratio analysis.

B12-E171 ECONOMIC PRINCIPLES I
An introduction to the central economic problems facing all societies, followed by a brief study of modern political economic systems designed to provide solutions to the economic problems. The workings of the mixed, free enterprise economy will be studied in depth, with particular emphasis on the role of the price system and its malfunctions under less-than-perfect competition.

B12-E272 ECONOMIC PRINCIPLES II
A study of macroeconomic principles, beginning with a survey of national economic goals, followed by a study of the determinants of national income, business cycles, creation of our money supply, and monetary stabilization policies.

B12-E373 ECONOMIC PRINCIPLES III
A continuation of the study of macroeconomics with further emphasis on stabilization policies. The role of government fiscal policy will be examined, followed by a study of the problems and dilemmas of simultaneous inflation and unemployment. The 1975 Wage & Price Controls program and finally a study of the limitations to economic growth.

B12-E471 ECONOMIC ISSUES IN CANADA
This course allows the student to use acquired economic tools to study and analyze important current events with economic and political implications: the urban crisis, inflation and unemployment, income distribution, the energy crisis and pollution, and others.

B12-E472 INTERNATIONAL ECONOMICS & BUSINESS
Canada's exports equal about 25% of its total production of goods and services. The study of international trade and business is therefore important and essential for the student of business. The subject matter includes exports and imports, foreign exchange, international monetary arrangements, the business of multinational corporations, and Canada's relationship to economic trading blocks with special influence to the European Economic Community.

B12-E580 INDUSTRIAL RELATIONS
A study of the Canadian labor market which examines composition of the labor force, unemployment, changing demand for labor, immigration and emigration, cyclical unemployment and the relationship of wages, prices and unemployment. The course examines the history and development of Canadian unions with particular emphasis on current problems in industrial relations. Important issues are augmented by the case method.

B12-E670 PUBLIC FINANCE
A study of governmental activities: the theory and structure of taxation, taxes on income, goods sold, property and their economic consequences, government borrowing and fiscal policy. The expenditure of Canadian governments. Canadian public finance and the Carter Report. Particular emphasis is placed on local (i.e. Manitoba) taxation changes and problems.

B12-E675 MANITOBA ECONOMIC PERSPECTIVES
This subject is designed to have students examine and analyze important economic issues and perspectives of the economy of Manitoba.

B12-I491 RISK AND INSURANCE
The course provides an introduction to and an analysis of the concept of risk (the chance of losses) and its effects both on the business and personal levels. Risk management alternatives are
dealt with next, insurance being but one of several valid methods of handling risk. Finally, the various types of insurance are discussed: property (fire), consequential losses, theft, bonds, casualty or liability coverages, automobile (both private and public), aviation, the various types, functions and uses of life insurance.

B12-L360 BUSINESS LAW
This course provides an introduction to our legal system and the administration of justice, to the law of tort, to the laws of contract and sale of goods.

B12-L466 BUSINESS LAW II
This course will constitute a study and application of business law in the areas of insurance, guarantee, bailments, principal and agent, contract of employment, negotiable instruments and the enforcement of rights thereafter, partnerships, management and operation of corporations, and credit transactions and creditor’s rights.

B12-F555 ENTREPRENEURSHIP
This course focuses on the development of new business ventures, as well as on the operation or management of a small business. Cases have been developed to stimulate the student to analyze the opportunities, risks and factors necessary for the success of the entrepreneur and his/her new enterprise.

B12-P666 ENTREPRENEURSHIP PRACTICUM
In small groups, students will prepare a formal feasibility study (business plan) for starting a profit-making enterprise and then present it to a panel of instructor-judges for examination. Written, oral and group work will be evaluated.

B13-M602 MANAGEMENT
The objective of this course is to give the student practice in integrating and applying the knowledge gained in previous courses. The medium used is major case studies for which the student must prepare a written solution. The theory sections deal with the role of the manager from the point of view of strategy, tactics, and decision making. The student is also exposed to some of the major concepts presented by Drucker, Odiorne, Mintzberg and Reddin. The cases studies used assume a previous knowledge of break-even analysis, financial-statement analysis, report-writing statistics and the management applications of computer systems.

B13-M612 INTRODUCTION TO BUSINESS
A broad analysis of business concepts, functional internal characteristics of a business and the inter-relationships among business, government and the consumer.

B13-M613 PERSONNEL STUDIES
The objective of the course is to give the student exposure to current management practices and principles. The theory section will deal with the role of the manager as a decision maker. Quantitative methods of management as they apply to business will be covered.

B13-M614 CANADIAN REAL ESTATE
This subject explores all aspects of real estate as an investment with particular emphasis in Manitoba. As well as private home purchasing, interest is focused on commercial properties and land speculation. This course integrates the student’s knowledge gained in law, economics, business finance and accounting.

B13-M618 CREDIT MANAGEMENT
A subject designed to familiarize the student with credit authorization and collections. Credit management will be analyzed in terms of profitability, efficiency, effectiveness, and operations. Credit relationships between retailer and consumer, bank and consumer, and company will be studied.

B13-M623 COOPERATIVE ENTERPRISE
The general objectives of the course are to:
1. Appreciate the cooperative sector of the economy of Manitoba and Western Canada.
2. Understand the problems and principles that are unique to the management of Canadian cooperatives and credit unions.
3. Research the potential for new cooperative development as a member of a team of approximately seven students.

B13-M624 POLITICS AND GOVERNMENT IN CANADA
A comprehensive study of Canadian federal politics which goes beyond the mere description of governmental institutions and processes. The approach is a practical one, where emphasis is placed on understanding the implications of such factors as culture, political behaviour and public policy. Consideration is made of the fact that the environment is shared with business and labor. Also, provincial and municipal governments are looked into, as well as the international scene.

B13-R701 PRODUCTION MANAGEMENT
Topics include work study, production standards, plant and workstation layout, quality control, critical path analysis, and equipment investment analysis.

B13-R703 FINANCIAL MATHEMATICS
The application of mathematics to practical business problems dealing with compound interest, installment payments, annuities, sinking funds, present values, evaluation of bonds.

B13-R705 QUANTITATIVE METHODS
This course builds on statistics and provides an in-depth examination of various statistical tools of management decision making. Topics include: decision making under uncertainty, linear programming, transportation method, and sales forecasting. This course will be of particular interest and use to those who intend to pursue a professional accounting designation.

B13-R706 STATISTICS I
This course is an introduction to economic and business statistics. Topics include: charts and graphs, frequency distributions, measures of central tendency, measures of dispersion, index numbers and probability theory.

B13-R707 STATISTICS II
This course continues the study of statistics into the "inference" area. Topics include: probability distributions, the normal curve, estimation hypothesis testing, quality control, statistical simulation and least squares analysis.
B13-R708 BUSINESS FINANCE
A subject to develop skill in planning and controlling the investment in each of the asset accounts and the methods of financing the firm. Particular emphasis will be placed on the analysis and interpretation of financial data.

B13-R709 SECURITIES INVESTMENT
The objective of this course is to introduce the student to the various types of securities available for investment. Special emphasis is placed on evaluation of securities as investment alternatives.

B13-R713 BUSINESS MATHEMATICS
This subject begins with a review of basic arithmetic and algebraic operations. This is followed by a study of the application of ratio, proportion, and percent to business problems, including trade and cash discounts, commissions and fees, taxes, markups and income statement analysis. Finally, the student is introduced to financial mathematics topics: simple interest and discount, bank discount, equivalent payment and negotiable instruments.

B13-S513 HUMAN BEHAVIOR IN ORGANIZATIONS
This course is concerned with the study of individual and group behavior in organized or purposeful group settings. Its major goals are, to communicate some knowledge of general psychological principles, and to develop skill in applying that knowledge to social and organizational situations.

B13-S515 CONTEMPORARY SOCIAL ISSUES IN CANADA
A course designated to broaden the student's awareness and knowledge of current trends and problems in today's society. Emphasis is placed on social problems in Canada and the world, and on current events and trends which are not labelled as problems, but which have some significance for society.

B13-S544 SOCIOLOGY
This is an introduction to the perspective of sociology and how it helps us to understand our social existence. It calls attention to the continuous interplay between the individuals and the social context in which they live out their lives. It also looks at the interrelationships between society's various institutions. Emphasis is placed on the presentation of an historical, theoretical and cross-cultural perspective of Canadian society in a time of rapid change.

B14-A501 ADVERTISING
A practical course in advertising with emphasis on advertising in Canada. Advertising is viewed as an important part of the total marketing mix of a company or other institution. The role of advertising in society is reviewed. A study is made of creative strategy and execution as well as media strategy and execution. In addition, the various elements of print and broadcast advertising are analyzed, as are the functions of the advertising agency.

B14-A502 RETAIL FINANCIAL MANAGEMENT
This course deals with mathematics and accounting for retail operation, financial statement analysis, accounting for the management of departmental and branch operation consolidations, accounting for receivables and inventories, preparation of merchandise budgets, and internal auditing programs. Retail budgeting and expense control are covered in detail.

B14-C401 CONSUMER BEHAVIOR
This course provides an introduction to the complexity of human behavior, particularly as it applies to buying behavior on the part of final consumer. Material for the course is drawn from the social sciences: sociology, psychology, social psychology and economics. The insight provided leads to a better understanding of consumer behavior in the marketplace.

B14-M101 BASIC MARKETING
A study of industrial and consumer marketing with emphasis on marketing institutions and principles. The vital role of marketing in society is presented from the perspective of the modern marketing concept. The student develops and learns to apply an understanding of marketing strategy involving selection of target markets and development of marketing mixes.

B14-M202 BASIC MARKETING
Basic marketing builds on the principles developed in 1st term. This course provides a more in-depth analysis of the four elements in the marketing mix: product, place, promotion and price. In addition, the student examines in more detail the various marketing institutions, is introduced to marketing research and finally learns to develop integrated marketing strategy.

B14-M601 MERCHANDISING
A study of merchandising methods and retail organization, retailing today, management of retailing, the retail store, the retail organization, merchandise management as it pertains to buying, handling, controlling and pricing, sales promotion and customer services, merchandising, accounting controls, coordination and retailing management.

B14-R602 MARKETING RESEARCH
This subject focuses on the use of information in the planning of marketing strategies and the execution and control of marketing functions. Particular attention is given to the identification and solution of marketing problems through the systematic collection, analysis and interpretation of data. The course consists of two parts: a) deals with theory through the lecture and case study methods; b) an actual research project is undertaken by students working in groups.

B14-S401 PERSONAL SELLING
A practical course in personal selling, designed for students who plan to pursue a career in sales. The course takes a practical approach in that the emphasis is on the development of specific sales skills such as prospecting, demonstration, handling objections, proving, opening and closing sales etc. While sales theory provides a framework, skills are developed through application using the techniques of role play, case studies and feature-benefit analysis.

B15-S301 INTRO TO DATA PROCESSING
Introduction to Data Processing provides a general overview of the computer field. It covers history and fundamentals, hardware, software, and the application of computers to solving business-related problems using flowcharting techniques and the BASIC programming language.
B15-S502 COMPUTER APPLICATIONS IN BUSINESS
Students are taught about various computer applications in business. Topics covered are typical large-scale systems and the microcomputer applications of word processing and spreadsheet.

B15-S601 MICROCOMPUTER DATA BASE
Microcomputer Data Base presents the RBASE 5000 software package.

B16-E121 ORAL COMMUNICATIONS
This course is designed to increase the student's ability to listen and speak well. Three hours each week has been scheduled for lectures and workshops. It is essential that the student attend regularly to contribute as speaker and listener.

B16-E221 BASIC BUSINESS COMMUNICATIONS
The fundamentals of business communications are covered: techniques of business letters, promotional writing, answering complaints, collecting material and writing reports. Basic grammar will be incorporated to the depth indicated by the individual's need.

B16-E313 REPORT WRITING
The course is designed to familiarize the student with the variety of report formats in use today. Concise, correct and clear usage is stressed, as is the proper development of report themes, conclusions, and recommendations.
BUSINESS ADMINISTRATION INTEGRATED

PURPOSE
To develop a potential for supervision and management through the study of business-related subjects and practical projects.

COURSE
Business Administration Integrated is a three-year diploma course with an August entry date. This integrated course is designed for applicants who do not meet the entrance requirements for the two-year Business Administration course. The modified pace in the first two years allows additional time for upgrading study and for meeting individual needs. Sponsored students are expected to take a third-year elective in the summer during July to strengthen their work load in the third year. The third year of the course is similar in pace and content to the second year of the regular Business Administration program, and students from both courses attend the same classes.

The course is designed to provide a broad general business background so that the graduate may choose a career from a variety of job opportunities in the business community.

ENTRANCE REQUIREMENTS
A - 7 high school credits (Manitoba Grade 10 or equivalent secondary school preparation); with Mathematics 100 or 101 and English 100 or 101;

- Adult Basic Education 7-10 with supplemental mathematics and communications modules;

B - provincial entrance only: satisfactory results on a written test, administered by the college, which surveys basic skills in mathematics, language, and reading, if requested;

C - completion of an applicant information sheet;

D - a personal interview with the Selection Committee.

This is a special selection course. The Selection Committee will interview applicants who have completed the preliminary entrance requirements and will select students on the basis of preparation, motivation and maturity.

Mature Student Admission. Mature students may submit other academic equivalents, including G.E.D. standing (scores on each of the five tests must be 41 or higher) or successful completion of one of English 100, 101, 190, or Adult English I and II and one of Mathematics 100, 101, 190, or Practical Mathematics-Elementary/Junior High Level. Mature students must also meet requirements (B), (C), and (D) above and be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

EMPLOYMENT POTENTIAL
Many graduates have been accepted into management training programs with department stores, banks, insurance companies and financial institutions. Graduates interested in accounting have found work in federal and provincial finance and taxation departments. Others have found rewarding careers in small businesses. Some graduates have even gone on to start their own enterprises.

Please see the Business Administration Integrated course brochure for further information on transfer of credit to university and certified accounting programs.

COURSE OUTLINE
YEAR I
Term 1
B13-I800 Business Mathematics
B13-I801 Introduction To Business
B14-M111 Marketing I
R01-B001 Study Skills
R01-B002 Communications
R01-B003 Professional Development
R01-B004 Supplementary Instruction

Term 2
B12-B111 Economics I
B13-R713 Business Mathematics
B14-M122 Marketing II
R01-B002 Communications
R01-B003 Professional Development
R01-B004 Supplementary Instruction

Term 3
B11-A193 Intro Accounting A
B12-E212 Economics II
B13-I804 Human Behaviour In Organizations
B16-E131 Oral Communications
R01-B004 Supplementary Instruction

YEAR 2
Term 4
B11-A293 Intro Accounting B
B12-E313 Economics III
B13-I803 Financial Mathematics
B16-E231 Basic Business Communications
R01-B004 Supplementary Instruction

Term 5
B11-A393 Intro Accounting C
B13-R703 Financial Mathematics
B15-S602 Intro To Data Processing
B16-E314 Report Writing
R01-B004 Supplementary Instruction

Term 6
B13-I805 Statistics I
B15-S503 Computer Applications In Business
R01-B004 Supplementary Instruction

plus three electives, one each from Terms 7, 8 and 9

YEAR 3
Term 7
Compulsory subjects
B12-L360 Business Law
B13-R707 Statistics II
Students will elect four of the following subjects:
B11-A491 Intermediate Accounting A
B11-A492 Microcomputer Accounting Applications
B12-E472 International Economics & Business
B13-S501 Psychology

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Term 8

Compulsory subjects:
B12-P555 Entrepreneurship
B13-M624 Politics and Government in Canada

Students will elect four of the following subjects:
B11-A505 Cost Accounting A
B11-A591 Intermediate Accounting B
B12-E471 Economic Issues in Canada
B12-L468 Business Law II
B13-M613 Personnel Studies
B13-R701 Production Management
B13-R705 Quantitative Methods
B13-R709 Securities Investment
B13-S544 Sociology
B14-R601 Merchandising
B14-R602 Marketing Research

Term 9

Compulsory subjects:
B12-P666 Entrepreneurship Practicum
B13-M602 Management

Students will elect four of the following subjects:
B11-A605 Cost Accounting B
B11-A691 Intermediate Accounting C
B12-E580 Industrial Relations
B12-E675 Manitoba Economic Perspectives
B12-I491 Risk And Insurance
B13-M614 Canadian Real Estate
B13-M616 Credit Management
B13-M623 Cooperative Enterprise
B13-S515 Contemporary Social Issues In Canada
B14-A501 Advertising
B14-A502 Retail Financial Management
B15-S601 Microcomputer Data Base

*Please note that not all elective subjects listed are offered each year.

SUBJECT DESCRIPTIONS
B13-I800 BUSINESS MATHEMATICS
The general objective of the course is to ensure that students develop the mathematical skills necessary to handle basic quantitative material in Financial Mathematics, Statistics, Economics, Accounting, Real Estate and Finance courses.

B13-I803 FINANCIAL MATHEMATICS
The application of mathematics to practical business problems dealing with compound interest, installment payments, annuities, sinking funds, present values, evaluations of bonds.

R01-B001 STUDY SKILLS
Assists students to develop effective methods of studying, reading a textbook, taking notes, preparing for examinations and managing their time so as to be successful in the college.

R01-B002 COMMUNICATIONS
Identifies and provides remediation for reading and writing problems. Exercises are provided to increase reading speed, comprehension and vocabulary. Time is spent on logical reasoning and in the reading lab.

R01-B003 PROFESSIONAL DEVELOPMENT
Students learn self-assessment and develop professional behaviours. Topics include goal setting, stress and time management, communications, confidence building, problem solving, values awareness and group development. Participation is essential.

R01-B004 SUPPLEMENTARY INSTRUCTION
A process designed to broaden the student's knowledge base and enhance their learning in the college credit courses. Provides review, discussion, clarification, small-group work and testing for students.

All other subject descriptions for this course can be found under Business Administration Subject Descriptions, pages 80 - 83. Please note that the subjects listed below have different subject numbers.

B11-A193 INTRO ACCOUNTING A; see Business Administration B11-A191.

B11-A293 INTRO ACCOUNTING B; see Business Administration B11-A291.

B11-A393 INTRO ACCOUNTING C; see Business Administration B11-A391.

B12-B111 ECONOMICS 1; see Business Administration B12-B117.

B12-E212 ECONOMICS II; see Business Administration B12-E272.

B12-E313 ECONOMICS III; see Business Administration B12-E373.

B13-I801 INTRODUCTION TO BUSINESS; see Business Administration B13-M612.

B13-I804 HUMAN BEHAVIOUR IN ORGANIZATIONS; see Business Administration B13-S513.

B13-I805 STATISTICS 1; see Business Administration B13-R706.

B14-M111 MARKETING I; see Business Administration B14-M101.

B14-M122 MARKETING II; see Business Administration B14-M202.

B15-S602 INTRO TO DATA PROCESSING; see Business Administration B15-S301.
PURPOSE
To develop typing and office-related skills (and possible additional skills in accounting, machine transcription, data entry and/or word processing).

COURSE
Business Skills Integrated is a ten-month certificate course with an August entry date. The course is designed to prepare students for employment as receptionists, clerk-typists, dicta-typists or as stenographers or bookkeepers, through the development of typing, filing, shorthand, bookkeeping, machine-transcription and related business skills. The extent of skills developed will vary from student to student, depending on motivation and abilities.

ENTRANCE REQUIREMENTS
- Grade 8 or G.E.D. standing (standard score of 41 on each sub-test);
- basic skills in spelling, grammar and language usage

EMPLOYMENT POTENTIAL
Graduates of this course have found employment as clerks, typists and receptionists.

COURSE OUTLINE
B18-W535  Word Processing - Practical
B35-1303  Maths/Machines
B35-1304  Office Procedures
B35-1401  Filing
B35-1414  Business Communications
B35-1534  Advanced Typing (optional)
B35-1603  Intermediate Typing
B35-1802  Introductory Typing

SUBJECT DESCRIPTIONS

B35-1802  INTRODUCTORY TYPING
Subject description is unavailable at this time.

B18-W535  WORD PROCESSING - PRACTICAL
This course is designed to familiarize the student with the basic operations of a screen-based word processor. The following topics are covered: keyboarding, formatting, editing, locating, printing, filing, and merging forms with variables.

B35-1303  MATHS/MACHINES
Subject description is unavailable at this time.

B35-1304  OFFICE PROCEDURES
Subject description is unavailable at this time.

B35-1401  FILING
Subject description is unavailable at this time.

B35-1414  BUSINESS COMMUNICATIONS
Subject description is unavailable at this time.

B35-1534  ADVANCED TYPING (optional)
Subject description is unavailable at this time.

B35-1603  INTERMEDIATE TYPING
Subject description is unavailable at this time.
BUSINESS TEACHER EDUCATION

PURPOSE
To develop teaching and technical skills in general business practices and in an area of specialization selected from options of marketing, accounting or secretarial.

COURSE
Business Teacher Education is a four-year Red River Community College and University of Manitoba Integrated Bachelor of Education degree program with a September entry date. Emphasis is directed at developing your knowledge and skills in the areas of general business and the area that you select from the specializations of marketing, accounting or secretarial. The program will assure you that you have knowledge in business skills and educational methods.

ENTRANCE REQUIREMENTS
- 20 high school credits (Manitoba Grade 12 or equivalent high school preparation) with English 300, Mathematics 300 or 301. A minimum of three subjects must be at the 300 (academic preparation) level;
- a minimum typing speed of 25 w.p.m.

Mature Student Admission. Mature students may submit either a Manitoba Education Grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits. Mature students are strongly advised to include formal course work in mathematics and English at the 300 or 301 level as part of their preparation for College. Applicants applying for admission as mature students must be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Department Head, Teacher Education, for review.

EMPLOYMENT POTENTIAL
After successful completion of this program, you will be eligible to teach in the secondary schools in Manitoba. The majority of job opportunities are available in rural areas of the province.

COURSE OUTLINE
First Year - Red River Community College

Term 1
B22-B110 Shorthand I (optional)
B22-B112 Keyboarding & Basic Formatting
B22-B116 Fundamentals of Accounting
B22-B120 Data Processing I
B22-B208 Business Organization & the Consumer
B22-M102 Marketing (optional)

Term 2
B22-B113 Keyboarding & Advanced Formatting
B22-B205 Management Accounting Systems
B22-B220 Data Processing II
B22-T111 Seminar & School Experience

Term 3
B22-T111 Seminar & School Experience
B23-W102 Cooperative Business/Industrial Education

Second Year - University of Manitoba

Third Year - Red River Community College

Term 4
B22-B209 Intermediate Accounting
B22-B222 Records Management
B22-E204 Educational Testing & Evaluation
B22-E213 Methods of Teaching Basic Business

Term 5
B22-B210 Intermediate Accounting II (optional)
B22-E203 Course Development in Business Education
B22-E209 Methods of Teaching Retailing (optional)
B22-E212 Teaching Typewriting & Office Systems Management
B22-E220 Methods of Teaching Data Processing & Accounting
B22-E222 Comparative Shorthand Systems (optional)

Term 6
B22-T211 Student Teaching

Fourth Year - University of Manitoba

Please note that the Course Outline above and the Subject Descriptions below include Red River Community College subjects only. For further information on the University of Manitoba subjects, please see the Business Teacher Education course brochure.

SUBJECT DESCRIPTIONS

B22-B110 SHORTHAND I
A course introducing elementary principles and practices in Pitman shorthand with daily instruction in recording, writing and transcription.

B22-B112 KEYBOARDING AND BASIC FORMATTING
Basic fundamentals and techniques in keyboard learning are stressed and speed in straight copy ranges from 30-40 w.p.m. Production of letters, tables and manuscripts in basic styles is required at specific speeds.

B22-B113 ADVANCED FORMATTING
Skill building in straight copy is continued as well as further instruction in more complicated styles of letters, tables and manuscripts. Speed requirements in both areas are increased and straight copy speed is increased to 50-60 w.p.m. The course also includes modules in word processing and dictaphone. Pre-requisite: B22-B112.

B22-B116 FUNDAMENTALS OF ACCOUNTING
An introductory course in financial accounting including the accounting cycle and preparation of financial statements. Assets, liabilities, owners' equity, and forms of business organization are introduced.

B22-B210 DATA PROCESSING I
A general overview of the development of business data processing dealing with hardware, software, data communications, internal architecture, and information systems. A series of BASIC programs using loops, decisions and sequential files, and assignments using the basic functions of word processing, data base and spreadsheet business software will be completed on a microcomputer.

B22-B205 MANAGEMENT ACCOUNTING SYSTEMS
The role of accounting systems, mathematical models and com-
puter software in the creation and application of the information required for the planning and controlling of the business operation. The topics include accounting information systems and controls, manufacturing and cost accounting, profit planning and operational budgeting, and investment decisions and capital budgeting.

B22-B208 BUSINESS ORGANIZATION AND THE CONSUMER
A broad analysis of business concepts, functional internal characteristics of business, the interrelationships of business, government and consumers and discussion of consumer decision making.

B22-B209 INTERMEDIATE ACCOUNTING I
Involves accounting information useful in decision making with a review of all accounting procedures. The course includes an in-depth study of the principles and techniques as applied to cash, temporary investments, receivables and fixed assets. Prerequisite: Grade of C in B22-B2116. (Equivalent to 9.201 in Faculty of Management, University of Manitoba.)

B22-B210 INTERMEDIATE ACCOUNTING II
Includes an in-depth study of accounting principles and techniques as applied to long-term investments, inventories, general problems, flow matching and estimation procedures, and intangible assets. The course also deals with accounting for corporations. Prerequisites: Grade C in B22-B209.

B22-B220 DATA PROCESSING II
An introduction to business data processing including the design of business systems and information systems, the structure of data files, and the utilization of microcomputer word processing, data base, spreadsheet and accounting software for business applications. Prerequisite: B22-B120 or equivalent.

B22-B222 RECORDS MANAGEMENT
Technological changes have impacted greatly on the creation, content and dissemination and retention of information. Records Management deals extensively with each of these areas. Current technology is used to develop systems to integrate all of these elements which make up an effective records management program.

B22-E203 COURSE DEVELOPMENT IN BUSINESS EDUCATION
Development of an orderly procedure for the identification of concepts and instruction units to be used in teaching. The culminating project will be a course outline involving analysis of content, instructional objectives, resource units and sample tests.

B22-E204 EDUCATIONAL TESTING AND EVALUATION
Construction, administration and evaluation of tests. Methods of evaluation of student progress during the school year. Mastery of the statistical analysis necessary for testing and evaluation.

B22-E209 METHODS OF TEACHING RETAILING
An introduction to the principles and practices of directing learning in marketing education. Examination and assessment of various methods and techniques used in marketing education. Examination and evaluation of various marketing education programs.

B22-E212 TEACHING TYPWRITING AND OFFICE SYSTEMS MANAGEMENT
Preparation for instruction in typewriting with emphasis on development of resources, evaluation in relation to psychomotor domain. Research will be conducted on office systems and its implication for classroom-teaching procedures. Includes word processing and the automated office.

B22-E213 METHODS OF TEACHING BASIC BUSINESS
Preparation to teach basic business, economics and law. Evaluation of various methods, teaching aids and objectives. Micro-teaching is also a part of this subject.

B22-E220 METHODS OF TEACHING DATA PROCESSING AND ACCOUNTING
The preparation to teach accounting and data processing using high school curriculum guides and texts to determine the content and resources, and plan instructional techniques and objectives. The use of accounting, data base and spreadsheet microcomputer applications software will be emphasized. Prerequisite: B22-B116 and B22-B120 or equivalents.

B22-E222 COMPARATIVE SHORTHAND SYSTEMS
This course prepares student teachers to instruct in three shorthand systems authorized in the public schools. Basic methods will be adaptable to all three systems. Students will be given the opportunity to compare the systems and teach theory and use speed-building strategies applicable to any system.

B22-M102 MARKETING
This subject is designed to give students an introduction to the fundamentals of marketing. It will serve two types of students. The first group will be those students who are marketing majors who will use the course as a foundation upon which further study can be based. The second group will be the accounting majors for whom this will probably be the only marketing subject they will take.

B22-T111 SEMINAR AND SCHOOL EXPERIENCE
A period of student involvement in actual classroom practice. Students will be assigned to an experienced teacher in the public school to observe and participate in teaching activities. Informative conferences will be arranged to assist and evaluate the student in his or her student teaching period.

B22-T211 STUDENT TEACHING
A continuation of B22-T111 with less emphasis on observation and more overall teaching responsibilities including planning, classroom management, evaluation, and extracurricular activities.

B23-W102 COOPERATIVE BUSINESS/INDUSTRIAL EDUCATION
A special program designed to provide educational experiences relevant to Business Teacher Education students in an business environment. The experience will involve as many aspects of the concerned business as possible. The program will be individualized according to a student's background, and a project summarizing the student activities will be a major requirement.
CARPENTRY AND WOODWORKING

PURPOSE
To develop knowledge and skills to enter the carpentry trade; to convey a sound knowledge of woodworking machines and safe working practices; to familiarize the student with materials and procedures needed to enter related occupations such as cabinet making, furniture making, forming and sales.

COURSE
Carpentry and Woodworking is a ten-month certificate course with a September entry date. The course has been designed to develop the basic skills of carpentry and woodworking required to enter an apprenticeship program in carpentry.

The aim of the course is two-fold. Students just starting in the trade can, after completing the course successfully, enter the apprenticeship program. Students who have worked previously in the trade, and have the required practical experience, can apply on graduation to write the Provincial Examination under the Apprenticeship and Tradesmen's Qualification Act.

ENTRANCE REQUIREMENTS
- 7 high school credits (Manitoba Grade 10 or equivalent secondary school preparation) with Mathematics 100 or 101 and Science 100 or 101; English 100 or 101 is strongly recommended; or
- Adult Basic Education 7-10 Program completion.

Mature Student Admission. Mature student applicants may submit other educational equivalents, including G.E.D. standing (scores on each of the five tests must be 41 or higher), in lieu of 7 credits; however, they must have successfully completed one of Mathematics 100, 101, 190, or Practical Mathematics - Elementary/Junior High Level and one of Science 100, 101, or 190. Mature students must also be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

EMPLOYMENT POTENTIAL
Past employment records show a high percentage of graduates are working in course-related fields all across Canada. Opportunities have been found in commercial construction, housebuilding, factories, or cabinet-making shops. Almost all graduates choose to enter the apprenticeship program. Graduates who reach journeyman apprenticeship level may progress to foremen, supervisors, building inspectors, draftspersons, estimators, superintendents or specialists in related fields.

For further information on apprenticeship and possible transfer of credit, please see the Carpentry and Woodworking course brochure.

COURSE OUTLINE
Term 1
T02-C001 Handtools, Theory
T02-C002 Handtools, Practical
T02-C003 Woodworking Machines, Theory
T02-C004 Woodworking Machines, Practical
T02-C005 Concrete Form Construction, Theory
T02-C006 Concrete Form Construction, Practical

T02-C007 General Framing, Theory
T02-C008 General Framing, Practical
T02-C009 Equal Pitch Roofing, Theory
T02-C010 Equal Pitch Roofing, Practical
T02-C011 Stairs, Theory
T02-C012 Stairs, Practical
T02-C013 Finishing, Theory
T02-C014 Finishing, Practical
T02-C015 Cabinet Work, Theory
T02-C016 Cabinet Work, Practical
T02-C019 Surveying, Theory
T02-C020 Surveying, Practical
T02-C021 Estimating, Theory
T02-C022 Estimating, Practical
T02-C023 In-Industry Work Experience
T02-P501 Wood Finishing, Theory
T02-P502 Wood Finishing, Practical
T03-R011 Blue Print Reading And Sketching For Carpentry
T13-M512 Carpentry Math
T13-S512 Carpentry Science
T14-C504 Communication

SUBJECT DESCRIPTIONS
T02-C001 HANDTOOLS, THEORY
Measuring tools, layout tools, testing tools, sawing tools, bench and special planes, edge cutting tools, boring tools, fasteners: nails, screws, smoothing tools.

T02-C002 HANDTOOLS, PRACTICAL
Practical use of all tools in projects such as woodworking joints, coping mouldings, quarter round, brackets, drawers. Sharpening handsaws, chisels and plane blades.

T02-C003 WOODWORKING MACHINES, THEORY
General safety rules, operations and maintenance of the following: tablesaw, radial arm saw, bandsaw, jigsaw, jointer, planer, shaper, mortiser, tenoner, wood lathe, sanding machines, portable power tools, power-actuated tools.

T02-C004 WOODWORKING MACHINES, PRACTICAL
Sharpening circular saw blades, layout shop drawings, prepare bits of material; layout, machining and assembling check rail window, door frame, cut wedges, make mouldings, cabriole legs, practice with operation of stationary and portable machines.

T02-C005 CONCRETE FORM CONSTRUCTION, THEORY
Footing, foundation walls for single and multiple-dwelling units, concrete slabs, sidewalk steps, piles, columns, beams, ceilings and the stripping of forms.

T02-C006 CONCRETE FORM CONSTRUCTION PRACTICAL
Construct model basement forms, projects working with beam, column and slab construction, wall construction using wood and metal forms; curb forms, teleport pedestal forms, rough bucks.

T02-C007 GENERAL FRAMING, THEORY
Basic principles of framing procedures: one storey house, ballon framing, procedures for framing opening for doors, windows, stairs, etc., basic principles involving wooden members in masonry buildings, insulation, building papers, vapour barriers.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>T02-C008</td>
<td>GENERAL FRAMING, PRACTICAL</td>
<td>Models of single and two-storey house, framing of cottage or garage full-size complete with all partitions, blocking, backing etc.</td>
</tr>
<tr>
<td>T02-C009</td>
<td>EQUAL PITCH ROOFING, THEORY</td>
<td>Types of roofs: flat roofs, gable roofs, equal pitch hip roof, equal pitch intersecting hip roofs.</td>
</tr>
<tr>
<td>T02-C010</td>
<td>EQUAL PITCH ROOFING, PRACTICAL</td>
<td>Model roof framing, actual-size project using all necessary rafters in the roof, both gable and hip roofs, complete with dormers, snub gables, soffits and facia boards.</td>
</tr>
<tr>
<td>T02-C011</td>
<td>STAIRS, THEORY</td>
<td>Basic types of stairs, mathematical terms and calculations, building code requirements, simple, straight stairs, mitered and housed stringers, handrails.</td>
</tr>
<tr>
<td>T02-C012</td>
<td>STAIRS, PRACTICAL</td>
<td>Model of straight flight of basement stairs; flight with one housed and one mitered string, complete with handrail, balusters and newel posts; flight of winders; concrete stair forms.</td>
</tr>
<tr>
<td>T02-C013</td>
<td>FINISHING, THEORY</td>
<td>Siding, cornices, door and window trim, inside and outside doors, closets, baseboards, feature walls, tile ceilings, etc.</td>
</tr>
<tr>
<td>T02-C014</td>
<td>FINISHING, PRACTICAL</td>
<td>Installation of interior and exterior doors, windows, pocket doors, bypass doors, bifold doors; application of sidings and exterior trim, application of interior trim.</td>
</tr>
<tr>
<td>T02-C015</td>
<td>CABINET WORK, THEORY</td>
<td>Shop layouts, billing of material, kitchen cabinets, book shelves, vanity sets, furniture, wood bending, veneering, wood finishing and history of furniture.</td>
</tr>
<tr>
<td>T02-C016</td>
<td>CABINET WORK, PRACTICAL</td>
<td>Kitchen cabinets and vanities, complete with hardware and laminate tops.</td>
</tr>
<tr>
<td>T02-C019</td>
<td>SURVEYING, THEORY</td>
<td>Familiarization with the builder's level and transit to check elevations and to lay out building lines.</td>
</tr>
<tr>
<td>T02-C020</td>
<td>SURVEYING, PRACTICAL</td>
<td>Practice with layout of buildings, both commercial and housing, shooting of elevations.</td>
</tr>
<tr>
<td>T02-C021</td>
<td>ESTIMATING, THEORY</td>
<td>Take-off quantities of material, cost of material and layout, sub-trades, simple business procedures.</td>
</tr>
<tr>
<td>T02-C022</td>
<td>ESTIMATING, PRACTICAL</td>
<td>Preparation of estimates for a garage and a small one storey-house.</td>
</tr>
<tr>
<td>T02-C023</td>
<td>IN-INDUSTRY WORK EXPERIENCE</td>
<td>The students will receive first-hand knowledge of their chosen occupation.</td>
</tr>
<tr>
<td>T02-P501</td>
<td>WOOD FINISHING, THEORY</td>
<td>Hardwood, open grain, hardwood close grain, soft woods, oil stains, spirit stains, water stains, chemical stains.</td>
</tr>
<tr>
<td>T02-P502</td>
<td>WOOD FINISHING, PRACTICAL</td>
<td>Stripping, repairing, and refinishing furniture.</td>
</tr>
<tr>
<td>T03-R011</td>
<td>BLUE PRINT READING AND SKETCHING FOR CARPENTRY</td>
<td>Drawing interpretation and preparation as applied to the carpentry trade.</td>
</tr>
<tr>
<td>T13-M512</td>
<td>CARPENTRY MATH</td>
<td>Fractions, decimals, percent, board measure, area, rectilinear, square root circular measurement, ratio and proportion, volume, cylinder, cones, pyramids.</td>
</tr>
<tr>
<td>T13-S512</td>
<td>CARPENTRY SCIENCE</td>
<td>Study of wood — general information, classification, structure types, seasoning, sawing, grain defects, preserving, plywood and grades. Timber Fasteners — holding power, types of nails, application. Abrasive — types, sizing, use, basic elements. Insulation and heat loss fundamentals — methods of heat transfer and loss from buildings, new method of rating and identifying insulation, different building materials and types of construction, general classes and types, application, vapour barriers, causes of condensation, cures.</td>
</tr>
<tr>
<td>T14-C504</td>
<td>COMMUNICATION</td>
<td>A self-paced practical course that develops communications skills from four viewpoints: job-seeker, employee, junior supervisor, small business owner. The course is tailored to fit the needs of individual students and the requirements of the Advisory Boards.</td>
</tr>
</tbody>
</table>
CHEF TRAINING

PURPOSE
To develop the skills and related requirements for advanced food preparation and supervision of staff.

COURSE
Chef Training is a nine-month certificate course with an August entry date. The course has been designed to develop basic management capability and to provide training in advanced cooking skills. The curriculum is delivered on a competency-based learning (CBL) basis. CBL is a modularized approach to learning which allows a moderate degree of self-pacing. It requires initiative in planning a study schedule, completing requirements in a reasonable time, and in managing time wisely and effectively to meet self-imposed deadlines.

ENTRANCE REQUIREMENTS
A - 7 high school credits (Manitoba Grade 10 or equivalent secondary school preparation) with English 100 or 101, Mathematics 100 or 101, and Science 100 or 101;
or
- Adult Basic Education 7-10 program completion;
and
B - completion of a basic cooking course (eg. Commercial Cooking) or a minimum of two years of general, comprehensive cooking experience in the industry;
and
C - successful completion of the prescribed, written achievement test, and/or a personal interview;
and
D - submission of recent X-ray, medical, and dental certificates attesting to good health (required after an applicant receives notice of acceptance).

Although a selection committee is not a standing requirement, most applicants will be asked to attend an orientation and interview.

Mature Student Admission. Mature student applicants may submit other educational equivalents, including G.E.D. standing (scores on each of the five tests must be 41 or higher), in lieu of 7 credits; however, they must have successfully completed one of English 100, 101 or 190; one of Mathematics 100, 101, 190, or Practical Mathematics-Elementary/Junior High Level; and one of Science 100,101 or 190. Mature students must also meet entrance requirements (B), (C), and (D) above and be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

EMPLOYMENT POTENTIAL
Graduates have found employment in hotels, restaurants, private clubs and resorts, and in institutions and catering companies. Statistics indicate that Chef Training graduates generally earn a higher hourly rate than cooking course graduates who have not taken this course.

COURSE COMPETENCIES
B09-0N01 Analyze Business Transactions and Their Effects on Financial Statements
B09-0N02 Record Basic Accounting Entries; Take a Trial Balance
B09-0N07 Demonstrate Knowledge of Broad Principles of Internal Control and Specific Procedure for Internal Cash Control
B09-0N03 Fulfill Duties of Petty Cashier; Account for Establishing & Replenishing Petty Cash Fund
B09-0N09 Prepare a Bank Reconciliation & Make Correcting Journal Entries
B09-0N14 Calculate & Record Payroll
B09-0N15 Initiate & Employ a Payroll Application
B09-0Z00 Describe Human Factors in the Work Environment
B09-0Z01 Define Purpose of Understanding Human Behavior
B09-0Z02 Understand Perceptual Systems
B09-0Z03 Describe the Dynamics of Small Groups
B09-0Z04 Demonstrate Understanding of Motivation
B09-0Z05 Apply the Principles of Organization
B09-0Z06 Describe Leadership Skills & Leadership Challenges
B09-0Z07 Describe a Humanized Work Place (Morale)
B09-0Z08 Describe Dynamics of Change in a Work Environment
B09-0Z09 Identify Equal Employment Opportunities
B09-0Z10 Develop Appropriate Personal Attitude to Survive in the Organization

B30-A305 Nutrition
B33-BX01 Practical I
B33-BX02 Practical II
B33-DX01 Practical Pastry
B33-DA01 Demonstrate Chef Training Prerequisites
B33-DA02 Explain Basic Sanitation Principles & Procedures
B33-DA03 Explain Basic Kitchen Safety Rules & Procedures
B33-DA04 Explain Safe & Efficient Use of Kitchen Equipment
B33-DB01 Demonstrate Food Preparation Skills
B33-DB02 Demonstrate Food Preparation Skills
B33-DB03 Identify Elements Essential to Food Products
B33-DB04 Identify Elements Essential to Food Products
B33-DB05 Prepare Soups
B33-DB06 Cook Vegetables, Rice, Pasta & Dumplings
B33-DB07 Cook Meat, Fish & Poultry
B33-DB08 Debone, Cut & Portion Meat, Fish & Poultry
B33-DB09 Describe Preparation of Typical Breakfast Items
B33-DB10 Describe the Use of Dalry Products
B33-DB11 Prepare Coffee & Tea
B33-DC01 Prepare a Selection of Dishes as per Menu
B33-DD01 Prepare Food & Beverage in Dining Room
B33-DD02 Explain Dining Room Sanitation Principles
B33-DD03 Explain Dining Room Safety Procedures
B33-DD04 Prepare For Service
B33-DD05 Serve Customer
B33-DE01 Identify Baking Ingredients
B33-DE02 Prepare Yeast & Raised Goods
B33-DE03 Prepare a Variety of Pastries
B33-DE04 Prepare Cakes, Sweets & Desserts
B33-DF01 Describe Elements of Cost Control of Kitchen Management
B33-DF02 Describe Elements of Cost Control of Kitchen Management
B33-DF03 Identify Purchasing Criteria for Food
B33-DF04 Describe Receiving, Storing & Issuing Procedures
B33-DF05 Calculate Recipe Costs, Portion Costs, etc.
B33-0G00 Prepare Garde Manger Items
B33-0G01 Prepare Sandwiches
B33-0G02 Prepare Salads & Dressings
B33-0G03 Prepare Appetizers
B33-0G04 Buffet Preparation & Services
B33-0H00 Explain Management of Human Resources
B33-0H01 Describe Basic Concepts of Personnel Management
B33-0H02 Perform Job Analysis/Description/Specification
B33-0H03 Recruit & Select Employees
B33-0H04 Explain Hotel/Restaurant Training & Development
B33-0H05 Evaluate Employee Performance
B33-0H06 Explain Factors Affecting Labour Costs
B33-0I00 Design Menu & Kitchen Layout
B33-0I01 Develop Menu
B33-0I02 Design Layouts of Kitchen Equipment

SUBJECT DESCRIPTIONS

Please note that because the competencies listed above are self-explanatory, no subject descriptions are required for those skill areas. Descriptions are included only for the subject numbers listed below.

B30-A305 NUTRITION
Basic nutritional requirements and consideration of nutritional factors as they pertain to menu planning and the application of diet foods on commercial menus.

B33-BX01 PRACTICAL I
A practical mid-term test of cooking skills.

B33-BX02 PRACTICAL II
A practical final test of cooking skills.

B33-DX01 PRACTICAL PASTRY
A practical test of baking skills.
PUPPOSE
To develop the knowledge and skills required to provide quality child care in the community.

COURSE
Child Care Services is a two-year diploma course with a September entry date. The goals of the course are to prepare students to support children and families in group care settings. Graduates competently plan appropriate learning experiences that stimulate the intellectual, physical, emotional and social development of young children.

The major part of the course curriculum is delivered on a competency-based-learning (CBL) basis. CBL is a modularized approach to learning which allows a moderate degree of self-pacing. It requires initiative in planning a study schedule, completing requirements in a reasonable time, and in managing time wisely and effectively to meet deadlines.

ENTRANCE REQUIREMENTS
A - 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation) with 300 or 301 subjects inclusive. English 300 and Biology 300 or 301 are strongly recommended;

or

- Adult Basic education 11A, 11B, or 11C;

and

B - successful completion of the prescribed reading skills test at the minimum competency level required;

and

C - completion of the additional information sheets and submission of two letters of reference;

and

D - an orientation session with members of the Selection Committee*;

and

E - good health.** Immunizations are required of all students and must commence as indicated upon notification of acceptance into the program.

*Applicants may be required to attend an individual interview with the Selection Committee, as well as the general orientation session.

**The Selection Committee may require an applicant to submit medical certificates (including dental and chest X-ray) verifying good health and freedom from communicable disease.

Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits. A specific background in English and biology, as noted in (A) above, is recommended. As well, mature students must meet entrance requirements (B) through (E) and be 20 years of age on or before September 30 in the year of registration.

EMPLOYMENT POTENTIAL
Opportunities for employment are expanding as society's need for child care increases. Graduates have found positions in day care centres, nursery schools, infant centres and in school-age programs. With experience and continuing education, some graduates have progressed to positions as directors of children's centres.

For further information on transfer of credit, please see the Child Care Services course brochure.

Please note that as of October, 1991 diploma status is required for classification as a Child Care Worker Level II. The Provincial Day Care Regulations stipulate that two-thirds of all staff in full-time Manitoba day care centres must be at that level.

COURSE COMPETENCIES
Year I
H06-C123 Practicum 1
H06-C122 Integration Seminar 1
H06-C224 Practicum 2
H06-C221 Integration Seminar 2
H06-C320 Practicum 3
H06-C322 Integration Seminar 3
H06-C104 Personal Development
H06-0A31 Explain the Continuum of Human Development
H06-0A32 Foster Development of the Infant
H06-0A33 Foster Development of the Toddler
H06-0A34 Foster Development of the Preschool Child
H06-0B31 Respect Children's Culture
H06-0B32 Report Suspected Cases of Abuse
H06-OC31 Use Basic Writing Skills
H06-OC32 Write Observation Reports
H06-OC33 Demonstrate Interpersonal Skills and Self Understanding
H06-0D31 Provide Nurturing Care
H06-0D32 Act as a Role Model
H06-0D33 Communicate with Children
H06-0D34 Provide Guidance and Discipline
H06-0D35 Guide Routines and Transitions
H06-0D36 Guide Children's Expression of Emotion
H06-0D37 Foster Social Interaction and Growth
H06-0E31 Prevent Accidents
H06-0E32 Respond to Emergencies
H06-0F31 Follow Health Regulations
H06-0F32 Identify Childhood Diseases and Illness
H06-0F33 Administer Medications
H06-0G31 Identify Activity Areas and Their Components
H06-0G32 Select Equipment and Play Materials
H06-0K31 Explain the Program Development Process
H06-0J31 Guide Play Indoors and Outdoors
H06-0J32 Facilitate Play
H06-0K31 Set Out Steps in Planning a Curriculum
H06-0K32 Set Goals and Objectives
H06-0K33 Plan Activities
H06-0L31 Provide Art Experiences
H06-0L32 Provide Literature Activities
H06-0L33 Provide Group Time Activities
H06-0L34 Provide Music Activities
H06-0L35 Provide Drama Activities
H06-0L36 Provide Science Activities
H06-0L37 Provide Outdoor Activities
H06-0M31 Use Materials and Equipment
H06-0N31 Relate to Individual Family Situations
H06-C104 PERSONAL DEVELOPMENT

This subject assists students to develop skills and attitudes applicable to college life and personal growth. It stresses the importance of physical activity for a healthy lifestyle.

H06-C122 INTEGRATION SEMINAR 1

This seminar provides the student with information on what to expect and how to conduct themselves in the children's centres of Practicum I. Using various group process strategies, the student integrates the theory which they have learned to date with their own experiences in a children's centre.

H06-C123 PRACTICUM 1

This practicum provides the student with the opportunity to visit a variety of children's centres in Winnipeg, to become familiar with the many types of child care available. The student integrates theory and practice by applying the principles of child development and guidance of children to actual procedures according to the philosophy of the centres visited.

H06-C221 INTEGRATION SEMINAR 2

This seminar assists students to integrate the theory which they have learned to date with their own experiences in a preschool centre. Various group process strategies such as roleplays, presentations, simulations and group discussions are used to encourage critical thinking, analysis and interaction.

H06-C224 PRACTICUM 2

During this practicum, the student spends one half day per week at the same preschool children's centre. The student integrates theory and practice by applying the principles of child development, guidance of children and activity planning to actual procedures according to the philosophy of the centre.

H06-C320 PRACTICUM 3

This practicum is a three-week block placement at one preschool children's centre. The student is expected to assume more responsibility for integrating theory and practice by applying the principles of child development, guidance of children and activity planning in the development of competent child care skills.

H06-C322 INTEGRATION SEMINAR 3

This seminar assists students to integrate theory which they have learned to date with their own experiences in a preschool centre. Various group process strategies such as roleplays, simulations and discussions are used to encourage critical thinking, analysis, and class interaction.

H06-C433 PRACTICUM 4

This practicum provides three weeks of daily involvement with the same group of children at an assigned preschool centre. The student integrates theory and practice by applying the principles of child development, guidance of children, planning for activities and facilitating play, to actual interactions with children.

H06-C434 INTEGRATION SEMINAR 4

This seminar assists students to integrate theory learned to date with their own practicum experience. The effectiveness of guidance and behavior management techniques, activity planning, facilitation of play and communication skills are compared and evaluated using various group process strategies.
H06-C531 INTEGRATION SEMINAR 5
This seminar assists students to integrate theory learned to date with their own practicum experience. The unique needs of infants, school-age and special needs children, and how to plan for these needs within a children's centre, is a major focus of the seminar.

H06-C533 PRACTICUM 5
During this practicum, the student spends 1 1/2 days per week, for a period of 10 weeks at two different types of children's centres. The student selects the centres from a choice of infant, school-age or preschool day care with special needs children. The student integrates theory and practice by applying the principles of child development, guidance of children, planning for activities and facilitating play to actual procedures according to the type of centre and its philosophy.

H06-C631 INTEGRATION SEMINAR 6
This seminar assists students to synthesize theory learned to date with their final practicum experience. The effectiveness of guidance and behavior management techniques, activity planning, facilitation of play and communication skills are compared and evaluated using various group process strategies. In addition, professional behaviors, communication techniques for interactions with parents and colleagues and self evaluation of child care competencies are focused on.

H06-C634 PRACTICUM 6
This final practicum provides four weeks of daily involvement at children's centres selected according to the student's needs and interests. The student prepares for graduation integrating theory and practice by applying the principles of child development, guidance of children, activity planning, parent interactions and professionalism to their final practicum experience.
CHILD CARE SERVICES INTEGRATED

PURPOSE
To develop the knowledge and skills required to provide quality child care in the community.

COURSE
Child Care Services integrated is three-year diploma course with a September entry date. This integrated course is designed for applicants who do not meet the entrance requirements for the two-year Child Care Services course, and integrates required academic subjects to bring the student to an Adult 12 level. The modified pace allows additional time for meeting individual needs.

The goals of the course are to prepare students to support children and families in group care settings. Graduates competently plan appropriate learning experiences that stimulate the intellectual, physical, emotional and social development of young children.

The major part of the course curriculum is delivered on a competency-based-learning (CBL) basis. CBL is a modularized approach to learning which allows a moderate degree of self-pacing. It requires initiative in planning a study schedule, completing requirements in a reasonable time, and in managing time wisely and effectively to meet deadlines.

ENTRANCE REQUIREMENTS
A - 7 high school credits (Manitoba Grade 10 or equivalent secondary school preparation) with 100 or 101 subjects inclusive;
   or
   - Adult Basic Education 7-10 program completion, with supplemental communications modules;
   and
B - satisfactory results on a written test, administered by the college, which surveys basic skills in language usage, reading, and mathematics;
   and
C - completion of the additional information sheets;
   and
D - a personal interview with the Selection Committee*;
   and
E - good health **. Immunizations are required of all students and must commence as indicated upon notification of acceptance into the program.

Mature Student Admission. Mature students may submit G.E.D. standing (scores on each of the five tests must be 41 or higher) in lieu of 7 credits. Successful completion of English 100, 101, 190, or Adult English I and II is recommended as appropriate additional preparation. Mature students must also meet entrance requirements (B) through (E) and be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

*This is a special selection course. The Selection Committee will interview applicants who have completed the preliminary entrance requirements and will select students on the basis of preparation, motivation, maturity, and potential to work with children.

**Applicants may be required to submit medical certificates (including dental and chest x-ray) verifying general good health and freedom from communicable disease.

EMPLOYMENT POTENTIAL
Opportunities for employment are expanding as society's need for child care increases. Graduates have found positions in day care centres, nursery schools, infant centres and in school-age programs. With experience and continuing education, some graduates have progressed to positions as directors of children's centres.

For further information on transfer of credit, please see the Child Care Services Integrated course brochure.

Please note that as of October, 1991, diploma status is required for classification as a Child Care Worker Level II. The Provincial Day Care Regulations stipulate that two-thirds of all staff in full-time Manitoba day care centres must be at that level.

COURSE COMPETENCIES
Year 1
H06-D108 Reading and Study Skills
H06-D106 Writing Skills I
H06-D107 Speaking Skills I
H06-D206 Writing Skills II
H06-D207 Speaking Skills II
H06-D306 Writing Skills III
H06-C104 Personal Development
H06-D0A31 Explain the Continuum of Human Development
H06-D0A32 Foster Development of the Infant
H06-D0A33 Foster Development of the Toddler
H06-D0A34 Foster Development of the Preschool Child
H06-D0B31 Respect Children's Culture
H06-D0C32 Write Observation Reports
H06-D0D31 Provide Nurturing Care
H06-D0E31 Prevent Accidents
H06-D0E32 Respond to Emergencies
H06-D0F31 Follow Health Regulations
H06-D0F32 Identify Childhood Diseases and Illness
H06-D0F33 Administer Medications
H06-D0G31 Identify Activity Areas and Their Components
H06-D0N31 Relate to Individual Family Situations
H06-D0Q31 Explain the Child Care Profession

Year 2
H06-C123 Practicum 1
H06-C122 Integration Seminar 1
H06-C224 Practicum 2
H06-C221 Integration Seminar 2
H06-C320 Practicum 3
H06-C322 Integration Seminar 3
H06-C104 Personal Development
H06-D0B32 Report Suspected Cases of Abuse
H06-D0C31 Use Basic Writing Skills
H06-D0C33 Demonstrate Interpersonal Skills & Self-Understanding
H06-D0D32 Act as a Role Model
H06-D0D33 Communicate with Children
H06-D0D34 Provide Guidance and Discipline
H06-D0D35 Guide Routines and Transitions

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Please note that because the competencies listed above are self-explanatory, no subject descriptions are included for those skill areas.

For subject descriptions common to both Child Care Services and Child Care Services Integrated, please see Child Care Services Subject Descriptions, pages 94–95. The subject descriptions applicable to the integrated course only are listed below.

H06-D108 READING AND STUDY SKILLS
This subject is designed to improve reading comprehension along with developing study, test-writing, note-taking and critical thinking skills.

H06-D106 WRITING SKILLS I
This subject begins with a thorough review of basic grammar: subjects and verbs; phrases and clauses; co-ordination and subordination; sentence types; subject-verb agreement; verb tenses; shifts in number, person and tense; pronoun reference. Sentence writing is gradually introduced and is taught in conjunction with the above topics.

H06-D107 SPEAKING SKILLS I
This subject is a practical program which aims to develop the speaking skills needed by child care workers. The student will learn how to participate in a discussion, how to listen and how to present materials and ideas orally.

H06-D206 WRITING SKILLS II
This subject continues the review of basic grammar begun in Term 1: comma; colon; semi-colon; apostrophe; capitalization. Paragraph writing is introduced and is taught in conjunction with the above topics.

H06-D207 SPEAKING SKILLS II
This subject is a continuation of Speaking Skills (Term 2). Upon completion of this subject, the student will be able to prepare and deliver five-minute speeches on both child-care-related and non-child-care-related topics.

H06-D306 WRITING SKILLS III
This subject concludes the review of basic grammar begun in Term 1 (modification; parallel structure) and the paragraph writing begun in Term 2. It also deals with proofreading and report writing.
PURPOSE
To develop the knowledge and skills required for roadway and municipal services design, soil mechanics and hydraulics.

COURSE
Civil Engineering Technology is a two-year diploma course with a September entry date. The course is designed to develop the skills needed to assist engineers in the design and construction of municipal services and roadways, soil mechanics theory and testing, open channel flow hydraulics and hydrology, and the theory and use of photogrammetry.

ENTRANCE REQUIREMENTS
- 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation) with Mathematics 300, English 300 or 301, and Physics 300* or Physical Science 301;
- or
- Adult Basic Education Pre-Technology (Adult 12) program completion
* Physics 300 is strongly recommended as a more appropriate background for technology.

Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits; however, they must have specific credits in mathematics, English, and science as outlined above. Mature students must also be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

EMPLOYMENT POTENTIAL
Graduates have found employment with consulting engineering companies and various government departments and agencies in the design and construction of sewer and water projects, highway projects, and earth-retaining and hydraulic structures. Other graduates are employed in equipment and material sales and in the research and manufacture of construction-related products.

COURSE OUTLINE

Term 1
CIV-C162 Engineering Graphics
CIV-C165 Mechanics
CIV-C166 Surveying
CIV-M163 Introduction To Application Software
CIV-M169 Mathematics
CIV-R167 Communications

Term 2
CIV-C262 Engineering Graphics
CIV-C263 Computer Assisted Drafting I
CIV-C265 Strength Of Materials
CIV-C266 Surveying
CIV-M260 Introductory Calculus

CIV-M360 Calculus
CIV-M364 Statistics
CIV-R367 Specifications and Reports

Term 4
CIV-C461 Photogrammetry
CIV-C462 Roadway Design I
CIV-C468 Soil Mechanics
CIV-C469 Hydraulics
CIV-M460 Calculus

Term 5
CIV-C562 Roadway Design II
CIV-C564 Water Supply & Waste Disposal I
CIV-C567 Pavement Mix Design I
CIV-C568 Soil Mechanics II
CIV-C569 Hydrology

Term 6
CIV-C661 Terrain Interpretation
CIV-C664 Water Supply and Waste Disposal II
CIV-C666 Job Control and Estimating
CIV-C667 Pavement Mix Design II
CIV-C668 Stabilization

SUBJECT DESCRIPTIONS

CIV-C162 ENGINEERING GRAPHICS
Students will receive a basic understanding of technical drawing standards. They will be required to develop basic engineering drafting skills through practice in the use of drawing instruments, the interpretation of simple drawings and sketches, and the production and reproduction of simple components and mechanisms. Upon successful completion of this course, students will have obtained a thorough foundation in the fundamentals of engineering graphics, a basis upon which they may further develop their drafting skill and knowledge in their technology specialties.

CIV-C165 MECHANICS
This subject includes the following topics: 1) Basic Principles; 2) Resultant of Force Systems; 3) Equilibrium of Force Systems; 4) Centroid of Areas; 5) Moment of Inertia.

CIV-C166 SURVEYING
This subject consists of the theory and use of survey measuring instruments, the steel tape, engineer's level and transit and the basic techniques in the use of these instruments.

CIV-C262 ENGINEERING GRAPHICS
This course is a continuation of CIV-C162 Engineering Graphics, wherein the student's drafting skills and knowledge are further enhanced. Reference is made to national and local standards of drafting, and application is in terms of preparing drawings for a variety of Civil Engineering works, such as sewer and water supply projects, and highway design projects.

CIV-C263 COMPUTER ASSISTED DRAFTING I
This introduction to graphic computers and computer-aided drafting, involving geometric entities, input modes, coordinate types, drawing creation and manipulation, dimensioning, cell libraries (creation and usage), layers, bookkeeping functions, and output (plotting).
CIV-C265 STRENGTH OF MATERIALS
The first part of the course deals with problems relating to support and pin reactions in frames and trusses. The second part deals with stress and deformation of materials.

CIV-C266 SURVEYING
This subject consists of traverses and related calculations; systems of township layout and monumentation; the determination of areas and volumes of earthwork and field procedures.

CIV-C363 COMPUTER ASSISTED DRAFTING II
The introduction to more sophisticated software, named "Design Pro", includes use of menu options, directories, drafting mode, user work area, digitizers, function codes, grid and scale, keyboard coordinate entries, graphics commands, layers and pens, measures and drafting aids, introduction to 3-D, text editor, editing drawings, figures (cells), text, dimensioning and plotting.

CIV-C365 MECHANICS
This course deals with fluid statics, the stability of gravity and retaining walls, and graphical static solutions to simple frames.

CIV-C366 SURVEYING
This subject consists of: the field methods of laying out simple and vertical curves and calculations pertaining thereto; special problems in curves; methods of stadia; construction survey procedure.

CIV-C367 SURVEY CAMP
The purpose of this field camp is to acquire field data to be used in a roadway design project in CIV-C462, route surveys, to acquaint the student with basic survey techniques and Party-Chief responsibilities. Emphasis is on clear, neat, accurate and concise field notes.

CIV-C461 PHOTOGRAMMETRY
This course consists of theory and practical work in: a) the relationships of angles and distances on aerial photographs to angles and distances on the ground; b) flight planning, for aerial photographic missions; c) planimetric mapping of aerial photographs; d) area determination on aerial photographs by the dot grid method; e) the theory and use of parallax measurement.

CIV-C462 ROADWAY DESIGN I
This course consists of the design of simple, compound and reverse curves and spiral curves for various design speeds and sight distances, design of vertical curves to provide stopping sight distance and passing sight distance, design of superelevation for horizontal curves, safety features of roadway design, and surveys required for roadway design. All design is to standards set by the Roads and Transportation Association of Canada.

CIV-C465 HYDRAULICS
This course gives the student the background to solve problems in fluid statics, closed-conduct flow, and open-channel flow.

CIV-C466 SURVEYING
This course involves the calculation for roadway design, preparation of cross-sections, profiles, mass diagram and location plans required for construction, construction methods for earthwork and rock, placing and compaction of fills, construction equipment used, surveys required for construction, quality control for earth-grade construction and pavement thickness design.

CIV-C564 WATER SUPPLY AND WASTE DISPOSAL I
This course involves the gathering of information for the design and preparation of detailed plans for the construction of storm and sanitary collection systems and of water distribution systems. Also includes the fundamentals of water and sewage treatment.

CIV-C567 PAVEMENT MIX DESIGN I
This course involves a study of manufacture of Portland Cement, the five basic types of Portland Cement, evaluation of aggregates, properties of concrete, mixing waters, additives and the purpose of their usage in concrete, mixing, placing, compaction and curing of Portland cement concrete, construction and inspection procedures for Portland cement concrete pavements.

CIV-C568 SOIL MECHANICS II
This course consists of the definition and computation of the coefficient of hydraulic conductivity of soil and the test method best suited to each soil type, description of frost action in soils and the prevention of frost damage, interpretation consolidation test results to determine load-settlement relationships, and the determination of the shearing resistance and strength of soil.

CIV-C569 HYDROLOGY
This course gives a student the background to solve problems in the design and operation of an engineering project for the control and use of water.

CIV-C661 TERRAIN INTERPRETATION
This course involves: a) a review of elementary geology and geomorphology on the formation of landforms identifiable on aerial photographs with particular reference to the Canadian landscape; and b) a study of aerial photographs containing these landforms. From the theory and study, the student will be required to identify the various landforms, the method of deposition or formation of the landforms, the type of soil or granular material in the landform and surficial and possible sub-surface moisture conditions, permeability and perma-frost conditions.

CIV-C664 WATER SUPPLY AND WASTE DISPOSAL II
This course involves the gathering of information for the design and preparation of detailed plans for the construction of storm and sanitary collection systems and of water distribution systems. Also includes the fundamentals of water and sewage treatment.

CIV-C665 JOB CONTROL & ESTIMATING
Job control consists of the theory of project scheduling using the Critical Path Method. It will include the logistics of the method,
including terminology, arrow diagrams, expediting resource allocation, float and calendar dating. Estimating consists of the pricing of material, labor and indirect costs to determine the final cost of a municipal project.

CIV-C667 PAVEMENT MIX DESIGN II
This course consists of the study of asphalt cement and the testing required to determine its suitability as a paving asphalt, evaluation of concrete paving mixes using the surface-area method and the Marshall method, construction techniques, construction equipment and inspection procedures for asphalt concrete pavements.

CIV-C568 STABILIZATION
This subject includes the following topics: reasons for soil stabilization; lime stabilization; soil cement; asphalt stabilization; mechanical stabilization; and geotechnical fabrics.

CIV-M163 INTRODUCTION TO APPLICATION SOFTWARE
Through hands-on experience, this course provides an introduction to MS-DOS commands, WordPerfect word processing, SuperCalc 3 spreadsheet work, and DBASE III Plus data base manipulation. The course setting is in a networked IBM PC lab.

CIV-M169 MATHEMATICS
The course is basically a review of high-school mathematics with emphasis being placed on trigonometry, solution of algebraic equations, exponents, and logarithms.

CIV-M260 INTRODUCTORY CALCULUS
Explicit and implicit functions of a single variable; limits and derivative concept; differentiation of algebraic functions, trigonometric functions, inverse trigonometric functions, exponential and logarithmic functions; logarithmic differentiation, applications of the derivative, i.e. tangent and normal lines, related rates, curve sketching, minimum, maximum and inflection points, introduction to integration.

CIV-M360 CALCULUS
Integration methods and techniques using the power formula, logarithmic and exponential form, trigonometric and inverse trigonometric form, parts, and trigonometric substitution; application of definite integral i.e. area, volume, centroids, moment of inertia, forces.

CIV-M364 STATISTICS
Introduction to general elementary statistical principles involving data handling, measures of central tendency, and dispersion, fundamentals of probability, distributions, and least squares correlation and regression.

CIV-M460 CALCULUS
Advanced applications of the derivative and integral i.e. maxima/ minima, arc length, surface area, theorem of pappus; series expansion of functions, and application; differential equations, solution and application; partial derivatives and application; curves and surfaces in space, multiple integrals as applied to area, and volume.

CIV-R167 COMMUNICATIONS
The subject covers the organizing and writing of letters, memorandums, and reports on technical subjects. Prerequisites: None

CIV-R367 SPECIFICATIONS AND REPORTS
The subject covers the writing of technical instructions, proposals, and long investigation reports, the presentation of oral briefings, and the preparation of job-search documentation.
CLERICAL BOOKKEEPING

PURPOSE
To develop basic accounting, typing and office-related skills.

COURSE
Clerical Bookkeeping is a ten-month certificate course with two entry dates: September and January. The course is designed to develop business skills and a knowledge of office procedures with emphasis on bookkeeping, the operation of a personal computer, and typing.

Because the course is a competency-based-learning (CBL) program, there is a modularized approach to learning which allows a moderate degree of self-paced learning. Students should be prepared to complete requirements in a reasonable time, and to manage time wisely and effectively to meet deadlines.

ENTRANCE REQUIREMENTS
A - 14 high school credits (Manitoba Grade 11 or equivalent secondary school preparation) with one of English 200 or 201, and one of Mathematics 200 or 201. Completion of a computer awareness course is strongly recommended; or

- Adult Basic Education 11B;

B - satisfactory reading ability, as measured by a written test administered through the college.

Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma (with one of Mathematics 200/201 or 300/301) or G.E.D. standing (scores on each of the five tests must be 43 or higher) in lieu of 14 credits. Those persons applying on the basis of G.E.D. standing must also have successfully completed one of English 200, 201, 290, or 911 and one of Mathematics 200, 201, 290, or 911. Additional preparation by completion of a computer awareness course is strongly recommended. Mature student applicants must also complete entrance requirement (B) and be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

EMPLOYMENT POTENTIAL
Many graduates have found employment in the accounting departments of large business firms where work is of a specialized nature. They are employed in accounts receivable, accounts payable, payroll, invoice or data processing departments. Other graduates work for small business firms, performing a variety of functions, including preparing and typing monthly customer statements, operating calculating machines, handling cash, preparing the company's payroll, and paying accounts.

COURSE COMPETENCIES
B18-0A00 Maintain Life Skills
B18-0A01 Identify Employability Skills
B18-0A02 Recognize Factors for Building Self-Esteem
B18-0A03 Use Library Materials & Services
B18-0A04 Prepare a Job Search
B18-0B00 Communicate In Writing
B18-0B01 Apply Word Division Rules
B18-0B02 Apply Spelling Rules

B18-0B04 Use Appropriate Vocabulary
B18-0B10 Compose Inter-Office Memorandums
B18-0B11 Compose Business Letters
B18-0B13 Compose Unified, Complete and Coherent Paragraphs
B18-0B14 Demonstrate an Effective Style
B18-0C00 Communicate Verbally and Non-Verbally
B18-0C01 Discuss Process of Interpersonal Communication
B18-0C02 Discuss Listening Skills
B18-0C03 Project Professional Image
B18-0C04 Demonstrate Professional Attitude
B18-0C05 Respond to Office Callers
B18-0C06 Use Telephone

B18-0D00 Develop Interpersonal Skills
B18-0D01 Discuss Principles of Interpersonal Relationships
B18-0D02 Identify Problem-Solving Techniques
B18-0D03 Discuss Guidelines for Being a Group Member
B18-0D04 Apply Decision-Making Skills in Groups
B18-0D05 Identify Guidelines for Managing Conflict
B18-0D06 Identify Means of Managing Stress

B18-0E00 Produce Typied Material
B18-0E02 Demonstrate Correction Techniques & Proofreading
B18-0E03 Type Centered/Display Documents
B18-0E04 Type Inter-Office Memos
B18-0E05 Type Basic Business Forms
B18-0E06 Type Open Tables
B18-0E07 Type Ruled Tables
B18-0E08 Type Financial Statements
B18-0E09 Type Business Letters & Envelopes in Various Styles
B18-0E10 Type Business Letters with Special Features
B18-0E23 Keyboard at 40 wpm

B18-0H00 Use Calculator to Compute Mathematical Solutions
B18-0H01 Add, Subtract, Multiply & Divide Whole Numbers
B18-0H02 Add, Subtract, Multiply & Divide Decimals
B18-0H03 Compute Percentage, Rate, And Base
B18-0H04 Complete a Payroll Register
B18-0H05 Compute Cash & Trade Discounts
B18-0H06 Compute Simple & Compound Interest
B18-0H07 Calculate for Retail Pricing

B18-0J00 Perform Accounting Tasks
B18-0J01 Perform Selected Business Banking Functions
B18-0J02 Maintain Petty Cash Fund & Petty Cash Book
B18-0J03 Maintain Records Using a One-Write System
B18-0J04 Maintain Records to Trial Balance for Service Firm
B18-0J05 Complete Service Firm Records to Adjusted Balance
B18-0J06 Close Accounts After Worksheet & Financial Statements

B18-0J07 Journalize Petty Cash Transactions
B18-0J08 Journalize Bank Reconciliation Related Entries
B18-0J09 Perform Acct Duties for a Merchandising Firm
B18-0J10 Record Transactions Using Multi-Column Journals
B18-0J11 Maintain Company Records Using Synoptic Journal
B18-0J12 Journalize Entries Related to Uncollectable Accounts
B18-0J13 Record Transactions Related to Payroll
B18-0J14 Calculate Inventory Value & Record Changes
B18-0J15 Record Purchase, Use & Disposal of Plant Assets

B18-0L00 Use Personal Computers
B18-0L05 Use Spreadsheet Program
B18-0L07 Use Integrated Accounting Program on PC
B18-0M00 Perform Office Duties
B18-OM01 Identify Organizational Structures
B18-OM02 Manage Work Stations
B18-OM03 Manage Time
B18-OM04 Process Mail
B18-OM05 Use Photocoper
B18-OM06 Maintain Appointment Calendar
B18-OM07 Use Reference Sources
B18-OM08 Identify Safety Procedures
B18-OM12 Apply Skills in Office Simulation
B18-OM13 Describe Information Processing Technology
B18-ON00 Manage Records
B18-ON01 Compare Filing Systems
B18-ON02 File & Retrieve Material

In addition to the above required competencies, the student will elect one of the following two option packages:

ACCOUNTING OPTION
B18-OJ16 Maintain Records for Partnerships
B18-OJ17 Maintain Selected Records for Corporations
B18-OJ18 Maintain Records for Manufacturing Concern
B18-OJ19 Maintain Records for Departmentalized Business
B18-OJ20 Prepare Revised Budgets
B18-OJ21 Use Common Formulas to Analyze Financial Statement
B18-OJ22 Identify Commonly-Accepted Principles & Concepts

WORD PROCESSING OPTION
B18-OE11 Type Personal Letters & Envelopes
B18-OE12 Type Business Reports
B18-OK00 Perform Word Processing Functions on PC
B18-OK01 Log On/Log Off Format & Maintain Diskettes
B18-OK02 Create, Edit, Re-Format, Print Non-Stat Documents
B18-OK03 Create & Print Statistical Documents
B18-OK04 Utilize Special Formatting Functions
B18-OK05 Make Print Decisions for One-Page Documents
B18-OK06 Retrieve, Edit & Print Multi-Page Documents
B18-OK07 Perform Mail Merge Function

Please note that because the competencies listed above are self-explanatory, subject descriptions are not included for this course.
COLLEGE PREPARATION FOR NATIVE STUDENTS

PURPOSE
To assist native students in the development of mathematics, science, communication and assertiveness skills.

COURSE
College Preparation for Native Students is a ten-month (or less) course with a September entry date. The course is designed to assist students to develop mathematics, communication and assertiveness skills to pursue further education or training.

ENTRANCE REQUIREMENTS
A - successful completion of the Level Placement Test with appropriate scores;  
B - successful completion of a reading-skills test with an appropriate score

EMPLOYMENT POTENTIAL
Former students who have been successful have found that they are more confident and better prepared for skill training at the college.

COURSE OUTLINE
S02-C100 Writing Skills
S02-M108 Mathematics Core
S02-M109 Mathematics - Supplement
S02-S100 Science Core
S02-S113 Science - Supplement
S03-K001 Communications
S03-L001 Mathematics
S03-M001 Science (Physics)
S03-Q001 Communications
S03-R001 Mathematics

SUBJECT DESCRIPTIONS
S02-C100 WRITING SKILLS
Sentence and paragraph construction; expository paragraph writing; usage and mechanics; punctuation and capitalization.

S02-M108 MATHEMATICS CORE
Development of problem solving skills using whole numbers, fractions, decimals and percent, ratio and proportion; and measurements.

S02-M109 MATHEMATICS - SUPPLEMENT
Positive and negative numbers; square root; introductory algebra and geometry; and solving problems algebraically.

S02-S100 SCIENCE CORE
Scientific method; metric measurements.

S02-S113 SCIENCE - SUPPLEMENT
Temperature; heat; pressure; density; work; electricity; anatomy and physiology; problem solving.

S03-K001 COMMUNICATIONS
Writing Skills: Development of writing, grammar, writing of paragraphs. Reading Skills: Speed and comprehension, vocabulary development.

S03-L001 MATHEMATICS
Exponents and Scientific notation; fundamental operations of directed number, fundamental operations of algebra; equations with an unknown; special products and factoring; algebraic fractions; equations; graphic methods; simultaneous equations; trigonometry.

S03-M001 SCIENCE (PHYSICS)
Matter and energy, force measurement, motion, atomic structure, energy and machines, etc.

S03-Q001 COMMUNICATIONS
Grammar; usage; sentence structure; mechanics; paragraph writing, reading, and spelling.

S03-R001 MATHEMATICS
Equations, factoring, exponents, quadratics, solving simultaneous equations and formula manipulation, mensurational and analytic geometry, trigonometry and logarithms.
COLLEGE PREPARATION FOR NURSING

PURPOSE
To acquire the academic skills needed to enter Nursing or Practical Nursing courses.

COURSE
College Preparation for Nursing is a ten-month certificate course with a September entry date. The course is designed to enable applicants who do not meet the educational requirements for Nursing or Practical Nursing, to acquire the developmental skills to enter either course. It integrates the required academic subjects to bring the student to an Adult 12 level with some of the subjects from the first year of the Nursing program.

ENTRANCE REQUIREMENTS
- 7 high school credits (Manitoba Grade 10 or equivalent secondary school preparation); or
- Adult Basic Education 7-10 program completion; and
- completion of the additional information sheets; and
- successful completion of the Level Placement tests for entry-level competencies in mathematics, algebra, reading skills and writing skills; and
- a personal interview with the Selection Committee

Mature Student Admission. Mature student applicants may submit other educational equivalents, including G.E.D. standing (scores on each of the five tests must be 45 or higher), in lieu of 7 credits. (However, formal credit in mathematics, English and science at the 100, 101, 190, or 911 level is recommended.) Mature student applicants must also meet other requirements, as outlined above.

COURSE OUTLINE
H11-N120 Human Anatomy & Physiology
H11-S101 Social Science
H11-S201 Social Science
H11-S301 Social Science
S02-C116 Reading & Study Skills (part-time)
S03-R001 Mathematics 301
S03-M003 Science (Biology)
S03-S001 Science (Physics 300)
S03-S002 Science (Chemistry 300)
S03-U101 Communications

SUBJECT DESCRIPTIONS
H11-N120 HUMAN ANATOMY AND PHYSIOLOGY
This subject is designed to provide an introductory study of the structure and pertinent aspects of function of the principal organ systems. The importance of learning and using correct terminology is stressed. A unit on basic nutrition provides information which emphasizes nutritional principles students can apply to their lives. Laboratory exercises are provided to support and enrich the theoretical content. Active learning is required to perform dissections and complete the lab reports. This subject is taken by students enrolled in several health-related disciplines.

H11-S101 SOCIAL SCIENCE
This subject is an introductory study of general developmental psychology. It is designed for students in health care programs and, as such, is aimed at practical application of social science knowledge in the helping relationships. During the first part of the course, emphasis will be placed on fundamental principles of growth and development, development tasks, key concepts of personality, motivation, relevant aspects of emotions and methods of coping or adapting.

H11-S201 SOCIAL SCIENCE
This second part of the subject traces the development of the individual from birth to death in an ages-and-stages manner. This section begins with an examination of some key aspects of sociology which are then integrated with the development material which follows. Psycho-sociological considerations of personality development will be emphasized in an attempt to portray an accurate picture of normal human development throughout the life cycle. Each unit of instruction highlights the physical, social and psychological tasks of a particular stage of the life cycle and directs these to the health-care relationship. Prerequisite: H11-S101

H11-S301 SOCIAL SCIENCE
This is a continuation of the format utilized in Part II but the section of the life span to be explored is shifted to adolescence and beyond. Adolescence, early adulthood, middle age and old age are considered in developmental terms from both physical and psychosocial perspectives.

S02-C116 READING AND STUDY SKILLS
This course concentrates on the following: 1) increasing reading comprehension and vocabulary, 2) developing time management skills, 3) developing techniques for reading textbooks, 4) developing note taking skills, preparing for exams.

S03-R001 MATHEMATICS 301
Equations, factoring, exponents, quadratics, solving simultaneous equations and formula manipulation, mensurational and analytic geometry, trigonometry and logarithms.

S03-M003 SCIENCE (Biology)
No subject description available at this time.

S03-S001 SCIENCE (Physics 300)
Kinetic theory, vectors electromagnetism; radioactivity and electromagnetism, universal gravitation.

S03-S002 SCIENCE (Chemistry 300)
Introduction to chemistry; atomic structure and periodic table; chemical composition and reaction; acids; bases; salts; solutions; organic chemistry.

S03-U101 COMMUNICATIONS
Writing development; spelling development; review of grammar and English usage; sentence construction; writing of paragraphs.
COMMERCE/INDUSTRY SALES & MARKETING

PURPOSE
To develop the knowledge and personal-selling skills required for the identification and solution of sales problems.

COURSE
Commerce/Industry Sales & Marketing is a ten-month certificate course with a September entry date. The course is designed to develop the necessary skills to become a successful salesperson: to deal effectively with people and to understand, organize, and solve sales problems in marketing programs and situations.

Each term of the course is a comprehensive program in itself, but represents a different level of achievement. A weighted grade point average of 2.0 is required in Term I and II for progression to subsequent terms. Students who pass all subjects in Term I but are not continuing to Term II are eligible for a Basic Business Certificate. Similarly, a pass in all Term II subjects earns a Basic Sales Certificate for students not entering Term III. Graduates of the complete ten-month course receive a Commercial & Industrial Sales Certificate.

ENTRANCE REQUIREMENTS
- 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation) with English 300 or 301 and Mathematics 200 or 201;
  or
- Adult Basic Education 11B;

Mature Student Admission. Mature student applicants may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits; however, they must have successfully completed one of English 300 or 301 and one of Mathematics 200, 201, 290, or 911, at a minimum. Mature students must be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

EMPLOYMENT POTENTIAL
Some graduates have found employment with engineering companies, pharmaceutical houses, manufacturers of industrial equipment and suppliers of raw materials. Other graduates are selling and appraising real estate, selling office equipment, working in large retail stores at the merchandising level, and working in newspaper circulation departments.

COURSE OUTLINE

Term 1
B13-SS08 Human Behavior for Salespeople
B14-A115 Accounting
B14-B116 Business Mathematics
B14-C114 Basic Marketing & Customer Behavior
B14-I117 Introduction to Business
B14-T118 "In Business" Training
B16-E123 Sales Communications

Term 2
B12-E292 Economics
B13-SS09 Psychology of Selling
B14-M213 Advanced Marketing
B14-S211 Basic Salesmanship
B14-T218 Advanced "In Business" Training
B15-S209 Computer Literacy I
B16-E202 Advanced Sales Communications

Term 3
B14-D300 Marketing Decision Simulation
B14-L314 Canadian Business Law
B14-P319 Advertising & Promotion
B14-R312 Merchandising
B14-S311 Advanced Salesmanship
B14-T318 "In Business" Sales Training
B15-S309 Computer Literacy II

SUBJECT DESCRIPTIONS

B12-E292 ECONOMICS
This introductory course is concerned with Canada's economic problems and their solutions. The emphasis is on providing a sound basis in economic principles which are then applied in the form of economic reasoning. In addition to supply, demand, elasticity and firms in various types of competition (micro section), the following macro topics are also covered: national income, taxation, monetary and fiscal policy and international trade.

B13-SS08 HUMAN BEHAVIOR FOR SALEPEOPLE
This course will improve the student's understanding of self and others by applying the major concept of Transactional Analysis and discovering and validating as much as possible about human behaviour from his or her own experiences and those of others through various exercises and group activities.

B13-SS09 PSYCHOLOGY OF SELLING
This course will provide the prospective salesperson with systematic insight into customer behavior. It will teach the student how to gain flexibility so as to sell all kinds of customers; how to use persuasive communication strategies to create customer commitment; how to uncover customer needs and prove customer benefits by showing that your products or service will satisfy those needs; how to motivate customers so as to close sales and get repeat business.

B14-A115 ACCOUNTING
This subject is coordinated with Business Math in that it is sequential to the B116 subject. It consists of a study of basic accounting principles, enabling the student to interpret and use the information contained in financial statements. The concept for the subject within the program is that salespeople should develop an understanding of the basic accounting principles. This facilitates his or her better understanding of client problems and helps in producing better source documents for accounting, credit and related planning and control functions.

B14-B116 BUSINESS MATHEMATICS
This subject is coordinated with the accounting in A115 and precedes it in a course sequence. It focuses on the study and practice of common mathematical applications encountered in retailing, wholesaling, banking, credit granting, industrial selling. Emphasis is on the practical application of mathematics to standard business problems dealing with discounts, margins, installment buying, interest, calculations, etc.
B14-C114 BASIC MARKETING AND CUSTOMER BEHAVIOR
An introductory course into the complexity of human behavior, particularly as it applies to buying behavior on the part of the final consumers. Material for the course is drawn from the social sciences, psychology, sociology, social psychology and economics. The insight provided leads to a better understanding of consumer behavior in the marketplace, a vital element in the external environment of a business system.

B14-D300 MARKETING DECISION SIMULATION
Marketing Decision Simulation provides the student with an opportunity to apply his or her learned marketing skills in a dynamic and competitive simulated marketing situation. As a company marketing executive in a simulated business environment, the student makes marketing decisions as a member of a team. This affects work with other members of the firm which is competing with other companies in an industry.

B14-H117 INTRODUCTION TO BUSINESS
A practical course which provides an overview of the world of business and its role in the free enterprise system. The course provides the basis for specialization in specific areas of business which other subjects are concerned with. Part one deals with business and its environment; part two deals with establishing a business, the legal and financial aspects; part three deals with operating a business; part four deals with managing a business; part five deals with opportunities in business.

B14-L314 CANADIAN BUSINESS LAW
This program is designed to provide an appropriate foundation in Business Law specific to the needs of students involved in C/I Sales & Marketing. The major portion of the subject will be allocated to the formation and factors affecting contractual relationships. The introductory portion of Business Law deals with the origin, sources of law and the court system, followed by a section on tort law.

B14-M213 ADVANCED MARKETING
An introductory course which covers the broad field of marketing in a Canadian context. The study includes industrial and consumer marketing and emphasizes basic principles as they apply in the various marketing institutions. The student is introduced to marketing strategy and the uncontrollable factors considered in developing the marketing mix. The subject ties in closely with the simulation exercise in T218 where the business game focuses on marketing strategies in a competitive environment.

B14-P319 ADVERTISING AND PROMOTION
This subject presents a comprehensive study of the purposes, types, creation and control of advertising and other promotions. It develops an understanding of the important elements of advertising and other promotion tools and their relation to marketing. As a practical project, students organize in teams to develop and present a complete promotion package in a competitive situation.

B14-R312 MERCHANDISING
A study of merchandising methods and retail organization, retail planning and policies, retail organization, pricing strategy, markup and markdown calculation, planning sales, stock, purchases and profits retail budgeting and control, retail advertising, display, store layout and site selection. As a practical application of theory, students organize into management teams to develop a proposal for a retail operation in a selected location.

B14-S211 BASIC SALESMAISHIP
The purpose of this subject is to prepare the student for the field of selling at a basic level, such as order taking or support sales work. The subject presents a broad picture of the field of selling. Basic skills are studied and discussed and role play situations are developed for skill practice. The theory involved includes review of a variety of elements that are important to selling, consumer behavior, pricing and credit practices, knowledge of company and competitors, product knowledge, promotional aids, and telephone selling.

B14-S311 ADVANCED SALESMAISHIP
This subject builds on the foundation of S211 in the second term. It represents a thorough review of the sales process, all the way from the planning stage to closing the sale and follow up. The study and practice of opening the sale, presentation and demonstration, handling objections, proofs and supporting statements, probing, recognizing customer attitudes, closing the sale. Students undertake a number of role-play sessions to develop skills in practical situations.

B14-T118 "IN BUSINESS" TRAINING
This subject is included in the course to provide the student with exposure to the real business world. It is closely related to introductory business. Business tours, guest lectures from business; discussions with past graduates, and relevant films and tape recordings are all used as a means of giving students a closer and more practical view of the business environment.

B14-T218 ADVANCED "IN BUSINESS" TRAINING
This course provides more exposure to the business world and its problems. In addition to tours and speakers, the student works one week in the field with a sponsoring company. Also, he or she deals with business problems through simulation as he or she participates, as a member of a business team, in a competitive business game throughout the term. The student is identifying potential areas for future sales careers.

B14-T318 "IN BUSINESS" SALES TRAINING
This course is designed to further familiarize the student with a business environment. There is a more direct focus on sales careers. An attempt is made to narrow down the field of choice by exposure to various alternatives. One week is spent in a sales-oriented capacity with a sponsoring firm.

B15-S209 COMPUTER LITERACY I
Computer Literacy I has been designed to meet the needs of students wishing to become comfortable with computer terminology and functions and to become familiar with using the IBM PC. To achieve this goal, Computer Literacy I deals with the evolution of computers, computer hardware, and telecommunications, in addition to the introduction of the use of a word processing software package on the IBM PC.

B15-S309 COMPUTER LITERACY II
Computer Literacy II has been designed to meet the needs of students wishing to become aware of the types of computer
software in addition to becoming familiar with spreadsheets on the IBM PC.

B16-E123 SALES COMMUNICATIONS
The objective is to develop the potential salesperson's communication skills. These skills are speaking, listening, reading, and writing. The environment for the development of these skills is a marketing/sales setting. The course aims at continual development of all four skills throughout the term.

B16-E202 ADVANCED SALES COMMUNICATIONS
This subject develops communication skills to a more advanced level. Skills are developed through practice so that they may be used in role-play settings, case studies and group discussions.
COMMERCIAL BAKING

PURPOSE
To develop basic baking skills and related requirements through classroom instruction, practical lab training, and off-campus work experience.

COURSE
Commercial Baking is a ten-month certificate course with a September entry date. The course is designed to develop the skills required for employment in entry-level baking positions. It is noted for both its cooperative education component and its competency-based-learning (CBL) format.

Cooperative education aims at an effective blend of classroom study and off-campus work experience in course-related industry. This means that the student spends alternate two-month periods in the work force and is paid an hourly rate.

CBL is a modularized approach to learning which allows a moderate degree of self-pacing. It requires initiative in planning a study schedule, completing requirements in a reasonable time, and in managing time wisely and effectively to meet self-imposed deadlines.

ENTRANCE REQUIREMENTS
A- 7 high school credits (Manitoba Grade 10 or equivalent secondary school preparation) with English 100 or 101, Mathematics 100 or 101, and Science 100 or 101;
  or  
  - Adult Basic Education 7-10 program completion;
  and
B- An interview with a special selection committee*
  and
C- Submission of recent chest X-ray, medical, and dental certificates attesting to good health (required after an applicant receives notice of acceptance).

Mature Student Admission. Mature student applicants may submit other educational equivalents, including G.E.D. standing (scores on each of the five tests must be 41 or higher), in lieu of 7 credits; however, they must have successfully completed one of Mathematics 100, 101, 190, or Practical Mathematics-Elementary/Junior High Level and one of English 100/101/190, or Adult English (I & II). Mature students must also meet entrance requirements (B) and (C) above and be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

*C-This is a special selection course. The committee looks for applicants who are adequately prepared, who have a sincere desire to work in the baking industry, and who understand the demanding working conditions. Some work experience in a bakery or a related area is preferred.

EMPLOYMENT POTENTIAL
A graduate generally begins employment as a baker’s helper and may advance to a position as a competent tradesperson within approximately one year. Job opportunities have been found in both large in-store bakeries and smaller bakery operations.

COURSE COMPETENCIES
B31-0A00 Demonstrate Basic Baking Prequisites
B31-0A01 Explain Basic Sanitation Principles & Procedures
B31-0A02 Explain Basic Bakeshop Safety Rules
B31-0A03 Explain Safe & Efficient Use of Bakeshop Equipment
B31-0A04 Explain Standardized Recipes & Conversions
B31-0B00 Demonstrate Basic Baking Ingredient Knowledge
B31-0B01 Identify Typical Ingredients Used in Baking
B31-0C00 Prepare Yeast Raised Goods
B31-0C01 Explain Basic Methods to Prepare Yeast Goods
B31-0C02 Prepare Lean Dough Products
B31-0C03 Prepare Rich Dough Products
B31-0C04 Prepare Rye Bread
B31-0D00 Prepare Muffin Type Products
B31-0D01 Explain Basic Preparation of Muffin-Type Products
B31-0D02 Prepare a Variety of Muffins
B31-0E00 Prepare Pies & Short Pastry
B31-0E01 Explain Methods Used to Produce Pies & Tarts
B31-0E02 Prepare Pies & Tarts
B31-0E03 Prepare Fillings
B31-0E04 Explain Preparation of Puff Pastry
B31-0E05 Prepare Choux Pastry Items
B31-0F00 Prepare Cakes & Icings
B31-0F01 Explain Mixing Methods
B31-0F02 Prepare Basic Varieties of Cakes
B31-0F03 Prepare Basic Icings
B31-0F04 Assemble & Decorate Cakes
B31-0G00 Prepare Cookies
B31-0G01 Explain Methods for Preparing Cookies
B31-0G02 Prepare a Selection of Cookies
B31-0H00 Explain Basic Management Functions
B31-0H01 Describe Purchasing Functions
B31-0H02 Describe Receiving, Storing & Issuing
B31-0H03 Calculate Cost & Selling Prices
B31-0H04 Explain Scheduling of Staff & Production
B31-0H05 Explain the Role of Merchandizing
B31-B129 Cooperative Education Work Term I
B31-B124 Cooperative Education Work Term II

Please note that because the course competencies listed above are self-explanatory, no subject descriptions are included for those skill areas. Descriptions are included only for the subject numbers listed below.

B31-B129 COOPERATIVE EDUCATION WORK TERM I
The student will spend eight weeks in a commercial bakery as a paid employee. The placement will be arranged and monitored by the cooperative education coordinator.

B31-B124 COOPERATIVE EDUCATION WORK TERM II
The student will work for a second eight-week period in a commercial bakery. Again, the placement will be arranged and monitored by the cooperative education coordinator.
COMMERCIAL COOKING

PURPOSE
To develop basic cooking skills and related requirements through a blend of classroom instruction, practical lab training and off-campus work experience.

COURSE
Commercial Cooking is a twelve-month certificate course with four entry dates: September, October, January and February. The course is designed to develop the skills required to function effectively in an entry-level cooking position in the industry. It is noted for both its cooperative education component and competency-based-learning (CBL) format.

Cooperative education aims at an effective blend of classroom study, practical lab training and off-campus work experience. It goes beyond the traditional supplementary on-the-job training programs in that the student spends alternate two-month terms in the work force and is paid an hourly rate.

CBL is a modularized approach to learning which allows a moderate degree of self-pacing. It requires initiative in planning a study schedule, completing requirements in a reasonable time, and in managing time wisely and effectively to meet self-imposed deadlines.

ENTRANCE REQUIREMENTS
A- 7 high school credits (Manitoba Grade 10 or equivalent secondary school preparation) with English 100 or 101, Mathematics 100 or 101, and Science 100 or 101;
  or
  - Adult Basic Education 7-10 program completion;
  and
B- An interview with a special selection committee;
  and
C- submission of recent chest X-ray, medical, and dental certificates attesting to good health (required after an applicant receives notice of acceptance).

Mature Student Admission. Mature student applicants may submit other educational equivalents, including G.E.D. standing (scores on each of the five tests must be 41 or higher), in lieu of 7 credits; however, they must have successfully completed one of Mathematics 100, 101, 190, or Practical Mathematics - Elementary/Junior High Level and one of English 100/101/190, or Adult English (I & II). Mature students must also meet entrance requirements (B) and (C) above and be 20 years of age on or before September 30 in the year of registration. All mature student applicants are referred to the Director of Admissions/Registration for review.

This is a special selection course. The committee looks for applicants who are adequately prepared, who have a sincere desire to work in the food preparation industry, and who understand the demanding working conditions. Some related food service experience is preferred.

COURSE COMPETENCIES
B32-AX01 Practical Restaurant Cooking
B32-AX02 Practical Food Preparation
B32-CX01 Practical Cooking Quantity
B32-C206 On-the-Job Training
B32-C207 On-the-Job Training
B32-DX01 Practical Patisserie
B32-0A00 Demonstrate Food Preparation Skills
B32-0A01 Explain Sanitation Principles & Procedures
B32-0A02 Explain Kitchen Safety Rules & Procedures
B32-0A03 Explain Safe & Efficient Use of Kitchen Equipment
B32-0A04 Use Kitchen Knives Safely & Efficiently
B32-0A05 Explain Measurement Procedures & Conversions
B32-0A06 Explain Preparation of Typical Breakfast Items
B32-0A07 Describe Use of Dairy Products
B32-0A08 Prepare Coffee & Tea
B32-0A09 Explain Preparation of Basic Stocks
B32-0A10 Prepare Soups
B32-0A11 Prepare Sauces
B32-0A12 Cook Vegetables, Rice & Pasta
B32-0A13 Cook Meat, Poultry & Fish
B32-0A14 Debone & Cut Meat, Fish And Poultry
B32-0A15 Prepare Salads & Salad Dressings
B32-0A16 Prepare Appetizers
B32-0A17 Explain Buffet Preparation & Service
B32-0B00 Describe Elements of Cost Control
B32-0B01 Describe Common Mechanism Control & Records of Food Sold
B32-0B02 Describe Recipe Costs, Yields & Selling Prices
B32-0C00 Describe Elements of Purchasing & Inventory Control
B32-0C01 Describe Elements of Purchasing Functions
B32-0C02 Describe Purchasing of Food & Non-Alcoholic Beverages
B32-0C03 Describe Receiving, Storing & Issuing Procedures
B32-0D00 Prepare Patisserie Items
B32-0D01 Identify Baking Ingredients
B32-0D02 Prepare Yeast & Raised Goods
B32-0D03 Prepare a Variety of Pastries
B32-0D04 Prepare Cakes, Sweets & Desserts
B32-0E00 Design Menu & Kitchen Layout
B32-0E01 Develop Menu
B32-0F00 Practice Healthy Food Choices
B32-0F01 Evaluate Nutrition Claims
B32-0F02 Plan a Nutritionally Balanced Menu
B32-0F03 Determine a Healthy Weight
B32-0F04 Interpret Food Regulations
T14-C502 Communication

Please note that because the competencies listed above are self-explanatory, no subject descriptions are required for those skills areas. Descriptions are included only for the subject numbers listed below.

B32-AX01 PRACTICAL RESTAURANT COOKING
A practical test of restaurant cooking skills.

B32-AX02 PRACTICAL FOOD PREPARATION
A practical test of basic food-preparation skills.

B32-CX01 PRACTICAL QUANTITY COOKING
A practical test of quantity-cooking skills.
B32-C206 ON-THE-JOB TRAINING
The student will spend one block of eight weeks duration in the employment of a restaurant or hotel, as arranged by the college on a cooperative education basis. This placement will be monitored by the co-op ed coordinator.

B32-C207 ON-THE-JOB TRAINING
The student will spend a second block of eight weeks duration in the employment of a restaurant or hotel, as arranged by the college on a co-operative education basis. Again, the placement will be monitored by the co-op coordinator.

B32-DX01 PRACTICAL PATISSERIE
A practical test of baking skills.

T14-C502 COMMUNICATION
A self-paced practical course that develops communications skills from four viewpoints: job seeker, employee, junior supervisor, small business owner. The course is tailored to fit the needs of individual students and the requirements of the course Advisory Board.
COMPUTER/ANALYST PROGRAMMER

PURPOSE
To provide students with training in problem recognition, analysis and solution as applied to business data processing. The graduate will be familiar with a variety of computer languages, the principles of business and advanced topics of data processing.

COURSE
Computer Analyst/Programmer is a two-year diploma course with three entry dates: September, December and March. The course is designed to develop proficiency in computer programming and systems analysis.

ENTRANCE REQUIREMENTS
A - 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation) with one of English 300 or 301 and one of Mathematics 300* or 301;

- Adult Basic Education 11B with supplemental mathematics topics;

or

B - successful completion of an entrance test which assesses aptitude for training as an analyst/programmer.

* Mathematics 300 is strongly recommended for applicants to this program.

Mature Student Admission. Mature student applicants may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits; however, they must have specific credits in mathematics* and English as outlined in (A) above. Mature students must also meet entrance requirement (B) and be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

EMPLOYMENT POTENTIAL
Job opportunities have been found in many aspects of computer programming or systems analysis. Previous graduates are employed with various companies that require computers for business purposes such as accounts payable, accounts receivable, payroll, inventory, general ledger, sales-order forecasting and credit authorization. Other job opportunities exist with the government, computer manufacturers and consulting firms.

COURSE OUTLINE
Term 1
B11-A191 Introductory Accounting A
B13-M611 Introduction to Business
B15-C101 Data Processing I (Literacy & ASSEMBLER)
B15-M102 Maths of Finance
B16-E129 Communications I

Term 2
B11-A291 Introductory Accounting B
B13-S543 Human Behavior in Organizations
B15-C201 Data Processing II (ASSEMBLER & COBOL)
B16-E289 Advanced Communication

Term 3
B11-A392 Introductory Accounting C
B12-E276 Economic Principles I (Microeconomics)
B15-C301 Data Processing III (COBOL & BASIC)
B15-C303 Operating Systems
B15-C307 Systems Analysis

Term 4
B15-C405 RPG Programming
B15-C406 File Structures
B15-C407 Systems Design
B15-M301 Statistics

Term 5
B11-A681 Managerial Accounting
B12-E377 Economic Principles II (Macroeconomics)
B15-C502 PL/I Programming
B15-C507 Business Applications
B15-C607 Data Base

Term 6
B15-C601 Edit Project
B15-C608 4th Generation Software
B15-C609 Computer Topics (Including Data Communications and C Language)
B15-C610 Cooperative Work Experience

SUBJECT DESCRIPTIONS
B11-A191 INTRODUCTORY ACCOUNTING A
Double-entry bookkeeping routine, adjustments and work sheet for preparation of financial statements, financial statements pertaining to sole proprietorship, special journals, subsidiary ledgers and controlling accounts, control procedures for cash and receivables payrolls.

B11-A291 INTRODUCTORY ACCOUNTING B
Accounting for inventories and their valuation, procedures and techniques in the treatment of plant and equipment transactions, accounting principles and concepts, accounting for partnerships, departmentalization.

B11-A392 INTRODUCTORY ACCOUNTING C
Accounting procedures, methods and techniques as they apply to limited companies, share capital, retained earnings, consolidations, long-term liabilities and investments.

B11-A681 MANAGERIAL ACCOUNTING
This course is an introduction to management uses of the end product of accounting analysis for effective management decision making. The course stresses acquisition of a broad knowledge pertaining to management functions of planning and control and increasing the student’s intellectual skill in problem solving by means of cost information.

B12-E276 ECONOMIC PRINCIPLES I (Microeconomics)
This course is an introduction to the principles of microeconomics including production possibility analysis, theory of the market and price determination, supply and demand analysis, and theory of the firm.
B12-E377 ECONOMIC PRINCIPLES II (Macroeconomics)
This is a course in macro-economic principles. Studies will include
national income and its determination, the monetary system,
inflation and unemployment, with special emphasis on monetary
and fiscal policy.

B13-M611 INTRODUCTION TO BUSINESS
A broad analysis of business concepts, functional internal charac-
teristics of a business and the interrelationships among business,
government, and the consumer.

B13-S543 HUMAN BEHAVIOR IN ORGANIZATIONS
This course is about people at work. It focuses on the many
psychological and social pressures that people experience when
they interact with each other. Through lectures, films and case
studies, an attempt is made to understand the human relations-
ships that can help us accomplish our goals in all types of organi-
zations.

B15-C101 DATA PROCESSING I
The objective of this course is to introduce students to the basic
concepts of commercial data processing. To introduce terms such
as field, record file, accounts receivable, inventory control, etc.,
unit record concepts and devices are used. To introduce basic
programming concepts IBM DOS ASSEMBLER is used. Students
are required to complete a number of programming assign-
ments on the college's IBM 370 System.

B15-C201 DATA PROCESSING II
This is a continuation of the work begun in Data Processing I
programming. Further programming concepts such as table
handling, tape and disk processing, etc. are examined. At approxi-
mately mid-term, students are introduced to COBOL. Concepts
such as the balance line are covered at this time.

B15-C301 DATA PROCESSING III
This is a continuation of Data Processing II. The concepts covered
are Direct Access Programming, Variable Length Records, In-
dexed Sequential Files, and the Sort and Search Verbs in Cobol.
Structured programming techniques are used.

B15-C303 OPERATING SYSTEMS
Theory and history of operating systems. Use of system libraries.
Job Control Language for DOS. System utility programs. Intro-
duction to OS.

B15-C307 SYSTEMS ANALYSIS
This is the first in a series of two subjects in Systems Analysis and
Design offered in Terms III and IV of the Computer Analyst/
Programmer course. This, the first subject, focuses on the analy-
sis phase of systems development while the second covers the
design phase. The objective of this subject is to provide the student
with an understanding of the duties of the systems analyst to-
gether with an understanding of specific methods and techniques
used in the analysis phase of the systems life cycle. Three basic
approaches are covered: traditional (classical) structured, and
prototyping. The application of CASE tools is illustrated with
demonstrations of the use of Excelerator from Index Technology.

B15-C405 RPG PROGRAMMING
This course will provide the student with a sound understanding of
the Report Program Generator language. This language is differ-ent from procedure-oriented languages in that specification forms
are used to invoke the built-in logic to facilitate processing data.
The emphasis is practical and applied to the business environ-
ment. All specification forms are covered. Topics covered include
the use of tables and arrays as well as sequential and indexed
sequential file processing concepts. The course uses the lecture/ lab
approach to present the material. Several programming as-
signments are written by the student to reinforce learning the
language specifications and programming techniques.

B15-C406 FILE STRUCTURES
File structures provide an introduction to database processing
from the standpoint of the physical representation of the database.
The topics provide background material needed to understand
how database systems operate. Major topics include input/output
processing and file organization, data structures commonly used
in the database environment, representation of trees and net-
works, techniques for representing secondary keys and IBM's
VSAM files. A student should write 3 COBOL programs to simulate
database processing: a) to create a simple linked-list structure; b)
to maintain a tree structure using the child and twin pointer
 technique; c) to create and manipulate a values and occurrence
table to maintain non-unique secondary keys.

B15-C407 SYSTEMS DESIGN
This is the second in a series of two subjects in Systems Analysis
and Design offered in Terms III and IV of the Computer Analyst/
Programmer course. This, the second subject, focuses on the
analysis phase of systems development while the first covered the
analysis phase. The objective of this subject is to provide the
student with an understanding of the duties of the systems
designer together with an understanding of specific methods and
techniques used in the design phase of the systems life cycle.
Specifically, the topics covered are: output design, input design,
file/data base design, processing and controls, implementation
and hardware/software selection. The application of CASE tools
is illustrated with demonstrations of the use of Excelerator from
Index Technology.

B15-C502 PL/I PROGRAMMING
PL/I is a structured high-level programming language. Elements
as well as advanced concepts are covered. The objective of
the course is to enable students to become proficient in all aspects
of PL/I programming with particular emphasis on business applica-
tions. Topics covered include all structured control statements,
built-in functions, multi-dimensional array processing, subrou-
tines, function procedures, structures, various input/output proc-
essing and file processing. The course uses the lecture/lab
approach to present the material. Several programming assign-
ments are written by the student to reinforce learning the lan-
guage specifications and programming techniques.

B15-C507 BUSINESS APPLICATIONS
The purpose of this course is to provide the student with an
understanding of the most common business computer applica-
tions. The following are covered: Accounting—payroll, AR, cash
receipts, AP, fixed assets, G/L, financial statements. Sales/mark-
eting—invoicing, order filling, sales analysis, marketing penetra-
tion. Inventory control—forecasting and control, purchasing and
receiving. Manufacturing—work-in-process and scheduling, labor
distribution and job-costing.
B15-C508 MICROCOMPUTERS
Packages studied include the spreadsheet package SUPERCALC 3, the wordprocessing packages EDIX, WORDIX, SPELLIX, and a stand-alone graphics package BPSPGRAPH. Other packages will be included.

B15-C601 EDIT PROJECT
No subject description is available at this time.

B15-C607 DATA BASE
The purpose of this course is to introduce the student to the following software products: retrieved systems—extracto file management systems—Mark IV data base management systems—IMS, Total, IDMS, Adabas, System 2000. The students will be expected to design, code and test an inquiry program to access and MS file.

B15-C608 4TH GENERATION SOFTWARE
This subject instructs students in the latest 4th generation methodologies. The COGNOS "POWER HOUSE" system is used for this purpose. Instruction and "hands-on" experience are given to each student using the four main products that make up the system: QDD data dictionary processor, QUIZ report generator, QTP volume processor, QUICK screen design and on-line data entry processor.

B15-C609 COMPUTER TOPICS
A series of short modules subject to change with the times. These include Data Communication, Current Hardware and trends. Languages examined are PASCAL, FORTRAN and APL.

B15-C610 CO-OPERATIVE WORK EXPERIENCE
Students will work for six weeks full-time in a computer installation in Winnipeg.

B15-M102 MATHS OF FINANCE
Review of algebra, numbering, systems, discount, simple interest, negotiable instruments, ordinary annuities, installment buying, annuities due, deferred annuities, debt extinction by amortization and sinking fund, bonds, depreciation, perpetuities, capitalization and comparison of buying costs.

B15-M301 STATISTICS
The course deals with statistics as applied to business management and research; covering summarizing data, frequency distributions, statistical descriptions, summarizing data; probability, decision making, probability distributions, sampling distributions, estimation and hypothesis testing.

B16-E129 COMMUNICATIONS I
This subject provides instruction and practice in the writing of business letters, memos, and short reports. The oral portion incorporates basic principles of effective speaking and applies them to interviews and presentations.
PURPOSE
To develop a broad general background in electronics with specialty training in computer hardware and software, including troubleshooting, maintenance and servicing.

COURSE
Computer Engineering Technology is a two-year diploma course with a September entry date. It is a multi-discipline course encompassing electronic, electrical and some mechanical subjects. These subjects range from digital electronics and computer systems to peripheral devices and the troubleshooting environment.

Computer, Instrumentation, Electrical and Electronic Engineering Technology courses have a common first year of training.

ENTRANCE REQUIREMENTS
- 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation) with Mathematics 300, English 300 or 301, and Physics 300* or Physical Science 301;
- Adult Basic Education Pre-Technology (Adult 12) Program completion

Mature Student Admission. Mature students may submit either the Manitoba Education and Advanced Training (M.E.A.T.) Grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits; however, they must have specific credits in mathematics, English, and science* as outlined above. Mature students must also be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

* Physics 300 is strongly recommended as a more appropriate background for technology.

EMPLOYMENT POTENTIAL
Graduates have found employment in almost every aspect of the electronics and computer industry: in research and development, installation, testing and maintenance, design, and marketing.

COURSE OUTLINE
Term 1
ELE-E101 Electric Circuits
ELE-E102 Electrical Instruments
ELE-E104 Personal Computers I
ELE-E106 Drafting
ELE-M102 Mathematics
ELE-P109 Physics
ELE-R100 Report Writing

Term 2
ELE-E201 Electric Circuits
ELE-E202 Electrical Instruments
ELE-E204 Personal Computers II
ELE-E207 Basic Electronics
ELE-M202 Calculus
ELE-P209 Physics
ELE-R200 Report Writing

Term 3
ELE-E301 Electric Circuits
ELE-E303 Introductory Logic Circuits
ELE-E305 Introductory Microprocessors
ELE-E307 Basic Electronics
ELE-M302 Calculus
ELE-P309 Physics

Term 4
ELE-C421 Electronic Circuits
ELE-C423 Digital Design
ELE-C424 Computer Systems I
ELE-C425 Microprocessors I
ELE-C427 Electronic Devices
ELE-M422 Calculus

Term 5
ELE-C521 Circuits & Transmission Lines
ELE-C524 Computer Systems II
ELE-C525 Microprocessors II
ELE-C527 Electronic Devices
ELE-C528 Computer Peripherals
ELE-C529 Linear Control Systems
ELE-M522 Calculus

Term 6
ELE-C621 Data Communications
ELE-C624 Computer Systems III
ELE-C625 Microprocessors III
ELE-C626 Manufacturing Techniques
ELE-C627 Electronic Devices
ELE-C629 Trouble Shooting Microprocessor Systems
ELE-R620 Report Writing

SUBJECT DESCRIPTIONS
ELE-C421 ELECTRONIC CIRCUITS
Matrix methods in circuit analysis, power transformers; equivalent circuits and regulation; balanced three-phase systems; analysis of three-phase systems; transformers in three-phase systems.

ELE-C423 DIGITAL DESIGN
This course is a continuation of the Introductory Logic Circuits (ELE-C303) course. The course addresses a number of areas of digital design including: static awareness; different logic families and their interfacing; operation of specific function circuits and the operation of memory devices. Approximately half the instruction time is spent doing laboratory exercises. The laboratory exercises are used to verify integrated circuit operation and test the operation of small digital designs synthesized from previous circuits covered.

ELE-C424 COMPUTER SYSTEMS
This semester will deal with general topics of the "Classic" computer systems, with emphasis on: Data types, Buffered block parallel and bit serial Input/Output, Polled versus Interrupt driven I/O, Input/Output devices and formats, disk hardware and software with respect to disk formats, files and linear versus hierarchically directory structures, and preparation of disks for a Disk Operating System. At the end of this semester, the above topics are integrated to introduce the elements of a ROM monitor (such as "BIOS") and a DOS such as "MS DOS".
ELE-C425 MICROPROCESSORS I
This course is composed of two main components: a) assembly language programming, and b) introduction to the hardware design of a microcomputer. The software skills developed in (a) are used to have a minimal system microcomputer perform simple serial I/O.

ELE-C427 ELECTRONIC DEVICES
This course consists of topics relating to gain, coupling, frequency considerations of transistor signal and power stages. Also investigated are transistor circuit stages in the IC operational amplifier. Time allotted is five hours per week in laboratory sessions, lectures and problem solving.

ELE-C521 CIRCUITS & TRANSMISSION LINES
This subject examines transient states in R-L, R-C and R-L-C circuits, undergoing both step and a.c. excitation. Analysis involves using the "assumed solution" and the more rigorous Laplace approach. The subject concludes by examining how wavefronts move along transmission lines.

ELE-C524 COMPUTER SYSTEMS II
This semester will provide a more detailed view of the internals of a current DOS and include application specific topics of the currently most prevalent applications such as: MS-DOS, CAD (S), Data Base and Spread Sheets, Word Processors and Windowing subsystems; with emphasis on the installation, configuration, and maintenance of these.

ELE-C525 MICROPROCESSORS II
This course is a continuation of the course Microprocessors I (ELE-C425). Parallel I/O is introduced with the programming continuing to be in assembly language. Control applications, interrupts, electrical characteristics, timing and some common interfacing requirements are covered.

ELE-C527 ELECTRONIC DEVICES
This course is a continuation of ELE-C427. Five hours per week of lectures and labs are devoted to the IC operational amplifier in comparator, negative feedback and active filter circuits. Some other ICs related in function are also studied.

ELE-C528 COMPUTER PERIPHERALS
The course deals with peripheral devices used in computer systems with emphasis on floppy and hard disk drives, printers, and displays. The operation of an XT system is examined at the BIOS level and how it interacts with its peripheral devices. Two hours per week is used for lecture time and four hours for lab work.

ELE-C529 LINEAR CONTROL SYSTEMS
This course introduces the fundamentals of closed-loop control (linear systems). Feedback system terminology, components, and block diagram algebra are discussed in the first half of the course. The second half of the course analyzes first and second-order systems (speed control and position control) and applies control-system principles to robotic systems.

ELE-C621 DATA COMMUNICATIONS
The course deals with the methods used to transmit digital information between systems using both analog and digital links. The course covers the use of MODEMS for conversion of digital data using AM, FSK and PSK for their transmission on analog lines, data communications hardware, and data communication protocols. Also covered is digital transmission using PCM and TDM. Three hours per week is used for lecture time and two hours for lab work.

ELE-C624 COMPUTER SYSTEMS III
This semester will deal with more advanced system types, their structure, installation, preparation and maintenance, and their target applications, specifically: UNIX (XENIX and/or QNX) multi-tasking a multi-user operating system as well as a relational look at distribute systems. Additionally, various advanced topics will be presented, such as: Bit Slice architectures, Site preparation and installation, and an introduction to RISC and/or Parallel Processing.

ELE-C625 MICROPROCESSORS III
This course is a continuation of the course Microprocessors II (ELE-C625). The topics of digital-to-analog conversion, analog-to-digital conversion, DMA and large system design considerations are studied. During the second half of the course, the students are introduced to a 16/32-bit microprocessor, embedded system design and the "C" programming language.

ELE-C626 MANUFACTURING TECHNIQUES
The Manufacturing Techniques course is an introductory course in the design of electronic equipment. The course will provide the student with basic skills in soldering and desoldering of components used on double-sided printed circuit boards with plated-thru-holes, and the soldering and desoldering of surface-mounted components. This course introduces the student to wire-wrapping techniques. The course introduces Printed Circuit Artwork Design and Layout.

ELE-C627 ELECTRONIC DEVICES
This course is a continuation of ELE-C527. It consists of a three-hour lab and two hours of lecture per week. Power control, trigger devices and associated theory and applications are investigated. Practical aspects are also covered. Some other devices relevant to the technology are also investigated.

ELE-C629 TROUBLESHOOTING MICROPROCESSOR SYSTEMS
A practical, hands-on lab course. Principles of hardware troubleshooting, troubleshooting tools, methodologies, faults and their symptoms, built-in tests, external testers. Students use a variety of tools including the Fluke Micro System Troubleshooter, logic analyzer, signature analyzer and the oscilloscope to troubleshoot faults, both in this course and in their projects. A total of 40 hours of instructional time with about 50% devoted to lab work.

ELE-E101 ELECTRIC CIRCUITS
Basic concepts of electricity and electric circuits. Ohm's law, power, energy and efficiency, Kirchhoff's voltage and current laws, voltage and current divider rules. Problem-solving methods for simple DC circuits. Analysis of more complex DC electric circuits using network theorems, network conversions, branch, mesh and nodal methods.
ELE-E102 ELECTRICAL INSTRUMENTS
ELE-E102 Basic Electrical Instruments is an applied Ohms Law Laboratory course for the ELE-E101 Electric Circuits course. It includes instruction in human electrical safety and how to calibrate, measure and communicate instrument readings. Basic instrument design, circuit calculations as well as instrument characteristics are also covered. The instruments discussed include the VOM, DMM, VTVM, DC Bridge, and potentiometer.

ELE-E104 PERSONAL COMPUTERS I
This subject will provide students with a brief introduction to personal computer hardware and the most often used DOS commands with the intent of facilitating use of personal computer based programs. A Typing Tutor program, to improve basic keyboard skills, will be followed by an introduction to the WordPerfect word-processing program. The final weeks will be spent using the ORCAD drafting program to produce a simple circuit diagram.

ELE-E201 ELECTRIC CIRCUITS
Continuation of Electric Circuits ELE-E101. Fundamental concepts of sinusoidal voltage and current, time and phasor domains; instantaneous average and effective values. Resistor, inductor and capacitor in AC sinusoidal circuit; impedance and admittance. Problem-solving methods for simple AC circuits. Analysis of more complex AC electric circuits using network theorems, network conversion, mesh and nodal methods. Single phase AC power: average, reactive and apparent, power factor; measurement of power in a single phase AC circuit using a wattmeter.

ELE-E202 ELECTRICAL INSTRUMENTS
This course is a continuation of ELE-E201 Basic Electrical Instruments and is the lab course for ELE-E201 Electric Circuits. It concentrates on the calibration and proper use of instruments for measurement in AC circuits. The instruments discussed are the function generator, VOM, VTVM, DMM and the oscilloscope. The course consists mainly of practical lab work.

ELE-E204 PERSONAL COMPUTERS II
This introductory programming subject in the BASIC language emphasizes a structured approach to problem-solving and programming. The focus of this approach is to develop an algorithm, translate it into a program, check the program for accuracy and debug the program as necessary. The three hours per week of formal class time is spent in the PC room or a classroom working on one of the series of tutorials/assignments which are keyed closely to the text and supplemented with material more relevant to applications in the Electronics, Electrical, Computer and Instrumentation Technology areas.

ELE-E207 BASIC ELECTRONICS
This course is a first course in Solid State electronics. Upon the completion of this course, the student will be able to analyze, design and build simple diode rectifier circuits, Zener diode circuits and Transistor biasing circuits.

ELE-E301 ELECTRIC CIRCUITS

ELE-E303 INTRODUCTORY LOGIC CIRCUITS
The purpose of this course is to familiarize the student with popular digital integrated circuit devices and to develop the student to the point where they can describe their operation and apply them in digital circuits. The course consists of approximately 25% lecture time in which specific blocks of material are dealt with in preparation for a follow-up laboratory exercise.

ELE-E305 INTRODUCTORY MICROPROCESSORS
This subject starts by providing a general hardware description of microprocessor systems at the block diagram level. It then continues with an introduction to microprocessor programming at the assembly- language level, including use of the TASM Cross Assembler. Assembly- language programming is implemented on systems which use the Z80 microprocessor. This subject lays the foundation for the more advanced microprocessor training contained in the second year of all Electrical, Electronic, Instrumentation and Computer Technology programs.

ELE-E307 BASIC ELECTRONICS
This course is a continuation of Term 2 Basic Electronics introduction to the AC analysis and design of Junction Transistor, Field Effect, and MOS transistor circuits. It concentrates on analysis techniques to predict the terminal behaviour of small signal amplifiers. It is primarily a lecture and lab-related course and consists of six hours a week.

ELE-M102 MATH
Pre-calculus "review": linear, quadratic, logarithmic, exponential and simultaneous (linear) equations. Some factoring, graphing, formula manipulation, functional notation, complex numbers. Right triangle, trig, radians, and problem solving. Emphasis is on doing and in the process of orderly developments. 56 hours in-class, plus testing.

ELE-M202 CALCULUS
Differential Calculus. Slope, straight line, parabolas, circle, translation of axes, trapezoid rule for areas. Derivatives of: polynomials, powers, products, quotients: implicit expressions, trig and inverse trig, logarithmics and exponentials. Tangents, normals, motion, rel. rates, max/min., small changes and "Newton's Roots". 54 hours in-class, plus testing.

ELE-M302 CALCULUS
Integral calculus. Work with trig identities and equations: reciprocal, pythagorean, angle sum, double and half angle relations. Integrate algebraic, log, exponential, trigonometric quantities. Use substitution and "by-part" techniques. Find areas, average and RMS values, and work with integrals with current, charge and voltage. 46 hours plus testing.
ELE-M422 CALCULUS
Applied Calculus for Computer Technology - McLaurin and Taylor series, differential equations with emphasis on LaPlace transform methods. Applications include: computation of trigonometric and logarithmic functions by series, transients in series circuits and using TUTSIM software to simulate natural and controlled systems.

ELE-M522 CALCULUS
Applied Calculus for Computer Technology - Fourier series and MathCAD software. Applications include harmonic analysis by integration and software, waveform filtering simulation by FFT on software, ac circuits by matrices on software.

ELE-P109 PHYSICS
An introductory course in engineering mechanics and electricity with emphasis on solving problems and dealing with such topics as the nature of physics, physical quantities, systems of measurements, significant figures, translational motion in one and two dimensions, Newton's laws of motion, free body diagrams, work, power and energy, discreteness of electric charge, electrostatic force and field, Coulomb's law and Gauss' law, electrostatic potential and potential energy, capacitance and electron ballistics. A total of 50 hours of instructional time is divided into 30 hours of lectures and 20 hours of labs.

ELE-P209 PHYSICS
An intermediate level course in engineering mechanics and electromagnetism with emphasis on solving problems and dealing with such topics as rotational kinematics & dynamics of rigid bodies, conservation of angular momentum, work power and energy in rotation, motion of simple, damped and driven oscillating mechanical systems and their electrical analogues, resonance and Q value, magnetic fields due to different current configurations, force on moving charge and current carrying wire in a magnetic field, electromagnetic induction, self and mutual inductance and magnetic properties of materials. A total of 40 hours of instructional time split evenly between labs and lectures.

ELE-P309 PHYSICS
The course deals with the transfer of energy by waves, mechanical as well as electromagnetic. The topics covered include definition of elastic and EM waves, longitudinal and transverse waves, speed of waves in different media, reflection, refraction, total internal reflection & fibre optics, diffraction, interference, standing waves and various modes of resonance. Doppler effect and it's applications, intensity and loudness of sound, SIL, radiant & luminous intensity, response of the eye, illumination & luminous intensity, sources of light and photoelectric effect. A total of 40 hours of instructional time split evenly between labs and lectures.

ELE-R100 REPORT WRITING
Streamlining the students' approach to writing; planning and writing technical business letters and memorandums; planning and writing short reports and medium-length investigation reports; writing at a computer terminal.

ELE-R200 REPORT WRITING
Presenting informational orally: at technical briefings, meetings, and conferences; preparing job-search documentation; attending employment interviews; planning and writing equipment descriptions and operating instructions.

ELE-R620 REPORT WRITING
Review of report writing, oral presentations, and job-search techniques; planning, writing and presenting a formal technical report.
CONSTRUCTION ENGINEERING TECHNOLOGY

PURPOSE
To develop the knowledge and skills required in the field of construction technology including basic building design, estimating, scheduling, site supervision, and project management.

COURSE
Construction Engineering Technology is a two-year diploma course with a September entry date. The course is designed to develop the skills needed to assist engineers in building construction and structural design for buildings, including soil investigation, foundation design, masonry, concrete, and steel design.

ENTRANCE REQUIREMENTS
- 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation) with Mathematics 300, English 300 or 301, and Physics 300* or Physical Science 301; or
- Adult Basic Education Pre-Technology (Adult 12) program completion

Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits; however, they must have specific credits in mathematics, English, and science* as outlined above. Mature students must also be 20 years of age or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

* Physics 300 is strongly recommended as a more appropriate background for technology.

EMPLOYMENT POTENTIAL
Graduate technologists have found employment in construction supervision, building inspection, estimating, materials testing and building product sales. These jobs have been with contractors, builders, fabricators and consulting firms in private industry or with government agencies or departments. Some graduates have become self-employed as contractors in various phases of building construction.

COURSE OUTLINE
Term 1
CIV-C162 Engineering Graphics
CIV-C165 Mechanics
CIV-C166 Surveying
CIV-M163 Introduction To Application Software
CIV-M169 Mathematics
CIV-R167 Communications

Term 2
CIV-B262 Engineering Graphics II
CIV-B263 Computer Assisted Drafting I
CIV-B264 Structural Analysis I
CIV-B265 Strength Of Materials I
CIV-B267 Surveying II
CIV-M261 Introductory Calculus

Term 3
CIV-B363 Computer Assisted Drafting II
CIV-B364 Structural Analysis II

CIV-B365 Strength of Materials II
CIV-B367 Surveying III
CIV-B368 Survey Camp
CIV-M361 Calculus
CIV-M364 Statistics
CIV-R367 Specifications & Reports

Term 4
CIV-B461 Soil Mechanics I
CIV-B462 Concrete Construction
CIV-B463 Computer Assisted Drafting III
CIV-B464 Structural Analysis III
CIV-B467 Reinforced Concrete Design
CIV-B469 Building Science

Term 5
CIV-B561 Soil Mechanics II
CIV-B562 Building Construction & Site Management
CIV-B563 Steel Design
CIV-B566 Job Control
CIV-B568 Masonry Design
CIV-B569 Building Services

Term 6
CIV-B661 Foundation Design
CIV-B662 Estimating & Construction Management
CIV-B663 Timber Design
CIV-B668 Testing Materials
CIV-B669 Drawing & Specification Interpretation
CIV-R666 Industrial Psychology

SUBJECT DESCRIPTIONS
CIV-B262 ENGINEERING GRAPHICS II
This subject is planned to continue the development of the students' technical drawing and drafting interpretation skills. Through the preparation of a set of construction drawings for a single-family residence, students will be introduced to residential construction practices, standards, and terminology applicable to their technology specialty.

CIV-B263 COMPUTER ASSISTED DRAFTING I
Introduction to graphic computers and computer-aided drafting, involving geometric entities, input modes, coordinate types, drawing creation and manipulation, dimensioning, cell libraries (creation and usage), layers, bookkeeping functions, and output (plotting). Production of drawings using Calcomp (Terak) hardware, and a software package, named "MINN-DRAFT".

CIV-B264 STRUCTURAL ANALYSIS I
1. Shear and Moment in Beams
2. Stresses in Beams

CIV-B265 STRENGTH OF MATERIALS I
The first half of the course gives the student the background in solving problems dealing with support and reactions in frames and trusses. The second half of the course deals with stress and deformation of materials.

CIV-B267 SURVEYING II
This subject consists of profiles and volumes from topographic maps; earthwork volumes from cross-sections (including the
CIV-B363 COMPUTER ASSISTED DRAFTING II
The first half of this trimester will be a continuation of the previous one, and will involve a more complex project. This will be followed by the introduction to more sophisticated Software, named "Design Pro". This will include use of menu options, directories, drafting mode, user work area, digitizers, function codes, grid and scale, keyboard coordinate entries, graphics commands, layers and pens, measures and drafting aids, introduction to 3-D, text editor, editing drawings, figures (cells), text, dimensioning and plotting. Production of drawings related to engineering disciplines using Calcomp (Terak) hardware.

CIV-B364 STRUCTURAL ANALYSIS II
1. Combined Stresses
2. Mohr's Circle
3. Structural Loads and Procedures

CIV-B365 STRENGTH OF MATERIALS II
This course deals with fluid statics, the stability of gravity, and retaining walls, and graphical static solutions to simple frames.

CIV-B367 SURVEYING III
Subject includes the following topics: foundation layout methods, sewer and water system layout, and laser levelling systems.

CIV-B368 SURVEY CAMP
This course is intended to provide the student with practical applications of surveying principles as they relate to building layout. The camp is held for three days in the spring.

CIV-B461 SOIL MECHANICS I
Subject includes the following topics: introduction to soil mechanics, methods of soil formation (grain size analysis), soil grain characteristics, soil-water relationships (volumetric and gravimetric), soil-water relationships (plasticity), and soil classification systems.

CIV-B462 CONCRETE CONSTRUCTION
The course will require students to study the manufacturing process of cement. The students are required to develop an understanding of the design and control of concrete mixtures. They will become familiar with testing of concrete, the properties of concrete, the types of concrete, the site handling and inspection of fresh and solid concrete building components. They will be able to describe graphically and explain correctly, procedures required for forming selected concrete building components. They will explain correctly the application of various forming systems used by industry which utilizes concrete as a building material. They will be able to define functions of selected concrete building components and systems through the medium of architectural and structural working drawings.

CIV-B463 COMPUTER ASSISTED DRAFTING III
This topic, during this third trimester of this subject, will involve the student in using Computer Assisted Design and Drafting methods in the production of a variety of engineering drawings.

CIV-B464 STRUCTURAL ANALYSIS III
1. Determinacy
2. Shear and Moment Diagrams
3. Moment Distribution
4. Approximate Methods

CIV-B467 REINFORCED CONCRETE DESIGN
1. Materials and Specifications
2. Beams - Flexure
3. Beams - Shear
4. Beams - Deflection
5. Columns
6. Floor Systems
7. Concrete Walls

CIV-B469 BUILDING SCIENCE
This is an introductory course planned to provide the student with a review of basic principles; occupant requirements in occupied spaces; an understanding of the interplay through building envelopes by both interior and exterior environments; an introduction to psychrometry; thermal and moisture gradients across the building envelope; heating and cooling loads. The course comprises a series of lectures and case studies with the student required to perform related calculations, and case studies.

CIV-B561 SOIL MECHANICS II
Subject includes the following topics: continuation of soil mechanics, settlement of fine grained soil, shear strength, frost action in soils, density of soils and compaction procedures, and permeability.

CIV-B562 BUILDING CONSTRUCTION & SITE MANAGEMENT
The subject is intended to have the student investigate the manufacture, testing, properties, types, uses, storage, site handling, inspection, equipment and the methods and procedures of application of the various architectural and engineering materials used in building construction. The student will also develop an understanding of on-site management as it relates to the construction superintendent.

CIV-B563 STEEL DESIGN
This design of individual steel building components such as tension members, columns, beams, base plates, bolted and welded connections based on CAN3-S16. 1-M84, using CISC, Handbook of Steel Construction, latest edition.

CIV-B566 JOB CONTROL
This subject consists of the theory of project scheduling using the Critical Path Method. It will include the logistics of the method including terminology, arrow diagrams, expediting, resource allocation, float and calendar dating.

CIV-B568 MASONRY DESIGN
This subject consists of reviewing the fundamental structural principles involved in the design of concrete and brick masonry components and, briefly, examining the related hardware and construction practices and problems.
CIV-B569 BUILDING SERVICES
This course provides the student with a basic understanding of building services: an overview of all building services describing the use and types of equipment and systems and field trips to a variety of structures, both built and under construction, to provide a visual description of actual systems and equipment. The building services covered in this course include water supply and distribution, waste handling, HVAC systems and equipment electrical lighting and power systems; people movers; annunciator systems etc. The course comprises lectures, field trips, case studies and the student will prepare a report on a specified building and its systems following a field trip.

CIV-B561 FOUNDATION DESIGN
Subject is a continuation from Soil Mechanics II and includes the following topics: vertical soil press calculations, footing types and design, r.c. footing design, pile types and design, and horizontal earth pressures.

CIV-B562 ESTIMATING AND CONSTRUCTION MANAGEMENT
This subject consists of construction estimating and its related costs, with practical exercises in the methods used to estimate residential, commercial & industrial buildings. The student will also develop an understanding of the construction process and competence with the application of management principles to construction projects.

CIV-B563 TIMBER DESIGN
This course consists of the design of the various components that make up a timber and/or plywood structure. It also deals with the design of wood-framed buildings in accordance with CAN-3-066. 1-M84.

CIV-B568 TESTING MATERIALS
This subject consists of demonstrating procedures used in calibrating and verifying lab-testing equipment, testing commercially available structural products in accordance with the appropriate standards, introducing the concept of quality control, particularly with respect to concrete, and comparing the results of theoretical assessments of structural components to their actual demonstrated capacity.

CIV-B569 DRAWING & SPECIFICATION INTERPRETATION
This course provides the student with a review of standard working drawings and specifications for building mechanical systems and their application. Incorporated within the course is the application of building codes and by-laws relevant to the mechanical services and the BIP's technical standards. The course comprises a series of lectures, interpretation of working drawings and specifications, interpretation of by-laws and estimating for building services.

CIV-C162 ENGINEERING GRAPHICS
Students will receive a basic understanding of the requirements for technical drawing standards. They will be required to develop basic engineering drafting skills through practice in the use of drawing instruments, the interpretation of simple drawings and sketches and the production and reproduction of simple components and mechanisms. Upon successful completion of this course, students will have obtained a thorough foundation in the fundamentals of engineering graphics, a basis upon which they may further develop their drafting skill and knowledge in their technology specialties. This course has one hour lecture per week and five hours lab per week.

CIV-C165 MECHANICS
Subject includes the following topics: 1) Basic Principles, 2) Resultant of Force Systems, 3) Equilibrium of Force Systems, 4) Centroid of Areas, and 5) Moment of Inertia.

CIV-C166 SURVEYING
This subject consists of the theory and use of survey measuring instruments, the steel tape, engineer's level and transit and the basic techniques in the use of these instruments.

CIV-M163 INTRODUCTION TO APPLICATION SOFTWARE
Through hands-on experience, this course provides an introduction to MS-DOS commands, WordPerfect word-processing, SuperCalc3 spreadsheet work, and DBASE III Plus data base manipulation. The course setting is in a networked IBM-PC lab.

CIV-M169 MATHEMATICS
The course is basically a review of high school mathematics with emphasis on trigonometry, solution of algebraic equations, exponents, and logarithms.

CIV-M261 INTRODUCTORY CALCULUS
The course provides an introduction to differential calculus of functions of a single variable with emphasis placed on applications related to the field of Civil Engineering Technology.

CIV-M361 CALCULUS
The course is an introduction to the process of integration of functions of one variable. Includes techniques of integration as well as applications of integration in elementary problems relating to the field of Civil Engineering Technology.

CIV-M364 STATISTICS
The course is an introduction to general elementary statistical principles involving data handling, measures of central tendency and dispersion, fundamentals of probability, distributions, and least squares correlation and regression.

CIV-R167 COMMUNICATIONS
The subject covers the organizing and writing of letters, memorandums, and reports on technical subjects.

CIV-R367 SPECIFICATIONS AND REPORTS
The Report Writing part of this course helps the student to polish the communication skills gained in Term 1. Emphasis is on producing the written reports and giving the oral briefings common in a scientific, engineering, or industrial environment. Secondly, the student is introduced to construction specifications, and studies the requirements for building materials.

CIV-R666 INDUSTRIAL PSYCHOLOGY
The student will be able to discuss, at the junior-management level, the various types of business, management's working relationship with the unions and employees, the means for increasing company efficiency through better employee morale, and practical supervisory methods.
CREATIVE COMMUNICATIONS

PURPOSE
To develop the knowledge and skills required to function effectively as a writer in print or broadcast journalism, advertising and public relations.

COURSE
Creative Communications is a two-year diploma course with a September entry date. The course is designed to develop broad skills as a generalist in journalism, advertising and public relations in the first year of training. In the second year of the course, students have the opportunity to specialize in one of the three areas.

ENTRANCE REQUIREMENTS
A - 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation) with one of English 300 or 301; or
- Adult Basic Education 11B;
and
B - submission of a two-page autobiography;
and
C - successful completion of tests of reading ability and current affairs information;
and
D - completion of a home assignment (details provided at the time of entrance testing; the deadline for submission of the assignment is two weeks from the test date.);
and
E - An interview with the Creative Communications Selection Committee.

* It is strongly recommended that successful applicants have a typing proficiency of 40 wpm.

Mature Student Admission. Mature student applicants may submit either the Manitoba Education Mature Student Grade 12 Diploma with English 300 or 301, or G.E.D. 12 in lieu of 20 high school credits. Mature applicants must also complete requirements (B) through (E) outlined above and be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

This is a special selection course. Students are selected on the basis of writing talent, motivation, and suitability for the kinds of communications careers available in the labour market.

EMPLOYMENT POTENTIAL
Past employment records show that a high percentage of graduates are working in course-related fields in Manitoba and other Canadian provinces. Graduates have found employment as reporters for daily and weekly newspapers; copywriters and media buyers for advertising agencies, radio stations, and television stations; and public relations personnel for various companies and government agencies.

COURSE OUTLINE
Term 1
B10-C110 Public Relations: Introduction
B10-C111 Creative Writing: Fiction
B10-C112 Journalism: Introduction
B10-C113 Composition & English Grammar
B10-C114 Advertising: Introduction
B10-C115 Literary Structure & Styles
B18-W120 Word Processing: Introduction

Term 2
B10-C216 Current Events
B10-C217 Oral Communications
B10-C218 Radio: Introduction
B10-C220 Public Relations: Process
B10-C221 Creative Writing: Drama
B10-C222 Journalism: Style And Practice
B10-C224 Advertising: Electronic Media

Term 3
B10-C319 Television: Introduction
B10-C325 Canadian Literature
B10-C330 Public Relations: Management
B10-C331 Creative Writing: Style
B10-C332 Journalism: Media and the Law
B10-C334 Advertising: Print Media
B10-C410 Business Communications

Term 4
Required subjects:
B01-A309 Layout & Design
B10-C420 Independent Professional Project I
B10-C429 Television: Production
B10-C430 Radio: Production
B12-E415 Applied Economics
Electives: one subject required
B10-C440 Public Relations: Practicum I
B10-C442 Journalism: Practicum I
B10-C444 Advertising: Practicum I

Term 5
Required subjects:
B10-C510 Field Work I
B10-C520 Independent Professional Project II
B10-C537 Television: Workshop
B10-C544 Radio: Fine Tuning for the Ear
Elective Group A: one subject required
B10-C550 Public Relations: Practicum II
B10-C552 Journalism: Practicum II The Newsroom
B10-C554 Advertising: Practicum II
Elective Group B: two subjects required
B02-P516 Photojournalism I
B10-C509 Media Buying I
B10-C512 Freelance Writing I
B10-C513 Cultural Arts I
B10-C514 Theatre Arts I
B13-S527 Psychology

Term 6
Required subjects:
B10-C609 Independent Professional Project III
B10-C610 Field Work II
B10-C644 Radio: You’re on the Air
B10-C649 Television: Broadcasting
Elective Group A: one subject required
B10-C659 Public Relations: Practicum III

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B10-C653 Journalism: Practicum III Developing Print
B10-C664 Advertising: Practicum III
Elective Group B: two subjects required
B10-C612 Media Buying II
B10-C614 Theatre Arts II
B10-C622 Freelance Writing II
B10-C623 Cultural Arts II
B10-C635 Manitoba Literature
B02-P626 Advanced Photojournalism II
B13-S617 Sociology

SUBJECT DESCRIPTIONS

B01-A309 LAYOUT & DESIGN
This course involves looking at the basic principles of design and applying these in practical exercises. Composition of typographic and illustrative elements, copyfitting, photo cropping and scaling, along with reproduction methods and materials are explored. The aim is to give the student some fundamental skills towards layout of magazine/newspaper advertisements and newsletters, coupled with a grasp of the terminologies used in the graphic arts industry.

B02-P516 PHOTOJOURNALISM I
This introductory subject provides the student with the theory and practical skills to make photographs to complement the written word. The following topics are covered in this subject: the major developments in documentary and photojournalistic photography from 1983 to present, the camera and its controls, the processing of the record, the enlarging and developing the print, the lighting for photography, and the techniques for improving photographs.

B02-P626 ADVANCED PHOTOJOURNALISM II
In this subject, the student is taught how to research, photograph, process and print, and caption a photo story at a professional level. Topics covered in this subject include: the news photograph, the feature photograph, the photograph sequence, and the photograph and essay.

B10-C110 PUBLIC RELATIONS: INTRODUCTION
This introductory subject provides the student with a basic understanding of the history of public relations as it related to the contemporary practice. The common roles, functions and activities associated with public relations as well as the dynamics of public opinion formation will be examined. Information will be presented through lectures and class discussions, with frequent representative guests from the field. Students will gain practical experience in preparing media releases, the most basic communication tool of the field. The course is designed to meet the needs of those planning further study in public relations as well as those pursuing careers in related fields.

B10-C111 CREATIVE WRITING: FICTION
This subject provides instruction and practice in the application of basic elements of fiction as related to the contemporary short story. Study focuses on the writing process with numerous writing activities designed to stimulate thought and enhance existing writing abilities.

B10-C112 JOURNALISM: INTRODUCTION
This subject introduces students to journalism by examining news values and news content. Interviewing styles and techniques, as well as researching tools are taught and practiced. OP style and news writing are emphasized.

B10-C113 COMPOSITION & ENGLISH GRAMMAR
This subject is designed to develop the student's ability to write effectively through an analysis of different modes and rhetorical techniques. This subject includes a review of grammatical principles - especially the structure of the sentence - but emphasizes the larger rhetorical variables of purpose, voice, and audience.

B10-C114 ADVERTISING: INTRODUCTION
In this introductory subject, the student studies the evolution of advertising and current marketing and advertising theory, emphasizing the role of advertising in modern business communications and relationships with media.

B10-C115 LITERARY STRUCTURE & STYLES
This subject introduces the student to some of the structural and stylistic choices that a successful writer makes through examination of a variety of (mostly modern) works. The student examines such aspects as genre, style, and tone in both poetry and prose to reach an understanding not only of the what of a work of literature (its theme or content) but also of the how and why which motivated its production — the conscious and unconscious choices made by the writer. This subject provides a conceptual vocabulary for Canadian Literature (Term 4).

B10-C216 CURRENT EVENTS
This subject is designed to introduce students to a variety of significant current events both domestic and international. This subject examines the deeper issues underlying major events in order to provide students with a perspective framework for understanding events in relation to the larger historical and ideological forces which are shaping our century.

B10-C217 ORAL COMMUNICATION
This subject is designed to introduce the student to the techniques and skills of public speaking. The student learns techniques for overcoming stage fright, scripting a speech, and "shaping" a delivery through voice and gesture. Extensive use is made of video playbacks in order to analyze and evaluate speaking styles.

B10-C218 RADIO: INTRODUCTION
This subject is designed to introduce the student to the medium of radio. The student becomes familiar with the organization of a radio station and learns the differences of this electronic medium in the information age. The student learns about all the opportunities involved in radio. Emphasis is placed on discovering the student's own radio potential through studio work.

B10-C220 PUBLIC RELATIONS: PROCESS
Term 2 of public relations provides the student with a comprehensive introduction to the four-step problem-solving process fundamental to the contemporary practice of public relations. Assignments are designed as practical applications of the principles to be examined in the areas of research, planning and programming, action and communications, and evaluation. The emphasis in this term is on research and planning with attention to MBO techniques.

B10-C221 CREATIVE WRITING: DRAMA
In this creative writing subject, the student is encouraged to
develop the creative imagination through exercises in dramatic writing. The student practices writing for the stage, radio and television.

B10-C222 JOURNALISM: STYLE AND PRACTICE
Students put book learning and class lectures from the previous term to practice by covering civic politics, press conferences, and writing feature profiles on prominent local personalities. The subject emphasizes freelancing and selling news stories, and students are given direction on selling their work.

B10-C224 ADVERTISING: ELECTRONIC MEDIA
This subject focuses on the study of advertising planning and approaches for the creation of commercials for radio and television. Emphasis is placed on practical exercises plus extensive study of the role of electronic media theory and practice.

B10-C319 TELEVISION: INTRODUCTION
This course is designed to introduce the student to the various components of television production. Emphasis is placed on the student learning through hands-on experience with portable, studio, and editing videotape equipment.

B10-C325 CANADIAN LITERATURE
This subject is designed to introduce the student to the works of some of the major writers in twentieth-century Canada and to the individual and cultural backgrounds which have shaped their writing. It also develops a critical awareness of the presuppositions which shape our notions of what literature is and is not — and which also mandate what we regard as "Canadian" literature. The material covered helps the student to respond effectively to professional situations requiring a knowledge of Canadian literature.

B10-C330 PUBLIC RELATIONS: MANAGEMENT
Term 3 of public relations addresses the identification of an organization's internal and external publics and examines the most effective means of communicating with each. Study focuses on the managerial role of PR in such key areas as media, consumer and corporate relations. This subject also addresses the emergence of issues management as a major PR function in the 80's as well as the ongoing concern for ethics in terms of standards or principles of conduct. Topics are presented in both lecture and workshop format with an emphasis on case studies.

B10-C331 CREATIVE WRITING: STYLE
The course examines the various writing styles in reviews, editorials, and features. Some fiction is discussed. The students write throughout the term and are expected to work in a group on a major project. The project involves a practical demonstration of student writing.

B10-C332 JOURNALISM: MEDIA AND THE LAW
This subject addresses intricate Canadian laws that affect the media - from defamation to contempt of court. Students cover a police press conference and attend court for news assignments. The subject addresses the use of statistics by examining Canadian crime statistics. Special emphasis is on community newspapers. Students visit rural weekly papers to research the paper and write a feature story. Lectures and class discussion deal with media ethics, morals, and taste.

B10-C334 ADVERTISING: PRINT MEDIA
This subject is designed to encourage the student to learn the role and current status of print media advertising while creating ads for newspaper, magazine, out-of-home and other print media vehicles.

B10-C410 BUSINESS COMMUNICATIONS
This subject introduces the student to the conventions and formats of business correspondence including letters, memos, and reports. A major part of the work involves preparing the student for entering the work force after graduation by assisting him or her to develop a professional resume and work portfolio.

B10-C420 INDEPENDENT PROFESSIONAL PROJECT I
This subject is designed to encourage students to develop a major, independent project related to their professional interests and ambitions. The type of projects offered vary from year to year depending on the participating instructors. The purpose of the course is to allow the students time not normally afforded in the classroom to develop an idea from concept to product, from the initial proposal to the finished presentation.

B10-C429 TELEVISION: PRODUCTION
This course is designed to further develop the student's skills in television production. Productions involving portable and studio equipment are designed with subject majors (journalism/public relations/advertising) as the dominant factor. Special attention is given to the audio portion of video recording and lighting techniques.

B10-C430 RADIO: PRODUCTION
The student is introduced to a radio studio and, by example, will develop and understand basic announcing techniques. Emphasis is placed on broadcast writing skills. This subject also involves a study of the CRTC and BBM, and other regulatory agencies that affect radio.

B10-C440 PUBLIC RELATIONS: PRACTICUM I
Term 4 focuses on the study of numerous communication tools used in the contemporary practice of public relations. The student becomes acquainted with writing and producing techniques related to the creation of such tools as brochures, A/V scripts and internal newsletters through lectures, workshops and working for clients from industry. Students are also introduced to the implications of Desktop Publishing.

B10-C442 JOURNALISM: PRACTICUM I TV AND RADIO NEWS
This subject addresses broadcasting writing with emphasis on meeting hourly and daily deadlines. Students attend prearranged press conferences or events in the community and are required to write radio and television stories. Instruction emphasizes the changes in writing style as students move from print to broadcast, from the written word to the use of visuals in telling a story. Assignments in this journalism subject dovetail with assignments in the radio and television subjects.

B10-C444 ADVERTISING: PRACTICUM I
The student focuses on advertising writing for various media with emphasis on print media and study of the advertising function. The student will write and format copy for a variety of advertising and promotions.
B10-C509 MEDIA BUYING I
This subject is designed for the student to study the advertising planning and buying processes for major media where industry guest speakers will play a key role in providing up-to-date data and information required to implement and execute the media buy.

B10-C510 FIELD WORK I
This subject is designed to give second-year students the opportunity to gain workplace experience through a three-week media placement. Term 5 students are assigned placements in accordance with their designated major (journalism, advertising, or public relations) with the instructor coordinating all placements.

B10-C512 FREELANCE WRITING I
Freelance Writing I is an introduction to the research, development, and preparation of marketable freelance material. Query letters, journalism styles, copyright, and market analysis are among the topics presented. The course is of interest to students who are actively writing and concerned with selling material.

B10-C513 CULTURAL ARTS I
The first term of this optional subject develops the student's knowledge of and capacity to respond to the visual arts. It is initially concerned with the different interpretive techniques used in responding to painting, sculpture, and architecture. This subject is not simply "art history," however, but an examination of the ways in which the visual arts interact with other areas of our cultural reality. The student is responsible for the exact direction of the second half of the term through the group projects he or she chooses to work on. Issues covered typically include the concept of "taste," the nature of artistic truth, the use of cultural icons in advertising, and the distinction between the erotic and the pornographic.

B10-C514 THEATRE ARTS I
This subject is designed to give the students both practical and theoretical experience in theatre arts. This experience is accomplished by workshops, study of scenes, plays, field trips, and presentations. The student is able to recognize the dramatic structure of a play, study a character and portray that character in a class presentation and, as a group project, organize and present a scene from a designated play.

B10-C520 INDEPENDENT PROFESSIONAL PROJECT II
This subject is designed to encourage students to develop a major, independent project related to their professional interests and ambitions. The type of projects offered vary from year to year depending on the participating instructors. The purpose of the course is to allow the students time not normally afforded in the classroom to develop an idea from concept to product, from the initial proposal to the finished presentation.

B10-C537 TELEVISION: WORKSHOP
This course is designed to develop advanced television production skills in the areas of EFP and studio production. Additional emphasis is placed on scripting for television, on-air presentations, control room and editing techniques.

B10-C544 RADIO: FINE TUNING FOR THE EAR
This subject is designed to fine tune earlier radio basics, and deals with the production of radio specials, commercial writing for the ear, documentaries, sports and news features. Microphone technique and air sound are developed.

B10-C550 PUBLIC RELATIONS: PRACTICUM II
This subject is designed to meet the needs of students intending to seek an entry-level position in PR and go on to build a career in the field. Terms 5 and 6 will include practical assignments involving selected clients and additional study of specialized applications of the theory addressed in previous terms. The projects to be undertaken and the areas of specialization to be further addressed are determined at the first class meeting.

B10-C552 JOURNALISM: PRACTICUM II THE NEWSROOM
In this subject, the classroom becomes a newsroom, as students are assigned news stories on a daily basis and are expected to research and write the stories for the end of the class. Students are assigned news stories from the community that mainstream media would be covering and are given direction on sources and angles. Their copies are edited by guest editors from local newspapers. Students are directed on how and where to sell their work.

B10-C554 ADVERTISING: PRACTICUM II
This subject refines the student's advertising skills with increased emphasis on conceptualization, intermediate executions and advanced copywriting techniques. Project activities are designed to enhance the student's planning and organizational abilities.

B10-C509 INDEPENDENT PROFESSIONAL PROJECT III
This subject is designed to encourage students to develop a major, independent project related to their professional interests and ambitions. The type of projects offered vary from year to year depending on the participating instructors. The purpose of the course is to allow the students time not normally afforded in the classroom to develop an idea from concept to product, from the initial proposal to the finished presentation.

B10-C516 FIELD WORK II
This subject is designed to give second-year students the opportunity to gain workplace experience through a three-week media placement. The instructor coordinates all placements.

B10-C512 MEDIA BUYING II
This subject involves practical exercises for the planning and buying of media, culminating with the delivery of a major buy for an assigned actual local client.

B10-C514 THEATRE ARTS II
This subject is designed to build upon the practical experience the student was exposed to in Theatre Arts I. Emphasis is placed on the further development of acting skills as well as the expansion of the student's knowledge on how to put a show together.

B10-C522 FREELANCE WRITING II
Freelance Writing II is an extension of FW I. The major focus is on writing style, manuscript presentation, and broader market contact.

B10-C523 CULTURAL ARTS II
The second term of this option focuses on the performing arts: film, theatre, opera, music, and dance. This subject assumes little prior
knowledge on the part of the student and attempts to develop a working vocabulary of those arts that tell stories and develop themes through non-literary means. The student is expected to attend whatever artistic performances are available at the time, and the class draws on the pool of talented local professionals for guest lectures and advice. Not all of the performing arts are necessarily covered in the term; the exact choice of subjects depends on the wishes of the instructor and students. This term’s work is especially valuable to students interested in reviewing and free lancing in arts-related areas.

B10-C635 MANITOBA LITERATURE
This optional subject introduces the student to a sampling of works by Manitoba authors and develops skills in researching and writing about these authors. The subject is concerned both with the authors’ individual techniques and styles and also with their generic responses (comic, satiric, tragic) to the experience of living on the prairies. A natural outcome of this process is trying to discover how far the concept of an autonomous Manitoba literature is justified. Through assignments such as interviews, the student is encouraged to develop a personal appreciation of local writers and of the pressures they face.

B10-C644 RADIO: YOU’RE ON THE AIR
This subject is designed to fine-tune ALL aspects of radio production. The student learns how to handle portable tape equipment, edit electronically, feed audio by phone, cart audio, and develop added skills on a production/broadcast board. Students are given the opportunity to be “ON AIR”.

B10-C649 TELEVISION: BROADCASTING
This course emphasizes major production work for a client-based assignment. Students will incorporate EFP and studio production skills to accomplish the productions. Journalism and public relations majors will produce documentaries, while advertising majors will produce commercials for client campaigns.

B10-C659 PUBLIC RELATIONS: PRACTICUM III
This subject is designed to meet the needs of students intending to seek an entry level position in PR and go on to build a career in the field. Terms 5 and 6 include practical assignments involving selected clients and additional study of specialized applications of the theory addressed in previous terms. The projects to be undertaken and the areas of specialization to be further addressed are determined at the first class meeting.

B10-C663 JOURNALISM: PRACTICUM III DEVELOPING PRINT
This subject allows students to apply all their previous experience to a documentary. Students work in teams to produce a package of stories around a theme. The stories are edited and then laid out on a desktop publishing system.

B10-C664 ADVERTISING: PRACTICUM III
In this subject, the student works for an assigned actual local client. Creative Communications students are teamed with students from Advertising Art to develop the complete ad campaign. In a competition judged by local advertising professionals, the student teams will make a formal presentation of the campaign for adjudication and evaluation.

B12-E415 APPLIED ECONOMICS
This subject guides students in using economic concepts and reasoning in every-day decision making; in reading and listening to accounts of economic issues in the communications media; and in recognizing the economic components of the nation. Emphasis is placed on the role of the price system in allocating resources, factors affecting economic investment in the economy, use and purpose of money, role of government through expenditures and taxation, and the operations of the banking system.

B13-S527 PSYCHOLOGY
This subject is a study of major personality theorists with the focus on the value and usefulness of each theory in explaining human nature and behavior. As many as possible of the following are considered - Freud, Jung, Adler, Homey, Erikson, Reich, Perls, William James, Skinner, Rodgers, and Maslow.

B13-S617 SOCIOLOGY
A basic knowledge of society and how it is organized is essential for an understanding of sociology. Our behavior is learned and society is the basic teacher. The course is conducted on a lecture/discussion format, and the student’s participation is actively encouraged.

B18-W120 WORD PROCESSING: INTRODUCTION
This subject introduces students to keyboarding and to creating, editing, printing, indexing, and filing documents. Students apply their knowledge to processing documents relevant to their main subject areas.
DENTAL ASSISTING - LEVEL I

PURPOSE
To develop the skills required to assist the dental operator in all dental procedures by using four-handed dentistry techniques, in mixing materials and in preparation of instruments, operatories and patients. The graduate also will be able to perform limited laboratory work and receptionist duties.

COURSE
Dental Assisting-Level I is a 30-week certificate course with a September entry date. The course has been fully accredited by the Canadian Dental Association, after a thorough inspection by an accreditation team.

ENTRANCE REQUIREMENTS
A - 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation) with one of Biology 300 or 301, Chemistry 300, Physical Science 301, or Physics 300, at a minimum. (Biology is recommended. Preparation in mathematics at the 200 or 201 level is strongly suggested);
or
- Adult Basic Education 11C or 11A program completion;
and
B - successful completion of the prescribed reading test at the minimum acceptable proficiency level;
and
C - recent medical, chest X-ray, and dental certificates plus immunization record which confirm general good health and freedom from communicable disease. (These records need not be submitted until notification of acceptance is received by the applicant.)

Mature Student Admission. Mature students may submit the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits; however, they must have specific credit in at least one science at the 300 or 301 level. Mature students must also meet entrance requirements (B) and (C) above and be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

EMPLOYMENT POTENTIAL
Graduates have found employment in private dental offices, large clinics, hospital dental clinics or in government public health programs.

COURSE OUTLINE
B15-S108 Introduction to Data Processing
F01-B000 Physical Education
H07-C101 Life Sciences
H07-C103 Supervised Clinical Experience
H07-C106 Dental Practice Management
H07-C109 Medical Emergencies
H07-C110 Accounting
H07-C111 Interpersonal Relations
H07-C112 Preventive Dentistry
H07-C113 Four-Handed Dentistry - Theory
H07-C114 Four-Handed Dentistry - Practical
H07-C115 Dental Equipment - Theory
H07-C116 Dental Equipment - Practical
H07-C117 Operative Dentistry - Theory
H07-C118 Operative Dentistry - Practical
H07-C119 Rubber Dam - Theory
H07-C120 Rubber Dam - Preclinical
H07-C121 Rubber Dam - Clinical
H07-C122 Diagnosis - Theory
H07-C123 Diagnosis - Practical
H07-C124 Radiology - Theory
H07-C125 Radiology - Preclinical
H07-C126 Radiology - Clinical
H07-C127 Microbiology and Sterilization - Theory
H07-C128 Microbiology and Sterilization - Practical
H07-C129 Prosthodontics - Theory
H07-C130 Prosthodontics - Practical
H07-C131 Endodontics - Theory
H07-C132 Endodontics - Practical
H07-C133 Oral Surgery
H07-C134 Periodontics
H07-C135 Orthodontics
H07-C136 Pediatric Dentistry
H11-S101 Social Sciences

SUBJECT DESCRIPTIONS
B15-S108 INTRODUCTION TO DATA PROCESSING
General computer literacy and the Wordperfect word processing software.

F01-B000 PHYSICAL EDUCATION
Physical education credit classes provide instruction in archery, badminton, golf, gymnasium, swimming, tennis, trampolining, volleyball, etc. with emphasis on basic skills. Advanced classes are also available for the more skilled. These classes provide an in-depth study of strategy in theory and practical. Extensive use of video-tape will be made in advanced classes.

H07-C101 LIFE SCIENCES
Information in basic sciences required by dental assistants. Includes an introduction to general and dental anatomy, microbiology (sterilization and disinfection), pharmacology, pathology, growth and development. The general concepts consider specific examples in the oral and dental environment.

H07-C103 SUPERVISED CLINICAL EXPERIENCE
Designed to provide the student with practical experience in routine dental activities and an opportunity to express knowledge gained in the in-college portion of the dental assisting program. Consists of seven weeks at a variety of dental experiences.

H07-C106 DENTAL PRACTICE MANAGEMENT
This subject prepares the student to function in the communications and organizational aspects of dental practice. The subject contains three parts: Communications, Accounting (Financial Record-Keeping), and Dental Practice Management. Topics include letter-writing, resume preparation, interview skill, basic accounting procedures, appointment and inventory control and dental office records among others.

H07-C109 MEDICAL EMERGENCIES
Students will learn basic rules to follow for medical emergencies. Students will also obtain CPR and St. John's Ambulance First Aid certificates.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H07-C110</td>
<td>ACCOUNTING</td>
<td>Students will study and practise basic principles of accounting.</td>
</tr>
<tr>
<td>H07-C111</td>
<td>INTERPERSONAL RELATIONS</td>
<td>Students will study and practise communication skills for various situations which are common in a dental office.</td>
</tr>
<tr>
<td>H07-C112</td>
<td>PREVENTIVE DENTISTRY</td>
<td>The student will study causes and prevention of dental diseases.</td>
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<tr>
<td>H07-C113</td>
<td>FOUR-HANDED DENTISTRY - THEORY</td>
<td>Students will study the principles of four-handed dentistry.</td>
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<tr>
<td>H07-C114</td>
<td>FOUR-HANDED DENTISTRY - PRACTICAL</td>
<td>Students will practice passing and receiving dental instruments.</td>
</tr>
<tr>
<td>H07-C115</td>
<td>DENTAL EQUIPMENT - THEORY</td>
<td>Students will study the operation of various dental equipment.</td>
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<tr>
<td>H07-C116</td>
<td>DENTAL EQUIPMENT - PRACTICAL</td>
<td>Students will operate various dental equipment.</td>
</tr>
<tr>
<td>H07-C117</td>
<td>OPERATIVE DENTISTRY - THEORY</td>
<td>Students will study various restorative dental procedures. Students will also study instrumentation used for each procedure.</td>
</tr>
<tr>
<td>H07-C118</td>
<td>OPERATIVE DENTISTRY - PRACTICAL</td>
<td>Students will learn mixing procedures for materials used in various restorative procedures.</td>
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<tr>
<td>H07-C119</td>
<td>RUBBER DAM THEORY</td>
<td>Students will study the purpose and technique of rubber dam application.</td>
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<tr>
<td>H07-C120</td>
<td>RUBBER DAM - PRECLINICAL</td>
<td>Students will develop required skills by placing rubber dam on mannekins.</td>
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<tr>
<td>H07-C121</td>
<td>RUBBER DAM - CLINICAL</td>
<td>Students complete rubber dam requirements by placing rubber dam on fellow classmates.</td>
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<tr>
<td>H07-C122</td>
<td>DIAGNOSIS - THEORY</td>
<td>Students will learn various methods/techniques used in diagnosing oral conditions.</td>
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<tr>
<td>H07-C123</td>
<td>DIAGNOSIS - PRACTICAL</td>
<td>Students will learn mixing procedures used in diagnosis.</td>
</tr>
<tr>
<td>H07-C124</td>
<td>RADIOLOGY - THEORY</td>
<td>Students will study the purpose and techniques of obtaining intraoral radiographs.</td>
</tr>
<tr>
<td>H07-C125</td>
<td>RADIOLOGY - PRECLINICAL</td>
<td>Students will learn the placement of x-ray films by practising on classmates. The films are not exposed during the pre-clinical classes.</td>
</tr>
<tr>
<td>H07-C126</td>
<td>RADIOLOGY - CLINICAL</td>
<td>Students will place and expose radiographs using DXRR as the patient. Students must also mount these radiographs. Each student is rotated through radiology to learn and perform the developing of radiographs.</td>
</tr>
<tr>
<td>H07-C127</td>
<td>MICROBIOLOGY AND STERILIZATION - THEORY</td>
<td>Students will study the basic microbial life and methods used to destroy the micro-organisms.</td>
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<tr>
<td>H07-C128</td>
<td>MICROBIOLOGY AND STERILIZATION - PRACTICAL</td>
<td>Students will operate various sterilizers and various disinfecting techniques.</td>
</tr>
<tr>
<td>H07-C129</td>
<td>PROSTHODONTICS - THEORY</td>
<td>Students will learn various prosthesis used in dentistry.</td>
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<tr>
<td>H07-C130</td>
<td>PROSTHODONTICS - PRACTICAL</td>
<td>Students will mix materials used in preparation for prothesis.</td>
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<tr>
<td>H07-C131</td>
<td>ENDODONTICS - THEORY</td>
<td>Students will learn causes and treatment of pulpal injuries.</td>
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<tr>
<td>H07-C132</td>
<td>ENDODONTICS - PRACTICAL</td>
<td>Students will learn basic skills for assisting with root canal therapy.</td>
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<tr>
<td>H07-C133</td>
<td>ORAL SURGERY</td>
<td>Students will learn various surgical procedures performed in dentistry.</td>
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<tr>
<td>H07-C134</td>
<td>PERIODONTICS</td>
<td>Students will learn causes and treatments of periodontal disease.</td>
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<tr>
<td>H07-C135</td>
<td>ORTHODONTICS</td>
<td>Students will learn causes and treatments of ortho which involves the straightening of teeth.</td>
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<tr>
<td>H07-C136</td>
<td>PEDIATRIC DENTISTRY</td>
<td>Students will learn the similarities and differences of treating adults and children.</td>
</tr>
<tr>
<td>H11-S101</td>
<td>SOCIAL SCIENCE</td>
<td>This subject is an introductory study of general developmental psychology. It is designed for students in health care programs and, as such, is aimed at practical application of social science knowledge in the helping relationships. During the first part of the course, emphasis will be placed on fundamental principles of growth and development, development tasks, key concepts of personality, motivation, relevant aspects of emotions and methods of coping or adapting.</td>
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</tbody>
</table>
PURPOSE
To develop the skills required for a variety of intra-oral duties, including polishing of teeth, application of fluoride, exposing radiographs, placement and removal of rubber dam, placement of sealants and taking of impressions.

COURSE
Dental Assisting-Level II is a ten-week certificate course with an April entry date. The course has been fully accredited by the Canadian Dental Association after a thorough inspection by an accreditation team.

ENTRANCE REQUIREMENTS
A - Dental Assisting-Phase I Certificate from Red River Community College or from an equivalent program, accredited by the Canadian Dental Association;
and
B - current First Aid and C.P.R. Basic Rescuer certificates;
and
C - successful completion of the prescribed reading skills test;
and
D - recent certificates of good medical and dental health and an immunization record (to be submitted after notification of acceptance is received).

Mature Student Admission. All Applicants, regardless of age, must meet the specific entrance requirements, as noted above.

EMPLOYMENT POTENTIAL
Because graduates of this course are capable of accepting increased responsibilities, both job opportunities and remuneration generally are greater. Graduates have found employment in private dental offices, large clinics, hospital dental clinics and in government public health programs.

COURSE OUTLINE
H07-E204 Dental Public Health Education
H07-E210 Polishing & Fluoride Theory
H07-E212 Sealants Theory
H07-E213 Impressions Theory
H07-E215 Polish - Preclinical
H07-E216 Impressions - Preclinical
H07-E219 Sealants - Preclinical
H07-E220 Polish - Clinical
H07-E222 Sealants - Clinical
H07-E224 Oral Health Theory
H07-E225 Nutrition
H10-G031 Job Search
H11-S201 Social Science

SUBJECT DESCRIPTIONS
H07-E204 DENTAL PUBLIC HEALTH EDUCATION
The student will study and apply concepts of dental health education to different population groups.

H07-E210 POLISHING & FLUORIDE THEORY
The student will study the purpose and technique of rubber cup polishing and application of topical fluoride.

H07-E212 SEALANTS THEORY
The student will study the purpose and techniques of applying pit and fissure sealants.

H07-E213 IMPRESSIONS THEORY
The student will study the purpose and techniques of obtaining impressions for study models.

H07-E215 POLISH-PRECLINICAL
Students practice polishing of teeth on a mannequin to develop necessary skills.

H07-E216 IMPRESSIONS - PRECLINICAL
Students take impressions on classmates.

H07-E219 SEALANTS - PRECLINICAL
Students practice placement of sealants on mannequins to develop necessary skills.

H07-E220 POLISH - CLINICAL
Students polish patients' teeth. dam on each other.

H07-E222 SEALANTS - CLINICAL
Students apply sealants on approved patients.

H07-E224 ORAL HEALTH THEORY
Student will study and understand the importance of proper personal oral hygiene procedures as well as be able to identify unhealthy oral soft structures.

H07-E225 NUTRITION
Student will study the importance of nutrition and its relation to good oral health.

H10-G031 JOB SEARCH
The student will learn to write a personal resume, as well as fill out mock applications.

H11-S201 SOCIAL SCIENCE
This second part of the subject traces the development of the individual from birth to death in an ages-and-stages manner. This section begins with an examination of some key aspects of sociology which are then integrated with the development material which follows. Psycho-sociological considerations of personality development will be emphasized in an attempt to portray an accurate picture of normal human development throughout the life cycle. Each unit of instruction highlights the physical, social and psychological tasks of a particular stage of the life cycle and directs these to the health care relationship. PREREQUISITE: H11-S101.
DEVELOPMENTAL SERVICES WORKER

PURPOSE
To develop the knowledge and skills required to provide quality care to people with a mental handicap, living in the community.

COURSE
Developmental Services Worker is a two-year diploma course with a September entry date in alternate years (1991, 1993). The objective of the course is to prepare the student to promote a variety of experiences that offer people with a mental handicap appropriate intellectual stimulation as well as opportunities for physical, emotional and social development. If the student chooses to exit the course after one year, he or she will be eligible to receive a certificate.

ENTRANCE REQUIREMENTS
A - 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation) including English 300 or 301, and Mathematics 300 or 301 or Accounting 302;
or
- Adult Basic Education 11A, 11B or 11C;
and
B - successful completion of the prescribed reading skills test at the minimum competency level required;
and
C - completion of the additional information sheets and submission of two letters of reference;
and
D - an orientation session with members of the Selection Committee*

and
E - good health.** Immunizations are required of all students and must commence as indicated upon notification of acceptance into the program.

* Applicants may be required to attend an individual interview with the Selection Committee, as well as the general orientation session.

** The Selection Committee may require an applicant to submit medical certificates (including dental and chest x-ray) verifying good health and freedom from communicable disease.

Mature Student Admission. Mature student applicants may submit the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits. A specific background in English and Mathematics, as noted in (A) above, is recommended. As well, mature students must meet entrance requirements (B) through (E) and be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

EMPLOYMENT POTENTIAL
Opportunities for employment are expanding as the need for community-based services for people with a mental handicap increases. Positions may be found in residential situations, employment-related, developmental and educational services.

COURSE OUTLINE
Year 1
F01-D1001 Activity for Life
H11-D101 Values & Attitudes in Developmental Services
H11-D102 Health Care
H11-D103 Professional Development
H11-D104 Interpersonal Communications
H11-D112 Practicum I
H11-D113 Practicum II
H11-D204 Teaching Strategies
H11-S101 Social Science (Introductory Psychology)
H11-S201 Social Science (Human Growth & Development)
H11-S301 Social Science (Human Growth & Development)

Year 2
F01-E001 Activity for Life
H11-D201 Values And Attitudes in Developmental Services
H11-D202 Health Care
H11-D203 Professional Development
H11-D205 Family Dynamics & Resources
H11-D206 Planning for Individuals
H11-D207 Advocacy
H11-D208 Communication & Counselling
H11-D209 Principles of Management
H11-D210 Sexuality
H11-D211 Service Systems: Issues & Applications
H11-D212 Practicum III
H11-D213 Practicum IV

SUBJECT DESCRIPTIONS
F01-D001 ACTIVITY FOR LIFE
Activities such as archery, badminton, curling, fitness, golf, swimming, and tennis will be taught in various combinations with both practical and theoretical considerations. In addition, students will learn the psychological and physiological reasons for exercise for themselves and people with disabilities. Each student will practice body mechanics as well as participate in fitness testing from which a personal fitness goal may be developed.

F01-E001 ACTIVITY FOR LIFE
A continuation of Activity for Life, F01-D001.

H11-D101 VALUES & ATTITUDES IN DEVELOPMENTAL SERVICES
This course is designed to provide the student with an understanding of how society's historical perceptions of individuals with a mental handicap have affected present-day services. The student will examine his or her own values and attitudes towards labelled individuals in an effort to guard against future prejudice and discrimination.

H11-D102 HEALTH CARE
This subject is designed to give the student a general overview of a healthy physical state. As well, students are made aware of the various causes, prevention strategies, and classification methods related to individuals who have a mental handicap. Personal care techniques, first aid, and emergency procedures are also given priority.

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H11-D103 PROFESSIONAL DEVELOPMENT
This subject serves as an introduction to the professional competencies necessary for a developmental service worker. Students will learn to recognize and demonstrate appropriate work behaviors as well as gain an understanding of the variety of services available for individuals who have a mental handicap.

H11-D104 INTERPERSONAL COMMUNICATIONS
This course is designed to give the student an introduction to interpersonal communications. Course content includes an overview of communications, self-concept, our perceptions, emotions, language, non-verbal communication, listening, and an understanding of how interpersonal relationships work.

H11-D112 PRACTICUM I
The student will be involved in a full-time work experience in one of a variety of possible residential or daytime situations. This initial experience will allow the student to observe and become acquainted with the roles of a developmental services worker in the agency. As well, the student will begin to practice the theoretical skills learned in Term 1 course work. Either Practicum I or II must be a residential placement.

H11-D113 PRACTICUM II
The student will work in one agency to practice the theoretical skills learned in Year I. Specific assignments will be given to ensure that the student develops the skills and fulfills the expectations of Year I course work. Either Practicum I or II must be a residential placement.

H11-D201 VALUES AND ATTITUDES IN DEVELOPMENTAL SERVICES
This subject is a continuation of Values and Attitudes (H11-D101). It deals with the concept of normalization and how to apply it in the lives of people who have a mental handicap. Respect for individuals and their rights to make choices is stressed, as is respect for their families. The course is meant to present positive values and attitudes towards the community inclusion of people who have a mental handicap.

H11-D202 HEALTH CARE
This subject is a continuation of Health Care, H11-D102). It deals with alterations from normal physical, mental and emotional health, with emphasis on the kinds of conditions that are typically associated with mental retardation. The purposes and administration of various medications will be stressed as will ensuring that proper medical care is provided.

H11-D203 PROFESSIONAL DEVELOPMENT
This course is an expansion of Professional Development (H11-D103). Its classroom component includes an overview of the bureaucracy and use of the system, how to present oneself professionally, and deal with reality. This course continues throughout the practicum placements and provides a forum for discussion and practicum project presentation.

H11-D204 TEACHING STRATEGIES
This subject is an overview of strategies which will assist in teaching persons with a mental handicap. The course looks at learning theory, analysis of routines, the use of assessment tools, various teaching strategies, how to evaluate teaching effectiveness, sensitivity to the individual learner and an overview of behavioral programs.

H11-D205 FAMILY DYNAMICS AND RESOURCES
This subject is an introduction to family dynamics with the emphasis being placed on families which include a member who has a mental handicap. It stresses the importance of respect for families, and the need to encourage their involvement in the lives of the person who is disabled.

H11-D206 PLANNING FOR INDIVIDUALS
This subject introduces a comprehensive method of planning for persons who have a mental handicap. The stress is placed on who is involved in the family process, recognizing the abilities of the person and promoting and evaluating experiences based on what is appropriate for the individual involved.

H11-D207 ADVOCACY
This subject introduces the need for strong advocacy on behalf of and by people who have a mental handicap. The course includes an overview of rights, how to be a good advocate and how to encourage family and the individual to advocate for themselves.

H11-D208 COMMUNICATION AND COUNSELLING
This subject is a continuation of the first-year course, Interpersonal Communications. The emphasis here is on being effective communicators and counselors, and includes the ability to recognize and respond to an individual's life situation, communicating with family, and responding safely to crisis situations.

H11-D209 PRINCIPLES OF MANAGEMENT
This subject is an introduction to management. It includes leadership, management and supervision techniques, how to manage time and maintain records, dealing with stress, developing volunteers and promoting good public relations.

H11-D210 SEXUALITY
This subject is designed to help developmental service workers facilitate healthy sexuality attitudes in people who have a mental handicap. It includes being comfortable with our own sexuality, role-playing and teaching techniques for use with people who have a mental handicap, and the prevention of sexual abuse and disease.

H11-D211 SERVICE SYSTEMS: ISSUES AND APPLICATIONS
This course is an overview of service systems for people who have a mental handicap. It is designed to give the student specific information in the areas of residential/leisure, employment/occupation, and educational services. Current issues are discussed and specific applications to services are studied.

H11-D212 PRACTICUM III
This practicum can be one of either a residential, employment-occupation, or an educational placement. The student will be expected to specifically demonstrate Year II, Term 1 competencies, but will also be responsible for maintaining Year I skills. This practicum will involve a greater degree of responsibility and initiative than previously expected.
H11-D213 PRACTICUM IV
The final practicum will allow the student to demonstrate competency in all program subjects. A high degree of responsibility, initiative, and motivation will be expected as students attain mastery in planning, assistance, and overall problem solving.

H11-S101 SOCIAL SCIENCE
This subject is an introductory study of general developmental psychology. It is designed for students in health care programs and, as such, is aimed at practical application of social science knowledge in the helping relationships. During the first part of the course, emphasis will be placed on fundamental principles of growth and development, development tasks, key concepts of personality, motivation, relevant aspects of emotions and methods of coping or adapting.

H11-S201 SOCIAL SCIENCE
This second part of the subject traces the development of the individual from birth to death in an ages-and-stages manner. This section begins with an examination of some key aspects of sociology which are then integrated with the development material which follows. Psycho-sociological considerations of personality development will be emphasized in an attempt to portray an accurate picture of normal human development throughout the life cycle. Each unit of instruction highlights the physical, social and psychological tasks of a particular stage of the life cycle and directs these to the health care relationship. PREREQUISITE: H11-S101.

H11-S301 SOCIAL SCIENCE
This is a continuation of the format utilized in Part II but the section of the life span to be explored is shifted to adolescence and beyond. Adolescence, early adulthood, middle age and old age are considered in developmental terms from both physical and psychosocial perspectives.
DIESEL MECHANICS - TRANSPORT

PURPOSE
To develop the knowledge and skills required to diagnose malfunctions, inspect and repair worn parts, and reassemble and render operational diesel-powered trucks and construction equipment.

COURSE
Diesel Mechanics - Transport is a ten-month certificate course with a September entry date. The course is designed to prepare the student to adjust, service and repair a variety of heavy mobile equipment, usually diesel powered, used in construction and/or highway transportation. The work will involve fault diagnosis, dismantling engines and related equipment to effect repairs, basic servicing and/or overhaul of fuel-injection and hydraulic systems, transmissions, air brakes, drives and control linkages, and other mechanical components.

ENTRANCE REQUIREMENTS
- 7 high school credits (Manitoba Grade 10 or equivalent secondary school preparation) with Mathematics 100 or 101 and Science 100 or 101. English 100 or 101 is strongly recommended; or
- Adult Basic Education 7-10 program completion.

Mature Student Admission. Mature student applicants may submit other educational equivalents, including G.E.D. standing (scores on each of the five tests must be 41 or higher), in lieu of 7 credits; however, they must have successfully completed one of Mathematics 100, 101, 190, or Practical Mathematics - Elementary/Junior High Level and one of Science 100, 101, or 190. Mature students must also be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

EMPLOYMENT POTENTIAL
Graduates of this course have found employment all across Canada, especially in northern areas on dam sites. Some graduates work as mechanics and maintenance specialists on industrial, highway and construction equipment, on rail-transport or marine equipment and on generating-plant equipment. Other graduates who have decided to take the apprenticeship program and have gained considerable work experience, have become service managers, company representatives and salespeople.

For further information on apprenticeship and possible transfer of credit, please see the Diesel Mechanics - Transport course brochure.

COURSE OUTLINE
T01-D011 Introductory Mechanics Theory
T01-D012 Introductory Mechanics Practical
T01-D013 Standard Transmissions Theory
T01-D014 Standard Transmissions Overhaul Practical
T01-D015 Rear Axles Theory
T01-D016 Rear Axles Practical
T01-D017 Brake Systems Theory
T01-D018 Brake Systems Practical
T01-D019 Automatic Transmission Theory
T01-D020 Automatic Transmission Practical
T01-D023 Gas Engine Overhaul Theory
T01-D024 Gas Engine Overhaul Practical
T01-D025 Diesel Engine Overhaul Theory
T01-D026 Diesel Engine Overhaul Practical
T01-D027 Diesel Engine Tune-Up Theory
T01-D028 Diesel Engine Tune-Up Practical
T01-D029 Hydraulic Components Theory
T01-D030 Hydraulic Components Practical
T01-D031 Electrical Systems Theory
T01-D032 Electrical Systems Practical
T01-D033 Fuel Systems Theory
T01-D034 Fuel Systems Practical
T01-D036 Industrial Training Practical
T01-D135 Steering Systems Theory
T01-D136 Steering Systems Practical
T01-D137 Suspension & Components Theory
T01-D138 Suspension & Components Practical
T04-A510 Related Arc Welding
T04-G510 Related Gas Welding
T04-M510 Related Machine Shop
T13-M508 Motor Vehicle Mechanic Technician P/E Math
T13-S508 Power Mechanics Science
T14-C504 Communication

SUBJECT DESCRIPTIONS
T01-D011 INTRODUCTORY MECHANICS THEORY
Demonstrate the ability to identify and use correctly the hand tools utilized in the H.D. mechanics trade.

T01-D012 INTRODUCTORY MECHANICS PRACTICAL
Student will learn first hand the involvement of on-the-job working conditions required in a live repair shop.

T01-D013 STANDARD TRANSMISSIONS THEORY
Construction, principle of operation, synchronizers, splitters and air shift, four-wheel-drive transfer case, farm tractor transmission, reversing transmissions, transmission overhaul.

T01-D014 STANDARD TRANSMISSIONS OVERHAUL PRACTICAL
Inspection, repair and overhaul of: synchronizers, splitters, and air shift, four-wheel-drive transfer case, farm tractor transmission, reversing transmissions.

T01-D015 REAR AXLES THEORY
Types and principle of operation, single-speed H.D. Eaton rear axles, traction equalizers, power dividers, electric and air-shift systems.

T01-D015 REAR AXLES PRACTICAL
Overhaul of single-speed H.D. Eaton rear axles, traction equalizers, power dividers, electric and air-shift systems.

T01-D017 BRAKE SYSTEMS THEORY
Theory of operation, repair and adjustment of hydraulic, manual and power brakes, air brake repairs, adjustments and maintenance.

T01-D018 BRAKE SYSTEMS PRACTICAL
Operation, repair and adjustments of hydraulic, manual and power brakes; air brake repairs. Adjustments and maintenance.
T01-D019  AUTOMATIC TRANSMISSION THEORY
The theory of operation of repair and overhaul of automatic and powershift transmissions.

T01-D020  AUTOMATIC TRANSMISSION PRACTICAL
The repair and overhaul of automatic and powershift transmissions.

T01-D022  GAS ENGINE OVERHAUL THEORY
Theory of gas engine cycles, types, components, lubrication and cooling systems.

T01-D024  GAS ENGINE OVERHAUL PRACTICAL
Repair of gas engine cycles, types, components, lubrication and cooling systems.

T01-D025  DIESEL ENGINE OVERHAUL THEORY
Theory of servicing diesel cylinder block assembly, cylinder head and valve train.

T01-D026  DIESEL ENGINE OVERHAUL PRACTICAL
Repairs and servicing of diesel cylinder block assembly, cylinder head and valve train.

T01-D027  DIESEL ENGINE TUNE-UP THEORY
Fundamentals of mechanical tune-up, electrical tune-up, trouble shooting, dynamometer testing, overhaul and servicing.

T01-D028  DIESEL ENGINES TUNE-UP PRACTICAL
The student will be able to diagnose engine noise, set valves fuel, and injector on different types of diesel engines.

T01-D029  HYDRAULIC COMPONENTS THEORY
Theory of operation and repair of the more common mobile hydraulic systems.

T01-D030  HYDRAULIC COMPONENTS PRACTICAL
Operation and repair of the more common mobile hydraulic systems.

T01-D031  ELECTRICAL SYSTEMS THEORY
Fundamentals of storage, testing, charging and care of batteries, DC and AC generators and regulators, ignition systems, transistor units and introduction to electronics.

T01-D032  ELECTRICAL SYSTEMS PRACTICAL
Storage, testing, charging and care of batteries; DC and AC generators and regulators, ignition systems, transistor units.

T01-D033  FUEL SYSTEMS THEORY
Fundamentals of carburetion types and methods of supercharging, principles of compression ignition engine, and inspection and complete servicing of pumps and nozzles.

T01-D034  FUEL SYSTEMS PRACTICE
Carburetion, types and methods of supercharging, principles of compression ignition engine, and inspection and complete servicing of pumps and nozzles.

T01-D036  INDUSTRIAL TRAINING PRACTICAL
Students are placed in an industrial repair shop to receive first hand, practical demands that are required to be successful in this trade.

T01-D135  STEERING SYSTEMS THEORY
Classroom theory would consist of basic steering geometry, component materials, caster, camber, understanding terminology, and trouble shooting front-end problems such as pulling, shimmying and hopping.

T01-D136  STEERING SYSTEMS PRACTICAL
The student will remove and overhaul steering boxes, as well as doing front-end alignment, toe-in, etc.

T01-D137  SUSPENSION & COMPONENTS THEORY
Understanding of the different types of suspension, the problems that can occur on the suspension. This would include, rear-end alignment, wheel cupping, air ride components and walking beam bushing on the Hendrick’s suspension and lubrication of diesel-powered equipment.

T01-D138  SUSPENSION COMPONENTS PRACTICAL
The student will be able to differentiate between the many styles of suspensions and be able to diagnose and repair. The styles range from Hendrick’s to new air-ride suspensions.

T04-A510  RELATED ARC WELDING
Demonstrate a basic knowledge of arc-welding circuits, electrodes, polarity, current requirements and welding procedures.

T04-G510  RELATED GAS WELDING
Safety in setting up and using oxy-acetylene equipment. Identifying and setting torch for carburizing, neutralizing, and oxidizing flame. Introduction to fusion welding, puddling and bead-running on sheet metal. Identification, selecting weld rods and fusing filler rod to base metal. Welding butt joints, lap joints, fillet welds and corner welds on sheet steel in the flat horizontal, vertical and overhead. Performing the same joints on sheet steel using bronze brazing rod. Safely operating flame-cutting equipment cutting various thickness of steel plate.

T04-M510  RELATED MACHINE SHOP
One week - (25 hours). Basic metals, metal layout and measuring tools, metal working equipment and safety.

T13-M508  MOTOR VEHICLE MECHANIC TECHNICIAN P/E MATH
Individual progress math. Program utilizing Diagnostic Test material to identify remedial requirements for each student. Students are required to complete basic assignments on each of following topics: four operations with whole numbers, fractions, decimals, elementary algebra using one unknown, percent, ratio and proportion, denominate numbers, metric measures and calculations, exponents, scientific notation/significant digits, square/ square roots, Pythagoras theorem, perimeter/circumferences, areas, various figures, volume/capacity of commonly-used shapes of containers.

T13-S508  POWER MECHANICS SCIENCE
Electricity and magnetism, Atomic theory, static electricity, condensers, circuits, batteries, transformers, PM motors, DC and AC generators, hydraulics, pressure Pascal’s principle, brakes and
brake fluids, kinetic energy, centripetal force, matter, properties of solids, liquids, and gases. Heat — temperature scales, expansion due to heat, heat transfer, machines — simple machines, work power, gear trains, gear ratios.

T14-C504 COMMUNICATION
A self-paced practical course that develops communications skills from four viewpoints: job-seeker, employee, junior supervisor, small business owner. The course is tailored to fit the needs of individual students and the requirements of the Advisory Boards.
DISTANCE EDUCATION COURSES

PURPOSE
To provide an alternative learning method for those individuals who are not able, or do not wish, to attend the college on a full-time basis.

COURSE
Distance Education courses are of up to 12 months in duration and are offered on a continuous-entry basis. Each correspondence subject provides a complete independent study unit. Instructional materials for the course, including textbooks, are mailed to the student upon acceptance and payment of the fee. An instructor is assigned to each student and will respond to the work that is required throughout the course or subject and will also mark the student's final examination, if an examination is required.

ENTRANCE REQUIREMENTS

Correspondence Courses

A.B.E.
S02-C100 Communications
Prerequisite: Manitoba Grade 9 or its equivalent and the ability to read and write the English language.

S02-M108 Mathematics
Prerequisite: Manitoba Grade 9 or its equivalent and the ability to read and write the English language.

S02-S100 Physical Science
Prerequisite: Manitoba Grade 9 or its equivalent and the ability to read and write the English language.

S03-L001 Mathematics (Adult 11A)
Prerequisite: Manitoba Grade 10 or its equivalent and the ability to read and write the English language.

Library Technician
B05-L114 Library Practicum
Prerequisite: None.

Business

B11-A161 Introductory Accounting (Part I)
Prerequisite: Preference will be given to applicants with Mathematics 300 or 301 (or its equivalent). Mature student standing also will be considered.

B11-A261 Introductory Accounting (Part II)
Prerequisite: Successful completion of Introductory Accounting (B11-A161) or its equivalent.

B11-A361 Introductory Accounting (Part III)
Prerequisite: Successful completion of Introductory Accounting (B11-A261) or its equivalent.

Administratively Write - Business Correspondence and Report Writing
Prerequisite: None.

Social Science & Refresher Nursing

H11-S101 Social Science (Term I) Introductory Social Science
Prerequisite: High school graduation preferred. Mature standing also will be considered.

H11-S201 Social Science (Term II) Child Growth & Development
Prerequisite: Successful completion of Social Science (H11-S101) or its equivalent.

H11-S301 Social Science (Term III) Adult Growth & Development
Prerequisite: Successful completion of Social Science (H11-S201) or its equivalent.

Refresher Course for Registered Nurses
Prerequisite: Verification of registered nurse's status is required with the admission application. Acceptable proof is a letter from the M.A.R.N. (Manitoba Association of Registered Nurses) or other Canadian licensing jurisdiction confirming eligibility for registration or status regarding registration, or last M.A.R.N. (or other Canadian licensing jurisdiction) registration card or photocopy. Applicants must also complete a supplementary application form pertaining to the applicant's nursing background. This form is available from the Continuing Education Nursing Department (telephone 632-2468) or the Admissions Office, Room 306, at the college. Please note that, at the present time, this correspondence course is available only to applicants who are unable to attend the full-time R.N. Refresher Course offered by Red River Community College or Assiniboine Community College because of distance and/or isolated location.

Child Care Services

H06-C200 Pre-School Child I
Prerequisite: High school graduation preferred. Mature student standing also will be considered.

H06-C232 Introduction to Curriculum: Creatively Experiences in Art
Prerequisite: Successful completion of Pre-School Child I (H06-200).

Observation and Report Writing
Prerequisite: None.

H06-C111 Overview of Human Development (Growing Years)
Prerequisite: None.

Telecourses

Library Training Program
S06-D110 Introduction to Library Training
Prerequisite: None.

S06-D111 Basic Library Management
Prerequisite: S06-D110.

S06-D112 Information Services
Prerequisite: S06-D110.

S06-D113 Circulation
Prerequisite: S06-D110.

S06-D114 Cataloguing
Prerequisite: S06-D110.
**Management Development**

**S06-D102 Effective Supervision**  
Prerequisite: None.

**S06-D101 Human Relations**  
Prerequisite: None.

**Activities Program**

**S06-A002 Introduction to Gerontology**  
Prerequisite: None.

**COURSE DESCRIPTIONS**

**B05-L114 LIBRARY PRACTICUM**  
This course is a necessary requirement of the Library Technician Program. It is designed as an introduction to library science and provides an overview of the organization and staffing of libraries.

**B11-A161 INTRODUCTORY ACCOUNTING (Part I)**  
Upon successful completion of Part I in Introductory Accounting, students should have a thorough knowledge of double-entry bookkeeping, the end-of-period adjusting and closing processes, and the preparation of the income statement and balance sheet from a worksheet as they relate to a sole proprietorship. In addition, students should become well versed in accounting for a merchandising firm, cash, and accounts receivable. Students will also receive an introduction to the topic of accounting systems. Students who receive a passing grade in the final examination for this subject will be entitled to credit in one of a variety of accounting courses.

**B11-A261 FINANCIAL ACCOUNTING (Part II)**  
This course provides the student with an opportunity to acquire a good working knowledge of: accounting for inventory on both a periodic and perpetual basis; the four main methods of pricing inventory on hand; estimating inventories; the costing, depreciation, disposal and exchange of plant assets; accounting for the repair, replacement and betterment of plant assets; accounting for intangible assets; payroll accounting; accounting for partnerships, departmental and responsibility accounting, and accounting for current and long-term liabilities. This course also introduces the topic of Accounting for National Resources, and the topic of Joint Costs.

**B11-A361 INTRODUCTORY ACCOUNTING (Part III)**  
This course provides the student with an opportunity to acquire a good working knowledge of: accounting for current and long-term liabilities (unsecured notes, mortgage notes, and leases); accounting for establishing and operating a corporation (including various types of stocks and dividends, treasury stock, stockholders' equity section, and statement of retained earnings); cost and equity approaches to acquisitions; basic consolidations; accounting for bonds payable, and investments in bonds; manufacturing accounting (general accounting system); accounting for segments and departments of a business; responsibility accounting; joint costs.

**H06-C200 PRE-SCHOOL CHILD I**  
This subject provides an introduction to concepts of child development. The approach is multidisciplinary, drawing on studies in anthropology, psychology, sociology, biology and medicine. The content is presented in eight modules or parts with corresponding assignments. On completion of all assignments, a final exam must be written. Because the subject content corresponds to that of the day and evening programs, successful completion of this subject will entitle students to credit in the Child Care Services program.

**H06-C230 CREATIVE EXPERIENCES IN ART**  
This subject combines an introduction to curriculum planning with creative experiences in art for pre-school children. Introduction to Curriculum focuses on understanding the relationship between philosophy and curriculum with emphasis on planning the art environment and experiences appropriate to the developmental levels of children. The subject is presented in a 10-module study guide with corresponding assignments and text readings. On completion of all assignments, a final exam must be written. Because the content of this course duplicates that of the day and evening programs, successful completion of this subject will entitle students to credit in the Child Care Services program.

**H11-S101 SOCIAL SCIENCE (Term I) INTRODUCTORY SOCIAL SCIENCE**  
This introductory level course is a multidisciplinary approach to key aspects of human behavior in contemporary society. It is intended for vocationally-oriented students who should gain greater insight into such topics as motivation, emotion, perception, personality, problem solving, family patterns, societal expectations and interpersonal relationships. Successful completion of this subject will entitle students to credit in one of a variety of specified subjects.

**H11-S201 SOCIAL SCIENCE (Term II) CHILD GROWTH & DEVELOPMENT**  
This course traces the psychological, social and physical development of the individual from conception to late childhood. Topics include inherited influences, pre-natal factors, principles of growth and development, developmental tasks, environmental effects, major theorists' views (Piaget, Erickson, Freud), behavioral patterns and need fulfillment. Particular emphasis is placed on the interaction of maturational processes and environmental influences in the development of the child as a unique individual.

**H11-S301 SOCIAL SCIENCE (Term III) ADULT GROWTH & DEVELOPMENT**  
This course is a continuation of the life cycle study from puberty through adolescence, early adulthood, middle age, old age and life ending. Again, emphasis is placed on the interaction between the environment and maturational processes in the ongoing development of the individual. The physical, social and psychological landmarks of each stage of the life cycle are examined in detail.

**S02-C100 COMMUNICATIONS**  
Grammar, usage and mechanics; sentence and paragraph construction; expository paragraph writing.
S02-M108 MATHEMATICS
Development of problem-solving skills using whole numbers, fractions, decimals and percent; ratio and proportion; positive and negative numbers; square root; introductory algebra and geometry.

S02-S100 PHYSICAL SCIENCE
Basic scientific concepts; measurement of forces; temperature; heat; pressure; density; work; electricity; systems of measurements; anatomy and physiology; problem-solving.

S03-L001 MATHEMATICS (Adult 11A)
This course will provide the student with an opportunity to develop a mastery of mathematical concepts equivalent to the public school Mathematics 200. This course is designed chiefly to give the student an orientation to the applied and technical aspects of mathematics. The course will include the use of the calculator and deal with concepts from the following areas: Introduction to Algebra, Equations, Word Problems, Fractions and Graphs, Geometry, Introduction to Trigonometry, Solution of Right Angles, Systems of Equations and Quadratic Equations. The student will be required to write a final exam. Please note that it is essential that the student obtain a scientific calculator for this course.

S06-A002 INTRODUCTION TO GERONTOLOGY
This subject will examine the aging process including topics such as: demography of aging, psycho-social aging, personal and societal attitudes, physical aging, theories of aging, introduction to a variety of facilities and current issues in regard to gerontology.

S06-D101 HUMAN RELATIONS
Human Relations is a course designed to assist individuals and organizations to achieve their goals and objectives through improved relationships. Very often, achieving one's goals and objectives depends on the quality of the relationships one establishes with individuals and organizations. This course concentrates on acquiring techniques to enhance the relationships between individuals and organizations.

S06-D102 EFFECTIVE SUPERVISION
This course is designed to help students develop supervisory/managerial skills. The focus of the course is on the acquisition of knowledge and skills necessary to be an effective supervisor/manager and how these skills can lead to good decision making and conflict resolution.

S06-D110 INTRODUCTION TO LIBRARY TRAINING
This introductory course describes the purpose and format of the Library Training Program. This course focuses on the use of the course materials and the basic study skills needed to use the program materials. Students will develop a familiarity with basic library terminology and materials and an understanding of the relationships of circulation, acquisition and organizational procedures.

S06-D111 BASIC LIBRARY MANAGEMENT
This course is intended to develop the organizational and managerial skills the trainee would need in operating in a small library environment. In this course, trainees will focus on budgeting, planning, public relations, staffing and the recruitment of volunteers.

S06-D112 INFORMATION SERVICES
This course covers the various aspects of reference service including types of services, the techniques of interviewing the patron; the strategies involved in searching for answers to reference questions; reference ethics; how to use and evaluate reference materials; and interlibrary loans.

S06-D113 CIRCULATION
The course will cover the various library functions associated with library circulation: patron registration, the charging and discharging of library materials, overdue, hold, closed reserve, shelf reading, inventory, etc. Both manual and automated circulation systems will be discussed, as well as the problems of security and vandalism. As part of the course, the student will develop a Circulation Procedures Manual. Prerequisite: S06-D110.

S06-D114 CATALOGUING
This course includes modules on the choice of main and added entries, choice of subject headings, assigning call numbers using Dewey Decimal Classification, basic description of library items and filing. Prerequisite: S06-D110.

ADMINISTRATIVELY WRITE - BUSINESS CORRESPONDENCE AND REPORT WRITING
By the end of the course, students will be able to organize information for optimum impact; identify primary information and focus readers' attention on it; write business correspondence, short and long reports, short proposals, procedures and instructions, and resumes; and perform business-oriented writing tasks.

OBSERVATION AND REPORT WRITING
By the end of this course, students will be able to observe and record children's activities; write clear, concise short reports, summaries and analyses; differentiate between and write in both the objective and subjective modes; and write effective dialogue and action description.

REFRESHER COURSE FOR REGISTERED NURSES
This course provides former registered nurses with a review and update of knowledge and skills in nursing fundamentals, needs of adults in health and illness, and current trends and issues in nursing. This course focuses on the knowledge and skills required to meet the needs of adults with medical-surgical conditions in long-term and acute care settings. One year is the maximum time normally allowed to complete the theoretical as well as the clinical portion of the course. The clinical portion which is a minimum of 15 days and two evenings is arranged on an individual basis in a hospital approved by the Continuing Education Nursing Department.
DOMESTIC ELECTRONICS

PURPOSE
To develop the knowledge of electronic fundamentals and the ability to interpret the technical information needed to service and repair audio and video equipment.

COURSE
Domestic Electronics is a twelve-month certificate course with two entry dates: September and January. During the first block of training, the student studies electrical and electronic fundamentals that are common to all electronic technician programs. The second block of training focuses on electronic applications to video and audio systems.

The course is a competency-based-learning course which is structured to allow mastery of each area. CBL requires initiative in planning a study schedule, completing requirements in a reasonable time, and in managing time wisely and effectively to meet deadlines. Training is designed to allow hands-on experience in all skill areas and there is close coordination of theory and application.

ENTRANCE REQUIREMENTS
- 14 high school credits (Manitoba Grade 11 or equivalent secondary school preparation) with one of Mathematics 200* or 301 and one of Physics 200 or Physical Science 201;
- Adult Basic Education 11A and 12
- Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. standing (scores on each of the five tests must be 43 or higher) in lieu of 14 credits; however, they must have successfully completed one of Mathematics 200*, 301, 290 academic, or 911 and one of Physics 200 or 290 or Physical Science 201. Mature students must also be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

* Mathematics 200, or its academic equivalent, is strongly recommended as minimum preparation. A strong background in mathematics is essential to the field of electronics.

EMPLOYMENT POTENTIAL
Graduates have found employment with retail outlet service departments, manufacturers, electronic wholesale and distribution centres, and colour television service shops, repairing televisions, radios and other audio equipment.

COURSE OUTLINE
T12-D001 Direct Current Fundamentals
T12-D003 Alternating Current Fundamentals
T12-D005 Electronic Fundamentals
T12-D053 Television Signal Circuits
T12-D055 Television Deflection Circuits
T12-D057 Television Auxiliary Circuits
T12-D074 Microprocessors
T12-D076 NTSC Standards For Color Television
T12-D081 Chroma Circuits
T12-D090 Video Cassette Recording
T12-D100 Audio Systems
T12-D101 Amplifier Servicing
T12-D102 AM/FM Radio Servicing
T12-D103 Audio Tape Systems/Servicing
T12-D104 Servicing
T12-D105 Microprocessor Interfacing
T12-D106 Luminance Circuits
T13-M518 Domestic Electronics Math
T14-C522 Communications II

SUBJECT DESCRIPTIONS
T12-D001 DIRECT CURRENT FUNDAMENTALS
Conductors, resistors, insulators, Ohm's Law, resistance measurements and calculations, magnetism, capacity, inductance, time constants, and test equipment.

T12-D003 ALTERNATING CURRENT FUNDAMENTALS
Basic AC generators, frequency spectrum, reactance, impedance, resonance, phase relationships, oscilloscopes.

T12-D005 ELECTRONIC FUNDAMENTALS
CRTs and their characteristics. Semiconductors and their characteristics. Gain, microphones, speakers, audio amplifiers, LC and RC oscillators, modulation and demodulation, mixing and the superheterodyne principle, and power supplies.

T12-D053 TELEVISION SIGNAL CIRCUITS
The tuner, video IF amplifiers, video amplifiers, sound systems, alignment equipment and alignment techniques. Troubleshooting the signal circuits.

T12-D055 TELEVISION DEFLECTION CIRCUITS
Deflection generators, vertical deflection systems, horizontal deflection and high-voltage systems. Horizontal AFC circuits. Troubleshooting the deflection systems.

T12-D057 TELEVISION AUXILIARY CIRCUITS
Vertical and horizontal sync signals, sync separation and sync circuits. Simple and keyed AGC systems, power supplies. Troubleshooting sync, AGC and power supplies.

T12-D074 MICROPROCESSORS
An introduction to the 6800 microprocessor using the Heathkit ET3400 trainer. How the microprocessor functions in a system and handles data and instructions. Writing basic programs for the 6800.

T12-D075 NTSC STANDARDS FOR COLOR TELEVISION
Light and color, the NTSC system, composition of the color video signal.

T12-D081 CHROMA CIRCUITS
Chroma IF and required response. Aligning chroma IF high and low-level demodulators, matrixing systems, chroma amplifiers. Keyed rainbow generator, testing demodulator and chroma circuits, repair of color TV sets.

T12-D090 VIDEO CASSETTE RECORDING
Principles of recording, luminance, and chroma record and playback. Capstan and head servo, system control and sensors.
T12-D100 AUDIO SYSTEMS
Acoustics, acoustic environment, sound recording and reproduction principles, audio system structure standards, installation and operation. Service considerations and techniques.

T12-D101 AMPLIFIER SERVICING
Audio amplifier circuits, power supply circuits, common distortion, failure indications, maintenance, troubleshooting, and repair techniques.

T12-D102 AM/FM RADIO SERVICING

T12-D103 AUDIO TAPE SYSTEMS/SERVICING
Magnetic tape recording principles, recording, reproduction circuits, transport systems, maintenance, troubleshooting, and repair techniques.

T12-D104 SERVICING
Troubleshooting and repair of color television sets.

T12-D105 MICROPROCESSOR INTERFACING
Study the Heathkit ET-3400 trainer circuit. Interface the following with the 6800 mpu, switches, registers, RAM, keyboards, and displays.

T12-D106 LUMINANCE CIRCUITS
CRT circuits, video outputs, IF detectors, tuners, sync separation, standards.

T13-M518 DOMESTIC ELECTRONICS MATH
Survey test of math concepts, addition, subtraction, and trigonometry. Equations applying Ohm's law to DC circuits, ratio and proportion, reciprocals, powers of ten, scientific notation, electronic measurement units, Pythagorean theorem, square roots, trig functions, trig applied to phasers in AC theory, calculating impedance, voltage drops, phase shifts and power dissipation in AC circuits, vector analysis of AC parallel circuits, common logs and decibels, simultaneous equations, applying Kirchoff's laws to multiple power source circuits.

T14-C522 COMMUNICATIONS II
Second half of T14-C504, described as: "A self-paced practical course that develops communication skills from four viewpoints - job-seeker, employee, junior supervisor, small-business owner. The course is tailored to fit the needs of individual students and the requirements of the Advisory Boards."
PURPOSE
To provide the opportunity to explore occupations and select a career direction; to upgrade academic skills required for entrance into a related course; and to learn some of the communications, mathematics and theory of that course.

COURSE
Educational Support Centre Preparatory Program is a ten-month certificate course with a September entry date. The course offers to hearing-impaired adults and adults with learning disabilities either oral or visual communicators, a specialized upgrading and career exploration curriculum. In addition, life skills and college preparation classes are taught.

ENTRANCE REQUIREMENTS
A - submission of a registration package to the Educational Support Centre; and
B - assessment of skill levels in mathematics, language and reading by Centre staff; and
C - an interview with the counsellor for hearing-impaired students.

EMPLOYMENT POTENTIAL
To be accepted into a career course at the college, you must first successfully complete the Educational Support Centre Preparatory Program.

COURSE OUTLINE
B15-S311 Computer Literacy with Word Processing & Spreadsheet
B15-S312 Computer Literacy with Word Processing
S01-C102 Communication Skills
S01-M101 Mathematics
S01-P103 Career Explorations
S01-P105 Science
S01-P106 Personal & Community Skills
S01-P109 Course Specific
S01-P110 Sign Language (optional)
S01-P112 Learning Skills

SUBJECT DESCRIPTIONS
B15-S311 COMPUTER LITERACY WITH WORD PROCESSING & SPREADSHEET
Introduction to computers with word processing (WordPerfect) and spreadsheets (SC4).

B15-S312 COMPUTER LITERACY WITH WORD PROCESSING
Introduction to computers with word processing (WordPerfect).

S01-C102 COMMUNICATION SKILLS
This course is designed to improve the student's written language skills based on material related to his or her areas of career interest.

S01-M101 MATHEMATICS
This course will provide individualized mathematics instruction to raise the student's skill level to that required for entrance into his or her chosen college program.

S01-P103 CAREER EXPLORATIONS
The course is designed to assess the student's aptitudes and vocational interests. By attending classes and receiving counseling services, the student goes through a process of evaluation, exposure and information gathering, job sampling and career assessment, and decision making and preparation for a training course.

S01-P105 SCIENCE
This course will provide individualized physics or general science instruction to raise the student's skill level to that required for the chosen college program.

S01-P106 PERSONAL & COMMUNITY SKILLS
Guest speakers will lecture the class on current topics of medical, economic and social concern.

S01-P109 COURSE SPECIFIC
Individual instruction/tutoring of course content from the college program that the student has chosen to enter.

S01-P110 SIGN LANGUAGE
An optional class for students who wish to improve their manual communication ability.

S01-P112 LEARNING SKILLS
The course is designed to increase the student's skills in the following areas: study skills, reading vocabulary and comprehension, critical thinking, reading for details.
ELECTRICAL

PURPOSE
To develop performance skills in house wiring, commercial and industrial wiring and controls, and motor repair.

COURSE
Electrical is a ten-month certificate course with a September entry date. The course is designed to develop the required knowledge and skills for employment in the electrical construction industry, with public utilities, motor winding and repair facilities, and manufacturers and distributors of electrical equipment. The graduate will have sufficient knowledge to plan and wire residential occupancies and small commercial buildings, and to repair and troubleshoot motor-control circuits and single-phase motors. The graduate also will be familiar with the Electrical Code, D.C. and A.C. machines and transformers.

ENTRANCE REQUIREMENTS
- 14 high school credits (Manitoba Grade 11 or equivalent secondary school preparation) with Mathematics 200* or 301 and Science 100 or 101;
- or
- Adult Basic Education 11A

Mature Student Admission. Mature student applicants may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. standing (scores on each of the five tests must be 43 or higher) in lieu of 14 credits; however, they must have successfully completed one of Mathematics 200*, 301, 290 academic, or 911 and one of Science 100, 101, 190. As well, mature students must be 20 years of age or before September 30 in the year of registration. All mature student applications are referred to the Director, Admissions/Registration for review.

* Mathematics 200, or its academic equivalent, is advised. A strong background in mathematics is essential to succeed in this trade.

Please note that reference books are essential components of the work procedures for this course and require above-average reading vocabulary and comprehension. Applicants are strongly encouraged to take Reading Comprehension and Study skills, through the college’s Extension Division, prior to entering skill training.

EMPLOYMENT POTENTIAL
Graduates have found jobs in the electrical industry working with house wiring, commercial and industrial wiring and controls and electric motors. Other graduates work with utility companies such as Manitoba Hydro and the Manitoba Telephone System, with electrical contractors, manufacturers and distributors of electrical equipment and machinery, and in many other areas where electrical equipment is used and sold.

For further information on possible transfer of credit, see the Electrical course brochure.

COURSE OUTLINE
T04-M510 Related Machine Shop
T11-E001 Fundamentals of Electricity
T11-E003 D.C. Machines & Controls
T11-E004 Electrical Laboratory
T11-E007 Residential Blueprint Reading
T11-E009 Residential Wiring
T11-E049 In-Industry
T11-E051 Alternating Current Fundamentals
T11-E053 Three Phase & Transformers
T11-E059 Commercial Blueprint Reading
T11-E061 Commercial Wiring
T11-E062 Solid State
T11-E063 Electric Motor Repair (Theory)
T11-E065 Electric Motor Repair (Practical)
T13-M517 Electrical P/E Math
T13-S717 Lighting Fundamentals
T14-C502 Communication

SUBJECT DESCRIPTIONS
T04-M510 RELATED MACHINE SHOP
Basic metals, metal layout and measuring tools, metalworking equipment and safety. 1 week (25 hours).

T11-E001 FUNDAMENTALS OF ELECTRICITY

T11-E003 D.C. MACHINES AND CONTROLS
Characteristics of DC motors and generators, types, applications and control methods used.

T11-E005 ELECTRICAL LABORATORY
To connect electrical equipment to DC and AC source to prove theories taught in T11-E001.

T11-E007 RESIDENTIAL BLUEPRINT READING
Blueprint reading and scaling. Application and use of code rules pertaining to residential wiring. Residential circuit calculations and services.

T11-E009 RESIDENTIAL WIRING
To practise the methods and techniques of residential wiring.

T11-E049 IN-INDUSTRY
This subject is designed to:
1. provide Electrical course pre-employment students with practical on the job experience.
2. expose students to actual job conditions and industry requirements.
3. help instill good work habits and a positive attitude in students.
4. introduce electrical contractors to possible apprentice candidates.
5. make electrical contractors aware of college programs and students with a view of providing input.

T11-E051 ALTERNATING CURRENT FUNDAMENTALS
Voltage and current relations in series and parallel AC circuits containing resistance, inductance and/or capacitance.

T11-E053 THREE PHASE AND TRANSFORMERS
Voltage and current relationship in single and three-phase systems. Principle of operation of single and three-phase systems.
Transformer connections and polarity tests. Special type transformer applications. Also DC and AC instruments.

T11-E057 ELECTRICAL LABORATORY A.C.
To connect electrical equipment to an AC source to determine their behaviors and characteristics.

T11-E059 COMMERCIAL BLUEPRINT READING
Blueprint reading and applied code in commercial-type occupancies. Electrical code calculations.

T11-E061 COMMERCIAL WIRING
To practice the methods and techniques as they apply to commercial buildings. Also wiring of motor control equipment.

T11-E062 SOLID STATE
An introduction to electronics and solid-state devices, half and full-wave rectification, diode applications, transistors and power supplies. Solid-state devices, i.e. dimmers, photo-tubes, timers, speed control, also lab hours with introduction to test equipment and their uses.

T11-E063 ELECTRIC MOTOR REPAIR (THEORY)
Theory of operation of single-phase motors. Procedure for analyzing motor faults, stripping and rewinding motors.

T11-E065 ELECTRIC MOTOR REPAIR (PRACTICAL)
Analyzing of motor faults, stripping, rewinding and bearing renewal and, if necessary, testing.

T13-M517 ELECTRICAL P/E MATH
Whole number operations, fractions, decimals, percent, denominator numbers, ratio and proportion, signed numbers, basic area and volume, right triangle, sine, cosine, tangent, equations, powers of ten, square roots, algebra, trigonometry, vectors and logarithms, law of sines, law of cosines.

T13-S717 LIGHTING FUNDAMENTALS
Introduction to lighting terms. Types of light sources available, their advantages and disadvantages in terms of fixture costs, light output (quality and quantity), life expectancy and operating cost efficiency. Calculation of luminaires required for a specific work place.

T14-C502 COMMUNICATION
A program similar to T14-C504 but only 20 hours duration. T14-C504 is described as: "A self-paced practical course that develops communications skills from four viewpoints - job seeker, employee, junior supervisor, small business owner. The course is tailored to fit the needs of individual students and the requirements of the Advisory Boards."
ELECTRICAL ENGINEERING TECHNOLOGY

PURPOSE
To develop the knowledge and skills required to design, construct, troubleshoot and maintain a wide variety of electrical power systems.

COURSE
Electrical Engineering Technology is a two-year diploma course with a September entry date. It is a multi-discipline course that includes electrical, electronic, computer and some mechanical subjects. These subjects range from electrical machines and electrical power systems to industrial electronics and microprocessor-based controllers.

Entrance Requirements
- 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation) with Mathematics 300, English 300 or 301, and Physics 300 or Physical Science 301:
  - Adult Basic Education Pre-Technology (Adult 12) program completion

Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits; however, they must have specific credits in mathematics, English, and science* as outlined above. Mature students must also be 20 years of age or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

* Physics 300 is strongly recommended as a more appropriate background for technology.

EMPLOYMENT POTENTIAL
Graduates have found employment at the engineering technologist level in electrical utility systems, consulting engineering, electrical manufacturing, electrical contracting, general primary and secondary manufacturing, and government agencies.

For information on possible transfer of credit, see the Electrical Engineering Technology course brochure.

COURSE OUTLINE
Year 1
Term 1
ELE-E101 Electric Circuits
ELE-E102 Electrical Instruments
ELE-E104 Personal Computers I
ELE-E106 Drafting
ELE-M102 Mathematics
ELE-P109 Physics
ELE-R100 Report Writing

Term 2
ELE-E201 Electric Circuits
ELE-E202 Electrical Instruments
ELE-E204 Personal Computers II
ELE-E207 Basic Electronics

ELE-M202 Calculus
ELE-P209 Physics
ELE-R200 Report Writing

Term 3
ELE-E301 Electric Circuits
ELE-E303 Introductory Logic Circuits
ELE-E305 Introductory Microprocessors
ELE-E307 Basic Electronics
ELE-M302 Calculus
ELE-P309 Physics

Year 2
Term 4
ELE-E401 Electrical Circuits
ELE-E402 Electrical Measurements
ELE-E405 Computer Overview
ELE-E406 Electrical Practices & Design
ELE-E407 Instrumentation Electronics
ELE-E408 Electrical Machines
ELE-M402 Calculus

Term 5
ELE-E501 Electrical Circuits
ELE-E502 Electrical Measurements
ELE-E505 Industrial Computer Interfaces
ELE-E506 Electrical Practices & Design
ELE-E507 Power Electronics
ELE-E508 Electrical Machines
ELE-M502 Calculus

Term 6
ELE-E602 Electrical Measurements
ELE-E606 Switchgear & Protection
ELE-E607 Power Electronics
ELE-E608 Electrical Machines
ELE-E609 Linear Control Systems
ELE-R600 Report Writing

SUBJECT DESCRIPTIONS
ELE-E101 ELECTRIC CIRCUITS
Basic concepts of electricity and electric circuits. Ohm's law, power, energy and efficiency, Kirchhoff's voltage and current laws, voltage and current divider rules. Problem-solving methods for simple DC circuits. Analysis of more complex DC electric circuits using network theorems, network conversions, branch, mesh and nodal methods.

ELE-E102 ELECTRICAL INSTRUMENTS
Basic Electrical Instruments is an applied Ohm's Law laboratory course for the ELE-E101 Electric Circuits course. It includes instruction in human electrical safety and how to calibrate, measure and communicate instrument readings. Basic instrument design, circuit calculations as well as instrument characteristics are also covered. The instruments discussed include the VOM, DMM, VTVM, DC Bridge, and potentiometer.

ELE-E104 PERSONAL COMPUTERS I
This subject will provide students with a brief introduction to personal computer hardware and the most often used DOS commands with the intent of facilitating use of personal computer-
based programs. A Typing Tutor program, to improve basic keyboard skills, will be followed by an introduction to the WordPerfect word-processing program. The final weeks will be spent using the ORCAD drafting program to produce a simple circuit diagram.

**ELE-E201 ELECTRIC CIRCUITS**
Continuation of Electric Circuits ELE-E101. Fundamental concepts of sinusoidal voltage and current, time and phasor domains; instantaneous average and effective values. Resistor, inductor and capacitor in AC sinusoidal circuit; impedance and admittance. Problem solving methods for simple AC circuits. Analysis of more complex AC electric circuits using network theorems, network conversions, mesh and nodal methods. Single-phase AC power; average, reactive and apparent, power factor; measurement of power in a single-phase AC circuit using a wattmeter.

**ELE-E202 ELECTRICAL INSTRUMENTS**
This course is a continuation of ELE-E102 Basic Electrical Instruments and is the lab course for ELE-E201 Electric Circuits. It concentrates on the calibration and proper use of instruments for measurement in AC circuits. The instruments discussed are the Function generator, VOM, VTVM, DMM and the oscilloscope. The course consists mainly of practical lab work.

**ELE-E204 PERSONAL COMPUTERS II**
This introductory programming subject in the BASIC language emphasizes a structured approach to problem-solving and programming. The focus of this approach is to develop an algorithm, translate it into a program, check the program for accuracy and debug the program as necessary. The three hours per week of formal class time is spent in the PC room or a classroom working on one of the series of tutorial/assignments which are keyed closely to the text and supplemented with material more relevant to applications in the Electronics, Electrical, Computer and Instrumentation Technology areas.

**ELE-E207 BASIC ELECTRONICS**
This course is a first course in Solid State electronics. Upon the completion of this course, the student will be able to analyze, design and build simple diode rectifier circuits, Zener diode circuits and Transistor biasing circuits.

**ELE-E301 ELECTRIC CIRCUITS**

**ELE-E303 INTRODUCTORY LOGIC CIRCUITS**
The purpose of this course is to familiarize the student with popular digital integrated circuit devices and to develop students to the point where they can describe their operation and apply them in digital circuits. The course consists of approximately 25% lecture time in which specific blocks of material are dealt with in preparation for a follow-up laboratory exercise.

**ELE-E305 INTRODUCTORY MICROPROCESSORS**
This subject starts by providing a general hardware description of microprocessor systems at the block-diagram level. It then continues with an introduction to microprocessor programming at the assembly-language level, including use of the TASM Cross Assembler. Assembly-language programming is implemented on systems which use the Z80 microprocessor. This subject lays the foundation for the more advanced microprocessor training contained in the second year of all Electrical, Electronic, Instrumentation and Computer Engineering Technology programs.

**ELE-E307 BASIC ELECTRONICS**
This course is a continuation of Term 2 Basic Electronics introduction to the AC analysis and design of Junction Transistor, Field Effect, and MOS transistor circuits. It concentrates on analysis techniques to predict the terminal behaviour of small signal amplifiers. It is primarily a lecture and lab-related course and consists of six hours a week.

**ELE-E401 ELECTRICAL CIRCUITS**
Matrix methods in circuit analysis, power transformers; equivalent circuits and regulation; balanced three-phase systems; analysis of three phase systems; transformers in three-phase systems; unbalanced three phase systems.

**ELE-E402 ELECTRICAL MEASUREMENTS**
This course consists of four hours of lectures and labs per week. Topics covered include the application of the wattmeter, AC test set, Hall-effect watt transducer, phase angle and power factor meter, phase sequence indicator, watt-hour meter, demand meter, potential and current transformers and phase-shifting transformers - in the measurement of active power, reactive power, energy and demand - in single and three-phase circuits.

**ELE-E405 COMPUTER OVERVIEW**
Reviews the architecture of a basic single board computer along with programming concepts in assembly, language, and BASIC for the purpose of counting, time delay, sequencing and the handling of interrupt inputs. Topics: computer hours; CPU registers and control lines; memory types, organization and decoding; parallel part registers; timer registers; stack operation and interrupt operation.

**ELE-E406 ELECTRICAL PRACTICES & DESIGN**
The Electrical Practices and Design course is intended to familiarize the student with the design and practices of electrical-power systems within the regulations of the Canadian Standard Association, Canadian Electrical Code, Part I. Topics covered include: 1) Insulating materials, 2) American wire gauge, 3) Load calculations, 4) Wiring methods, 5) Grounding, 6) Protection, and 7) Services.

**ELE-E407 INSTRUMENTATION ELECTRONICS**
Linear integrated circuits course which introduces the operational amplifier and describes the rudimentary circuits used for the acquisition and conditioning of analog signals. Topics: op-amp characteristics; single ended and differential input amplifiers; integrators; differentiators; analog switches and voltage regulators.
ELE-E408 ELECTRICAL MACHINES
This course introduces the student to electrical D-C machines. Students are required to circuit and operate D-C motors and generators as well as understand basic machine design. Dynamo construction details such as windings, commutator, magnetic circuits and brushes is covered. Operating characteristics of the various machines (i.e. shunt series and compound) are examined in detail.

ELE-E501 ELECTRICAL CIRCUITS
This subject begins by investigating how unbalanced loads affect 3-phase systems and includes an introduction to the principle of "symmetrical components". The subject examines transient states in R-L, R-C and R-L-C circuits, undergoing both step and A.C. excitation. Analysis involves using the "assumed solution" and the more rigorous Laplace approach.

ELE-E502 ELECTRICAL MEASUREMENTS
This course consists of five hours of lectures and labs per week. Topics covered include the construction, operation, application, and testing of single phase, three-phase and autotransformers. From test data, transformer polarity is established, equivalent circuits are obtained, efficiency and voltage regulation calculations are performed, and harmonics are analyzed.

ELE-E505 INDUSTRIAL COMPUTER INTERFACES
Describes operations, specifications and applications of most commonly used DAC, ADC, and serial data communication standards. Topics: DAC operation and specifications; ADC, successive approximation and dual slope; ADC MUX operation, input protection, aliasing filter and sampling rate; serial data communication standards, RS-232, RS-422 and RS-485.

ELE-E506 ELECTRICAL PRACTICES & DESIGN
The Electrical Practices and Design course is intended to familiarize the student with the design and practices of electrical power systems within the regulations of the Canadian Standard Association, Canadian Electrical Code, Part I. Topics include 1) motor circuits, 2) electrical distribution, 3) auxiliary systems, and 4) hazardous locations. The lab sessions will be used to familiarize the students with programmable controllers.

ELE-E507 POWER ELECTRONICS
Introduces thyristor devices for the purpose of describing the operation and application of AC power controllers. Topics: thyristor characteristics, control circuits, and protective circuits; AC power controllers, both phase controlled and zero crossing controlled; RFI; comparators and timers.

ELE-E508 ELECTRICAL MACHINES
This course is a continuation of the fourth-term course, Electrical Machines, ELE-E408. The students are taught theory and practical labs with respect to A.C. generators and motors. Special attention is given to A.C. dynamo construction and operation, including parallel operation of alternators.

ELE-E602 ELECTRICAL MEASUREMENTS
This course consists of five hours of lectures and labs per week and is designed to familiarize the student with the transmission of electric power over a system. Topics covered include establishing the circuit constants of an overhead transmission line, assembling power system components into a system for analysis, establishing power transmission limits and stability, and reading instruments for system monitoring.

ELE-E506 SWITCHGEAR & PROTECTION
This course is used to inform the students about the types of equipment used by the electric utilities for power transmission and fault protection. Tours are made of existing installations and some laboratory demonstrations are employed to show the latest practices and possible operating conditions. Power system analysis is used to point out the various elements that are significant in the operation of the various systems. Symmetrical components and protective relaying are two of the topics included in course material.

ELE-E507 POWER ELECTRONICS
Introduces three-phase rectifiers, converters, and variable frequency inverters for the purpose of describing the various types of DC and AC motor drives. Topics: three-phase bridge rectifier, both six pulse and twelve pulse; converters, both full control and half control; three-phase converter, both PWM output and six step output; DC drives, one quadrant, two quadrant and four quadrant; AC drives, variable voltage, variable frequency slip power recovery, eddy current and cycloconverter.

ELE-E508 ELECTRICAL MACHINES
This course is a continuation of the fifth term course Electrical Machines, ELE-E508. The students are taught theory and practical labs with respect to A.C. motors: three phase, single phase, and synchronous. Dynamo efficiency is also covered as a unified topic in Electromechanical conversion.

ELE-E509 LINEAR CONTROL SYSTEMS
Introduces general concepts of closed-loop control for electromechanical systems with motor control for illustration. Systems are approximately described: a) either first order or second order and b) performance rated on the basis of accuracy and transient response. Factors affecting accuracy and transient response are highlighted and simple control strategy(ies) developed to permit high accuracy and desired transient response.

ELE-M102 MATH
Pre-calculus "review": linear, quadratic, logarithmic, exponential and simultaneous (linear) equations. Some factoring, graphing, formula manipulation, functional notation, complex numbers. Right triangle, trig, radians, and problem solving. Emphasis is on doing and in the process of orderly developments. 56 hours in-class, plus testing.

ELE-M202 CALCULUS
Differential Calculus. Slope, straight line, parabolas, circle, transformation of axes, trapezoid rule for areas. Derivatives of: polynomials, powers, products, quotients: implicit expressions, trig and inverse trig, logarithms and exponentials. Tangents, normals, motion, rel. rates, max/min., small changes and "Newton's Roots". 54 hours in-class, plus testing.

ELE-M302 CALCULUS
Integral calculus. Work with trig identities and equations: reciprocal, pythagorean, angle sum, double and half-angle relations. Integrate algebraic, log, exponential, trigonometric quantities.
Use substitution and "by-part" techniques. Find areas, average and RMS values, and work with integrals with current, charge and voltage. 46 hours plus testing.

**ELE-M402 CALCULUS**
Applied Calculus for Electrical Technology - differential equations with emphasis on LaPlace transform methods. Applications include: transients in series circuits and simulation of natural and controlled systems using TUTSIM software.

**ELE-M502 CALCULUS**
Applied Calculus for Electrical Technology - Fourier series and MathCAD software. Applications include harmonic analysis by integration and software, waveform filtering simulation by FFT on software, AC circuits by matrices on software.

**ELE-P109 PHYSICS**
An introductory course in engineering mechanics and electricity with emphasis on solving problems and dealing with such topics as the nature of physics, physical quantities, systems of measurements, significant figures, translational motion in one and two dimensions, Newton’s laws of motion, free body diagrams, work, power and energy, discreteness of electric charge, electrostatic force and field, Coulomb’s law and Gauss’ law, electrostatic potential and potential energy, capacitance and electron ballistics. A total of 50 hours of instructional time is divided into 30 hours of lectures and 20 hours of labs.

**ELE-P209 PHYSICS**
An intermediate level course in engineering mechanics and electromagnetism with emphasis on solving problems and dealing with such topics as rotational kinematics & dynamics of rigid bodies, conservation of angular momentum, work power and energy in rotation, motion of simple, damped and driven oscillating mechanical systems and their electrical analogues, resonance and Q value, magnetic fields due to different current configurations, force on moving charge and current carrying wire in a magnetic field, electromagnetic induction, self & mutual inductance and magnetic properties of materials. A total of 40 hours of instructional time split evenly between labs and lectures.

**ELE-P309 PHYSICS**
The course deals with the transfer of energy by waves, mechanical as well as electromagnetic. The topics covered include definition of elastic & EM waves, longitudinal and transverse waves, speed of waves in different media, reflection, refraction, total internal reflection & fibre optics, diffraction, interference, standing waves and various modes of resonance. Doppler effect and its applications, intensity and loudness of sound, SIL, radiant & luminous intensity, response of the eye, illumination & luminous intensity, sources of light and photoelectric effect. A total of 40 hours of instructional time split evenly between labs and lectures.

**ELE-R100 REPORT WRITING**
Streamlining the students’ approach to writing; planning and writing technical business letters and memorandums; planning and writing short reports and medium-length investigation reports; writing at a computer terminal.

**ELE-R200 REPORT WRITING**
Presenting information orally: at technical briefings, meetings, and conferences; preparing job-search documentation; attending employment interviews; planning and writing equipment descriptions and operating instructions.

**ELE-R600 REPORT WRITING**
Review of report writing, oral presentations, and job-search techniques; planning, writing and presenting a formal technical report.
# ELECTRONIC ENGINEERING TECHNOLOGY

**PURPOSE**
To develop the knowledge and skills required to test, repair and develop a wide variety of electronic equipment.

**COURSE**
Electronic Engineering Technology is a two-year diploma course with a September entry date. The course is a multi-discipline program encompassing electronic, electrical and mechanical subjects, ranging from microprocessor-based control systems and radio and high-frequency circuits to high-speed data communications.

Electronic, Instrumentation, Electrical and Computer Engineering Technology courses have a common first year of training.

**ENTRANCE REQUIREMENTS**
- 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation) with Mathematics 300, English 300 or 301, and Physics 300* or Physical Science 301; or
- Adult Basic Education Pre-Technology (Adult 12) program completion

Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits; however, they must have specific credits in mathematics, English, and science* as outlined above. Mature students must also be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

* Physics 300 is strongly recommended as a more appropriate background for technology.

**EMPLOYMENT POTENTIAL**
Graduates have found employment in a broad range of electronics-related occupations: in research and development, assisting in project development; in technical sales, selling and servicing electronic equipment; and in design and quality control. Some graduates who have acquired substantial experience now work as plant supervisors.

For further information on possible transfer of credit, see the Electronic Engineering Technology course brochure.

**COURSE OUTLINE**

### Year 1

#### Term 1

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ELE-E101</td>
<td>Electric Circuits</td>
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<tr>
<td>ELE-E102</td>
<td>Electrical Instruments</td>
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<tr>
<td>ELE-E104</td>
<td>Personal Computers I</td>
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<tr>
<td>ELE-E108</td>
<td>Drafting</td>
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<tr>
<td>ELE-M102</td>
<td>Math</td>
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<tr>
<td>ELE-P109</td>
<td>Physics</td>
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<tr>
<td>ELE-R100</td>
<td>Report Writing</td>
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#### Term 2

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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>ELE-E201</td>
<td>Electric Circuits</td>
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<tr>
<td>ELE-E202</td>
<td>Electrical Instruments</td>
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<tr>
<td>ELE-E204</td>
<td>Personal Computers II</td>
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<tr>
<td>ELE-E207</td>
<td>Basic Electronics</td>
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<tr>
<td>ELE-M202</td>
<td>Calculus</td>
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<tr>
<td>ELE-P209</td>
<td>Physics</td>
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<tr>
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### Term 3

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<th>Course Code</th>
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<tr>
<td>ELE-E301</td>
<td>Electric Circuits</td>
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<tr>
<td>ELE-E303</td>
<td>Introductory Logic Circuits</td>
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<tr>
<td>ELE-E305</td>
<td>Introductory Microprocessors</td>
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<tr>
<td>ELE-E307</td>
<td>Basic Electronics</td>
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<tr>
<td>ELE-M302</td>
<td>Calculus</td>
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<tr>
<td>ELE-P309</td>
<td>Physics</td>
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### Year 2

#### Term 4

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<td>Communication Circuits</td>
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<tr>
<td>ELE-E412</td>
<td>Electronic Measurements</td>
</tr>
<tr>
<td>ELE-E415</td>
<td>Microprocessors</td>
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<tr>
<td>ELE-E416</td>
<td>Manufacturing Techniques</td>
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<tr>
<td>ELE-E417</td>
<td>Electronic Devices</td>
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<tr>
<td>ELE-M412</td>
<td>Calculus</td>
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### Term 5

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<tr>
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<tr>
<td>ELE-E512</td>
<td>Circuits &amp; Fields</td>
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<tr>
<td>ELE-E515</td>
<td>Microprocessors</td>
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<tr>
<td>ELE-E517</td>
<td>Electronic Devices</td>
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<tr>
<td>ELE-E519</td>
<td>Linear Control Systems</td>
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<tr>
<td>ELE-M512</td>
<td>Calculus</td>
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<tr>
<td>ELE-M513</td>
<td>Statistics &amp; Quality Control</td>
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### Term 6

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<th>Course Code</th>
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<tr>
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<td>Data Communications</td>
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<tr>
<td>ELE-E615</td>
<td>Digital Control Systems</td>
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<tr>
<td>ELE-E616</td>
<td>Manufacturing Techniques</td>
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<tr>
<td>ELE-E617</td>
<td>Electronic Devices</td>
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<tr>
<td>ELE-E618</td>
<td>Low Frequency Circuits</td>
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<tr>
<td>ELE-R610</td>
<td>Report Writing</td>
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</tbody>
</table>

### SUBJECT DESCRIPTIONS

**ELE-E101 ELECTRIC CIRCUITS**
Basic concepts of electricity and electric circuits. Ohm's law, power, energy and efficiency, Kirchhoff’s voltage and current laws, voltage and current divider rules. Problem-solving methods for simple DC circuits. Analysis of more complex DC electric circuits using network theorems, network conversions, branch, mesh and nodal methods.

**ELE-E102 ELECTRICAL INSTRUMENTS**
ELE-E102 Basic Electrical Instruments is an applied Ohms Law Laboratory course for the ELE-E101 Electric Circuits course. It includes instruction in human electrical safety and how to calibrate, measure and communicate instrument readings. Basic instrument design, circuit calculations as well as instrument characteristics are also covered. The instruments discussed include the VOM, DMM, VTVM, DC Bridge, and potentiometer.

**ELE-E104 PERSONAL COMPUTERS I**
This subject will provide students with a brief introduction to personal computer hardware and the most often used DOS com-
ELE-E106 DRAFTING
This is a first course in drafting, which assumes the student has little or no knowledge of drafting techniques. Simple skills such as line weight, use of the T square and triangles are taught. As the course progresses, emphasis shifts to drawing organization and layout, with particular attention paid to electrical/electronic device symbols, schematic diagrams and logic drawings.

ELE-E201 ELECTRIC CIRCUITS
Continuation of Electric Circuits ELE-E101. Fundamental concepts of sinusoidal voltage and current, time and phasor domains; instantaneous average and effective values. Resistor, inductor and capacitor in AC sinusoidal circuit; impedance and admittance. Problem-solving methods for simple AC circuits. Analysis of more complex AC electric circuits using network theorems, network conversions, mesh and nodal methods. Single phase AC power: average, reactive and apparent, power factor; measurement of power in a single phase AC circuit using a wattmeter.

ELE-E202 ELECTRICAL INSTRUMENTS
This course is a continuation of ELE-E102 Basic Electrical Instruments and is the lab course for ELE-E201 Electric Circuits. It concentrates on the calibration and proper use of instruments for measurement in AC circuits. The instruments discussed are the Function generator, VOM, VTVM, DMM and the oscilloscope. The course consists mainly of practical lab work.

ELE-E204 PERSONAL COMPUTERS II
This introductory programming subject in the BASIC language emphasizes a structured approach to problem-solving and programming. The focus of this approach is to develop an algorithm, translate it into a program, check the program for accuracy and debug the program as necessary. The three hours per week of formal class time is spent in the PC room or a classroom working on one of the series of tutorial/assignments which are keyed closely to the text and supplemented with material more relevant to applications in the Electronics, Electrical, Computer and Instrumentation Engineering Technology areas.

ELE-E207 BASIC ELECTRONICS
This course is a first course in Solid State electronics. Upon the completion of this course, the student will be able to analyze, design and build simple diode rectifier circuits, Zener diode circuits and Transistor biasing circuits.

ELE-E301 ELECTRIC CIRCUITS

ELE-E303 INTRODUCTORY LOGIC CIRCUITS
The purpose of this course is to familiarize students with popular digital integrated circuit devices and to develop the students to the point where they can describe their operation and apply them in digital circuits. The course consists of approximately 25% lecture time in which specific blocks of material are dealt with in preparation for a follow-up laboratory exercise.

ELE-E305 INTRODUCTORY MICROPROCESSORS
This subject starts by providing a general hardware description of microprocessor systems at the block diagram level. It then continues with an introduction to microprocessor programming at the assembly language level, including use of the TASM Cross Assembler. Assembly language programming is implemented on systems which use the 8080 microprocessor. This subject lays the foundation for the more advanced microprocessor training contained in the second year of all Electrical, Electronic, Instrumentation and Computer Engineering Technology programs.

ELE-E307 BASIC ELECTRONICS
This course is a continuation of Term 2 Basic Electronics introduction to the AC analysis and design of Junction Transistor, Field Effect, and MOS transistor circuits. It concentrates on analysis techniques to predict the terminal behavior of small signal amplifiers. It is primarily a lecture and lab-related course and consists of six hours a week.

ELE-E411 COMMUNICATION CIRCUITS
A study of the various electrical circuits and their applications in communication systems. First and higher order transfer functions, Bode plots, frequency and phase response measurements. Resonant circuits, parallel-series conversions, reactance curves, applications. RF coupling circuits: Impedance and inductive coupling. RF matching circuits: tapped tuned circuits, L-, n- and T-type circuits.

ELE-E412 ELECTRONIC MEASUREMENTS
Electronic Measurements is a course intended to provide practical application of instruments, interpretation of results, methods of analysis, and documentation of data from a wide range of the more advanced instruments. Emphasis is placed on the proper use of instruments for measuring and matching levels in systems from audio to microwave. Included are Wave, Distortion and Spectrum analyzers, Delayed sweep and storage oscilloscopes, AC voltmeters and power meters. The course consists of two hours lecture and three hours lab per week.

ELE-E415 MICROPROCESSORS
This is an application-oriented course based on the Low Power Schottky TTL and CMOS families, the Z-80 CPU system architecture and Z-80 peripheral devices. The course is a continuation of the Introductory Logic and Introductory Microprocessor courses of Term III and is intended as a preparatory course for the Digital courses in Terms V and VI. Approximately 50% of the class time is spent in the lab, verifying operation, design and testing of subsystems.

ELE-E416 MANUFACTURING TECHNIQUES
The Manufacturing Techniques course is an introductory course in the design of electronic equipment. The course will provide the student with basic skills in soldering and desoldering of compo-
tems used on double-sided printed circuit boards with plated-thru-
holes, and the soldering and desoldering of surface-mounted
components. This course introduces the student to wire-wrap-
ting techniques. The course introduces Printed Circuit Artwork Design
and Layout.

ELE-E417 ELECTRONIC DEVICES
This course is a continuation of Term 3 Basic Electronics for
students in the Electronic Technology discipline. The course
consists of six hours of instruction per week, split between labs and
lecture. The course discusses the frequency response and design of
circuits using basic active devices, such as transistors and
FETs. The course also discusses Feedback theory in preampli-
fiers as well as the characteristics and applications of the opera-
tional amplifier.

ELE-E511 HIGH FREQUENCY CIRCUITS
High-frequency circuits is a course on the theory and practical
aspects of electronic communication fundamentals. Three hours
per week are allotted for lecture and two hours for Lab work.

ELE-E512 CIRCUITS AND FIELDS
Electronic Circuits and Fields provide a strong background to the
technologist on the fundamentals of transmission lines and
waveguides. Course time each week is divided between three (3)
hours of lecture and two (2) hours of Lab work.

ELE-E515 MICROPROCESSORS
This is an application-oriented course based on the Z-80 periph-
eral devices. Concepts and methods of controlling input and
output devices are introduced. The student will write, test and
debug software to interface Z-80 microprocessor systems to the
P10, CTC, Keyboard, ADC/DAC devices and the Real Time Clock.

ELE-E517 ELECTRONIC DEVICES
This course is a continuation of Term 4 Devices. The course
consists of five hours of instruction per week, two hours lecture and
three hours lab. The course investigates oscillator circuits and
regulated power supplies. A wide assortment of integrated
devices and applications are studied and applied in the lab.

ELE-E519 LINEAR CONTROL SYSTEMS
This course introduces the fundamentals of closed-loop control
(linear systems). Feedback system terminology, components,
and block diagram algebra are discussed in the first half of the
course. The second half of the course analyzes first and second-
order systems (speed control and position control) and applies
control system principles to robotic systems.

ELE-E511 DATA COMMUNICATIONS
Data Communications focuses on advanced electronic communi-
cation techniques with an emphasis on modern digital communi-
cation systems. Three hours per week is used for lecture time and
two hours for lab work.

ELE-E615 DIGITAL CONTROL SYSTEMS
This is a project-oriented course based on the Z-80 CPU and the
Z-80 peripheral devices. Each project group must submit a pro-
posal requesting department approval of manhour and material
cost that may be incurred during development and construc-
tion of a Z-80 microprocessor controlled project. The proposed
project must be unique with respect to any currently approved
projects, must include a peripheral requesting a vectored interrupt
and must utilize some form of feedback. The class instructor will
act as monitor and counsellor for each group, (maximum two
students per group), and will conduct weekly progress meetings
with each group to help keep the projects on schedule. A formal
technical report, written with the Report Writing course, must be
submitted on completion of the project.

ELE-E616 MANUFACTURING TECHNIQUES
The Manufacturing Techniques course is an introductory course
in the design of electronic equipment. The student is introduced
to a computerized printed circuit board design and layout program.
A project is completed to develop a higher skill level in printed
circuit artwork design and layout that was introduced in the fourth
term.

ELE-E617 ELECTRONIC DEVICES
This course is a continuation of Term 5 Devices. The course
consists of five hours of instruction per week, two hours lecture and
three hours lab. The course investigates power devices, opto-
electronic and trigger devices, theory and applications.

ELE-E618 LOW FREQUENCY CIRCUITS
The Low Frequency circuits course is a linear electronics course
describing circuits and systems commonly used in industry for
control, in computer interfacing, in audio, and in other low fre-
cquency analog systems. Included in the topics are transducer
equalization, instrumentation amplifiers, non-linear circuits and
power amplifiers.

ELE-M102 MATH
Pre-calculus "review": linear, quadratic, logarithmic, exponential
and simultaneous (linear) equations. Some factoring, graphing,
formula manipulation, functional notation, complex numbers. Right
triangle, trig, radians, and problem solving. Emphasis is on doing
and in the process of orderly developments. 56 hours in-class,
plus testing.

ELE-M202 CALCULUS
Differential Calculus. Slope, straight line, parabolas, circle, trans-
lation of axes, trapezoid rule for areas. Derivatives of: polynomi-
als, powers, products, quotients: Implicit expressions, trig and
inverse trig, logarithmic and exponentials. Tangents, normals,
motion, rel. rates, max/min., small changes and "Newton's Roots".
54 hours in-class, plus testing.

ELE-M302 CALCULUS
Integral calculus. Work with trig identities and equations: recipro-
cal, pythagorean, angle sum, double and half angle relations.
Integrate algebraic, log, exponential, trigonometric quantities.
Use substitution and "by-part" techniques. Find areas, average
and RMS values, and work with integrals with current, charge and
voltage. 46 hours plus testing.

ELE-M412 CALCULUS
Applied Calculus for Electronic Technology - McLaurin and Taylor
series, differential equations with emphasis on LaPlace transform
methods. Applications include: computation of trigonometric and
logarithmic functions by series, transients in series circuits and
simulation of natural and controlled systems using TUTSIM soft-
ware.
ELE-M512 CALCULUS
Applied Calculus for Electronic Technology - Fourier series and MathCAD software. Applications include harmonic analysis by integration and software, waveform filtering simulation by FFT on software, AC circuits by matrices on software.

ELE-M513 STATISTICS & QUALITY CONTROL
The course is an introduction to fundamental concepts of quality control. Sufficient theory is presented to ensure a sound understanding of the basic principles. Probability and statistical techniques are reduced to simple mathematics or presented in the form of tables and charts. The course duration is 11 weeks with three periods per week.

ELE-P109 PHYSICS
An introductory course in engineering mechanics and electricity with emphasis on solving problems and dealing with such topics as the nature of physics, physical quantities, systems of measurements, significant figures, translational motion in one and two dimensions, Newton's laws of motion, free body diagrams, work, power and energy, discreteness of electric charge, electrostatic force and field, Coulomb's law and Gauss' law, electrostatic potential and potential energy, capacitance and electron ballistics. A total of 50 hours of instructional time is divided into 30 hours of lectures and 20 hours of labs.

ELE-P209 PHYSICS
An intermediate level course in engineering mechanics and electromagnetism with emphasis on solving problems and dealing with such topics as rotational kinematics & dynamics of rigid bodies, conservation of angular momentum, work power and energy in rotation, motion of simple, damped and driven oscillating mechanical systems and their electrical analogues, resonance and Q value, magnetic fields due to different current configurations, force on moving charge and current carrying wire in a magnetic field, electromagnetic induction, self & mutual inductance and magnetic properties of materials. A total of 40 hours of instructional time split evenly between labs and lectures.

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ELE-R200 REPORT WRITING
Presenting informational orally: at technical briefings, meetings, and conferences; preparing job-search documentation; attending employment interviews; planning and writing equipment descriptions and operating instructions.

ELE-R510 REPORT WRITING
Review of report writing, oral presentations, and job-search techniques; planning, writing and presenting a formal technical report.
EMPLOYMENT ORIENTATION FOR WOMEN

PURPOSE
To provide women with the information, self-confidence and personal skills required for entering or re-entering the workforce. This course will assist clients who wish to enter the labour market, or who are under-employed, to practice the skills required to get a job and to assess their situations in making a realistic and appropriate career decision.

COURSE
Employment Orientation for Women is a 12-week course with September, January and April entry dates. The course comprises three main sections: Personal Development, Career Exploration and Job Preparation.

ENTRANCE REQUIREMENTS
Although there are no formal entrance requirements, basic reading and writing skills are essential for success in this course.

EMPLOYMENT POTENTIAL
Upon successful completion of this program, students have found themselves better prepared to make decisions on employment, training or further education. Most students have increased their knowledge, skills and self-esteem, and achieved the level of self-confidence required to pursue appropriate goals.

COURSE OUTLINE
S06-E200 Work Experience
S06-E202 Personal Development
S06-E203 Career Exploration
S06-E204 Job Preparation

SUBJECT DESCRIPTIONS
S06-E200 WORK EXPERIENCE
A work experience in the occupation of the student’s choice will be arranged. Employer feedback on the student’s work ethic and suitability for the occupation will be made available for personal use in career planning and decision making.

S06-E202 PERSONAL DEVELOPMENT
The personal development component focuses on self-awareness and personal growth as it relates to the individual and employment. Students examine their interests, aptitudes, skills and experience. Topics include: barrier identification, coping with change and stress, communication skills, group behavior, assertiveness and self-confidence, problem solving, decision making and goal setting.

S06-E203 CAREER EXPLORATION
Career exploration includes research of career possibilities, training and educational programs, resource agencies, job search techniques and employer-employee expectations. Individual suitability as well as access to jobs is investigated with an emphasis on finding and securing a job. Issues that affect women as employees are given special emphasis: assertiveness in the work place, sex role stereotyping and traditional and non-traditional work for women.

S06-E204 JOB PREPARATION
Job search skills, employer expectations, applications, resumes, letters, interview skills, work habits, inter-employee skills.
ENGINEERING DESIGN & DRAFTING TECHNOLOGY

PURPOSE
To develop the knowledge and skills required in the field of architectural and mechanical design and drafting.

COURSE
Engineering Design and Drafting Technology is a two-year diploma course with a September entry date. The course is designed to develop skills in the design and preparation of working drawings for the presentation of technical information.

ENTRANCE REQUIREMENTS
- 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation) with Mathematics 300, English 300 or 301, and Physics 300* or Physical Science 301;
or
- Adult Basic Education Pre-Technology (Adult 12) program completion

Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits; however, they must have specific credits in mathematics, English, and science* as outlined above. Mature students must also be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

* Physics 300 is strongly recommended as a more appropriate background for technology.

EMPLOYMENT POTENTIAL
Graduates have found employment with consulting and mechanical engineers, contractors, fabricators, architects and service industries, as well as a variety of positions with various departments of municipal, provincial and federal government services.

COURSE OUTLINE

Term 1
CIV-C162 Engineering Graphics
CIV-C165 Mechanics
CIV-C166 Surveying
CIV-M183 Introduction to Application Software
CIV-M189 Mathematics
CIV-R167 Communications

Term 2
CIV-D261 Architectural Technology I
CIV-D262 Architectural Environment I
CIV-D263 Manufacturing Technology I
CIV-D264 Building Science I
CIV-D265 Strength of Materials
CIV-D266 Manufacturing Materials & Process
CIV-M268 Calculus

Term 3
CIV-D361 Architectural Technology II
CIV-D362 Architectural Environment II
CIV-D363 Manufacturing Technology II
CIV-D364 Building Science II
CIV-D365 Theory of Structures
CIV-D368 Computer Assisted Drafting I

Term 4
CIV-D461 Architectural Technology III
CIV-D463 Manufacturing Technology III
CIV-D464 Mechanical Systems I
CIV-D465 Structural Design I
CIV-D468 Materials & Specifications I
CIV-D468 Computer Assisted Drafting II

Term 5
CIV-D561 Architectural Technology IV
CIV-D564 Mechanical Systems II
CIV-D565 Structural Design II
CIV-D566 Construction Systems
CIV-D568 Computer Assisted Drafting III
CIV-R566 Specifications & Reports

Term 6
CIV-D661 Architectural - Final
CIV-D664 Mechanical Systems III
CIV-D665 Structural Design III
CIV-D666 Materials & Specifications II
CIV-D668 Job Control & Estimating
CIV-R667 Report Writing

SUBJECT DESCRIPTIONS
CIV-C162 ENGINEERING GRAPHICS
Students will receive a basic understanding in the requirements for technical drawing standards. They will be required to develop basic engineering drafting skills through practice in the use of drawing instruments, the interpretation of simple drawings and sketches and the production and reproduction of simple components and mechanisms. Upon successful completion of this course, students will have obtained a thorough foundation in the fundamentals of engineering graphics, a basis upon which they may further develop their drafting skill and knowledge in their technology specialties. This course has one hour lecture per week and five hours lab per week.

CIV-C165 MECHANICS
Subject includes the following topics: 1) Basic Principles, 2) Resultant of Force Systems, 3) Equilibrium of Force Systems, 4) Center of Areas, and 5) Moment of Inertia.

CIV-C166 SURVEYING
This subject consists of the theory and use of survey measuring instruments, the steel tape, engineer’s level and transit and the basic techniques in the use of these Instruments.

CIV-D261 ARCHITECTURAL TECHNOLOGY I
Architectural Technology I is an introduction to architectural methods. It commences with a series of exercises designed to assist in the practice of lettering and linework. The term project is concerned with the development of an oversized double garage utilizing the use of a reinforced concrete slab on grade and single wood framing techniques.

CIV-D262 ARCHITECTURAL ENVIRONMENT I
This course is an introduction to a number of major factors affecting the built environment; noise and sound control, basic electricity leading to electrical illumination studies. The course material is mainly theoretical in nature and is considered as
building science in scope; colour theory is also introduced in this course.

CIV-D263 MANUFACTURING TECHNOLOGY I
This programme has the function of providing the student with an overview of drawing office practices; standard practices as applied to manufacturing standard components including fasteners; gears, cams, linkages and other machine elements; weldments; basic machines and their applications. The course comprises a series of lectures, case studies and production of working drawings for machined and welded components.

CIV-D264 BUILDING SCIENCE I
This is an introductory course planned to provide the student with a review of basic principles, and occupant requirements for controlled environments; with an understanding of the interplay through building envelopes by both interior and exterior environments. The course comprises a series of lectures with the student required to perform related calculations, probability studies and case studies.

CIV-D265 STRENGTH OF MATERIALS
The first part of the course deals with problems relating to support and pin reactions in frames and trusses. The second part deals with stress and deformation of materials.

CIV-D266 MANUFACTURING MATERIALS & PROCESS
This program provides the student with an introduction to basic metallurgy; qualities and properties of materials; production of basic materials; alloys; heat treatment processes; selection of materials for specific purposes; plastics and other non-metallic materials; material manipulation; manufacturing machines, their form and function; measurement methods; and surface treatments. The course comprises a series of lectures, case studies and the preparation of a report on new materials and/or processes.

CIV-D361 ARCHITECTURAL TECHNOLOGY II
Architectural Technology II is concerned mainly with light wood frame construction employed in the single family residence. The selected architectural project introduces the student to framing details, foundation details, window and door systems, roof truss system including a series of related residential topics.

CIV-D362 ARCHITECTURAL ENVIRONMENT II
The principles established in course CIV-D262 Architectural Environment I are further explored in Architectural Environment II wherein engineering calculations and case studies are employed as a means of applying the previously studied theory. Selected term papers are required to permit the integration of the theory and engineering calculations. The major topics are sound control (acoustics) electrical illumination and Colour Theory.

CIV-D363 MANUFACTURING TECHNOLOGY II
In this course, the student is presented with data on basic machine design. This includes basic jig and fixture design applications; transmission design for belt, chain and gear drives; the utilisation of couplings, clutches, brakes, speed reducers, and bearings through the selection of components from manufacturers' catalogues and application to given design problems. The student is expected to produce all related calculations and working drawings of solutions to design problems and case studies.

CIV-D364 BUILDING SCIENCE II
This course is an introduction to the principles for evaluating air-conditioning systems; the requirements for a HVAC system; building function requirements; insulation, vapour barriers and air-sealing methods; air-conditioning load determination methods. The course comprises a series of lectures, case studies and determination of HVAC loads.

CIV-D365 THEORY OF STRUCTURES
This course consists of: defining structural loads, applying structural loads and procedures to beams as per code, calculating degree of indeterminacy for beams, analyzing indeterminate beams using Three Moment Equation, Concrete Beam Coefficients, and Moment Distribution, recording results on Shear Force and Bending Moment Diagrams, and calculating deflections.

CIV-D366 COMPUTER ASSIST DRAFTING I
Introduction to graphic computers and computer-aided-drafting, involving geometric entities, input modes, coordinate types, drawing creation and manipulation, dimensioning, cell libraries (creation and usage), layers, bookkeeping functions, and output (plotting). Production of drawings using Calcomp (Terak) hardware, and a software package, named "MINN-DRAFT".

CIV-D461 ARCHITECTURAL TECHNOLOGY III
This course commences with an introductory perspective drawing exercise using the single-family residence designed in Architectural Technology II. Aspects of basic shade and shadow techniques to create depth of field are employed in producing a rendered perspective of the residence. The second part of the course deals with an introduction to load-bearing masonry wall systems and light industrial steel roof system utilized in typical single-storey warehouse structures. The project involves the production of basic working drawings within an architectural context.

CIV-D463 MANUFACTURING TECHNOLOGY III
This course introduces the student to the materials, equipment and systems commonly used in industrial processing plants, such as pipes, valves, pumps, control devices and related components. The student is introduced to standard drawing office practices for the production of both multi-view and isometric working drawings of given processing plants. The student is further introduced to hydraulic and pneumatic systems and components. From the given data, the student will produce schematic drawings of hydraulic designs utilising standardised flow systems. A report on the operation and sequencing of the designed system must accompany the drawings.

CIV-D464 MECHANICAL SYSTEMS I
This course is an introduction to the equipment and systems used in creating interior environments within the wide range of structures already constructed and being developed. It covers the relationship of the mechanical-architectural interface, fuels: all-air, all-water, and chilled water systems, refrigeration theory and related equipment; heat recovery systems and alternative energy systems. The course comprises lectures and case studies.

CIV-D465 STRUCTURAL DESIGN I
Timber design.
CIV-D466 MATERIALS & SPECIFICATIONS I
This is an introductory course concerned with two major topics; Specifications and Concrete Materials Properties. Specification introduction deals with such topics as contract law, liabilities and contracts, specification types and construction participants while Concrete Materials Properties deals with the manufacturing of cements, types of cements, factors affecting the properties of concrete, placing, finishing and curing of concrete plus a number of related practice procedures.

CIV-D468 COMPUTER ASSISTED DRAFTING II
The first half of this trimester will be a continuation of the previous one, and will involve a more complex project. This will be followed by the introduction to more sophisticated Software, named “Design Pro”. This will include use of menu options, directories, drafting mode, user work area, digitizers, function codes, grid and scale, keyboard coordinate entries, graphics commands, layers and pens, measures and drafting aids, introduction to 3-D, text editor, editing drawings, figures (cells), text, dimensioning & plotting. Production of drawings related to engineering disciplines using Calcomp (Terak) hardware.

CIV-D561 ARCHITECTURAL TECHNOLOGY IV
This course concerns the planning and design of a selected project, limited in size and scope to allow full development of design and working drawings in an architectural content. The projects permits the incorporation of construction materials selection and implementation, specifically in detail development. The selected project usually is a highrise structure; multiple residential, commercial or mixed-use occupancy.

CIV-D564 MECHANICAL SYSTEMS II
In this course, the student is introduced to the design of water supply and distribution systems and equipment, waste and sewage handling systems and equipment. The course requires the student to develop suitable designs for given structures, including both calculated data and working drawings. The student must include within the design project compliance with the Manitoba Building and plumbing codes.

CIV-D565 STRUCTURAL DESIGN II
Steel design.

CIV-D566 CONSTRUCTION SYSTEMS
This is an introductory course concerned mainly with two major topics: formwork practice and reinforced concrete systems. The course concerns practices, principles and systems involved for forming of foundation walls, columns, girders, beams and flat slab work in the first instance, expanding into formwork required and systems employed for multi-storey, heavy construction, flat plate, waffle and rib systems, etc.

CIV-D568 COMPUTER ASSISTED DRAFTING III
This topic, during the third trimester of this subject, will involve the student in using Computer Assisted Design and Drafting methods in the production of a variety of engineering drawings.

CIV-D661 ARCHITECTURAL - FINAL
The final architectural project involves the development of a building program in response to general directives. Planning methods are explored with use of bubble and functional relationship diagrams, leading to plan layouts. Design drawings are produced in respect to the developed program, followed by framing layouts and working drawings.

CIV-D664 MECHANICAL SYSTEMS III
In this course, the student will be introduced to the design of HVAC systems. The course includes the utilisation of all relevant standards and building codes in the development of HVAC systems for a given building. The student will complete the determination of all loads, select the necessary equipment and produce a complete set of working drawings for a given building.

CIV-D665 STRUCTURAL DESIGN III
Reinforced Concrete Design.

CIV-D666 MATERIALS & SPECIFICATIONS II
This course is a continuation of CIV-D668 in respect to specifications and materials studies. The study of specification writing and application is completed during this course and is applied directly to the final architectural project which is developed in course CIV-D661. The study of the properties and application of building materials such as concrete, masonry units, plaster, drywall systems, partition systems, finishing materials, ceiling systems and other materials and systems as per the course outline.

CIV-D668 JOB CONTROL & ESTIMATING
Job Control consists of the theory of project scheduling using the Critical Path Method. It will include the logistics of the method including terminology, arrow diagrams, expediting resource allocation, float and calendar dating. Estimating consists of the pricing of material, labour and indirect costs to determine the final cost of constructing a building.

CIV-M163 INTRODUCTION TO APPLICATION SOFTWARE
Through hands-on experience, this course provides an introduction to MS-DOS commands, WordPerfect word-processing, SuperCalc3 spreadsheet work, AND DBASE III Plus data base manipulation. The course setting is in a networked IBM-PC lab.

CIV-M169 MATHEMATICS
The course is basically a review of high school mathematics with emphasis on trigonometry, solution of algebraic equations, exponents, and logarithms.

CIV-M268 CALCULUS
Explicit and implicit functions of a single variable, limits, and derivative concept; differentiation of algebraic functions, trigonometric functions, inverse trigonometric functions, exponential and logarithmic functions; applications of the derivative; introduction to integration.

CIV-R167 COMMUNICATIONS
The subject covers the organizing and writing of letters, memorandums, and reports on technical subjects.

CIV-R666 SPECIFICATIONS & REPORTS
The subject covers the writing of technical instructions, proposals, and long investigation reports, the presentation of oral briefings, and the preparation of job-search documentation.
CIV-R667 REPORT WRITING
The course helps the student to polish the communication skills gained in Trimesters 1 and 5. Emphasis is on producing the long report and giving oral presentations.
ENGLISH AS A SECOND LANGUAGE (ESL)

PURPOSE
To develop practical English speaking, listening, reading and writing skills.

COURSE
The English as a Second Language (ESL) program is an intensive, full-time language training program at the Basic, Intermediate and Advanced levels. Each level is six months in duration and has September and February entry dates. Courses have been designed to develop practical speaking, listening, reading and writing skills which would be of immediate use to students. Course objectives are met through a combination of regular classroom activities and individualized instruction in the language, reading and spelling laboratories.

EMPLOYMENT OPPORTUNITIES
Many former students have found that ESL courses have opened up new employment opportunities for them. Others, who have successfully completed the Advanced course, have gone on to enroll in college and university programs. An important benefit for all students is the increased ability to communicate and function effectively in the community.

ENTRANCE REQUIREMENTS
All applicants will be tested to determine placement at an appropriate level of language development.

COURSE OUTLINES
Basic Level (Levels 1-5)
S05-E422 Writing Skills
S05-E423 Reading Skills
S05-E424 Grammar Skills
S05-E425 Speaking & Listening Skills

Intermediate Level (Level 6)
S05-E426 Listening Skills
S05-E427 Speaking Skills
S05-E428 Reading & Vocabulary Skills
S05-E429 Spelling Skills
S05-E430 Grammar Skills
S05-E431 Writing Skills
S05-E432 Settlement Information
S05-E433 Occupational Orientation

Advanced Level (Level 7)
S05-E400 Listening Skills
S05-E401 Reading & Vocabulary Skills
S05-E402 Spelling, Pronunciation & Dictation Skills
S05-E403 Conversation Skills
S05-E404 Grammar Skills
S05-E405 Writing Skills
S05-E406 Preparation for T.O.E.F.L.
S05-E420 Occupational Orientation
S05-E421 Settlement Information

SUBJECT DESCRIPTIONS
Basic Level
S05-E422 WRITING SKILLS
The student will develop the writing skills necessary to write a simple sentence, to complete a variety of forms, and to develop a basic resume.

S05-E423 READING SKILLS
The student will develop a basic vocabulary and he or she will be able to perform practical reading tasks which include reading want ads, street signs, simple directions, and consumer information.

S05-E424 GRAMMAR SKILLS
The student will develop an understanding of the basic structures of the English language. He or she will be able to form basic questions and answers using the appropriate verb tense.

S05-E425 SPEAKING AND LISTENING SKILLS
The student will be able to participate in a conversation where minimal language skills are required and which fall within the framework of the following topics: 1) personal information; 2) orientation of living in Canada; 3) language learning in the classroom; 4) health; 5) social interaction and leisure activities; 6) services; 7) shopping/buying - food, clothing, other items; 8) work; and 9) transportation/weather.

Intermediate Level
S05-E426 LISTENING SKILLS
The student will be able to understand news broadcasts, short lectures, and taped passages. He or she will demonstrate understanding by paraphrasing and/or answering questions based on what has been heard.

S05-E427 SPEAKING SKILLS
The student will be able to use idioms appropriately, make a presentation to the class, and debate controversial issues.

S05-E428 READING AND VOCABULARY SKILLS
The student's reading and vocabulary levels will be raised by at least two grade levels above the level at which he or she started.

S05-E429 SPELLING SKILLS
The student will be able to spell correctly, many commonly-used words in the English language.

S05-E430 GRAMMAR SKILLS
The student will be able to identify correct grammar usage and adapt formal grammar skills to communicative and writing situations.

S05-E431 WRITING SKILLS
The student will be able to write simple, compound, and complex sentences. He or she will be able to demonstrate his or her ability to use these sentences in a paragraph.

S05-E432 SETTLEMENT INFORMATION
The student will discuss, participate in, and explore various activities related to the current settlement needs of individual students.

S05-E433 OCCUPATIONAL ORIENTATION
The student will be able to accurately complete an application form and write a standard resume and covering letter. He or she will be able to apply for a job and effectively participate in a selection interview.
Advanced Level

S05-E400 LISTENING SKILLS
The student will be able to understand a radio news report, a short lecture or a passage that is read to him or her. He or she will demonstrate understanding by answering (with at least 80% accuracy) questions based on what has been heard.

S05-E401 READING & VOCABULARY SKILLS
The student’s reading and vocabulary levels will be raised by at least two grade levels above the level at which he or she started.

S05-E402 SPELLING PRONUNCIATION AND DICTATION SKILLS
The student will be able to spell correctly the most commonly-used words in the English language (approximately 3000 words). The student will be able to speak in a way that is understandable to a listener whose first language is English. The student will be able to write down (with few errors) a short passage that is dictated to him or her.

S05-E403 CONVERSATION SKILLS
The student will demonstrate ability to carry on a conversation by discussing and answering questions about a news item or other piece of information that he or she has just listened to.

S05-E404 GRAMMAR
The student’s understanding of English grammar will be sufficient for him or her to achieve the required score on the test of English as a foreign language (T.O.E.F.L.). He or she will demonstrate ability to use correct English constructions in written work.

S05-E405 WRITING SKILLS
The student will be able to write expository paragraphs. The facts and/or ideas will be presented in logical order and will be expressed in correct sentences. Punctuation marks and capital letters will be used correctly.

S05-E406 PREPARATION FOR T.O.E.F.L.
The student will be able to achieve the required score on the Test of English as a Foreign Language.

S05-E420 OCCUPATIONAL ORIENTATION
The student will learn vocabulary applicable to employment in general and to his or her chosen occupation; study vocabulary, abbreviations and types of information found in want ads; study application forms and appropriate ways of completing the forms; study various types of resumes and specific uses of each; produce a usable resume; produce a cover letter which can be adapted to accompany the resume during job search; study various interview skills; listen to various employment-related topics such as Human Rights/Unemployment Insurance; answer comprehensive questions about the various topics in Human Rights/Unemployment Insurance.

S05-E421 SETTLEMENT INFORMATION
Discuss participation in and explore various topics, concerns, and activities related to current settlement needs of individual students.

For further information please contact the Language Training Centre at 957-1026.
GRAPHIC ARTS

PURPOSE
To develop skills in printing technology, operations and processes: camera and paste-up, typography and electronic composition, and in negative assembly, presswork and bindery.

COURSE
Graphic Arts is a ten-month certificate course with a September entry date. (There are two possible additional entry dates in December and March.) Course delivery follows a block system in each of the three specific areas of instruction: 1. paste-up, camera and darkroom; 2. layout, typography and typesetting; 3. negative assembly, presswork and bindery.

ENTRANCE REQUIREMENTS
A - 14 high school credits (Manitoba Grade 11 or equivalent secondary school preparation) with English 200 or 201 and Mathematics 200 or 201. A typing course is highly recommended;

or

- Adult Basic Education 11B;

and

B - completion of entrance testing in basic mathematics and language usage skills with an overall score of at least 60 percent;

and

C - an orientation session with Graphic Arts staff.

Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. standing (scores on each of the five tests must be 43 or higher) in lieu of 14 credits; however, they must have successfully completed one of English 200, 201, 290, or 911 and one of Mathematics 200, 201, 290, or 911 at a minimum. Mature students must also meet entrance requirements (B) and (C) above and be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

EMPLOYMENT POTENTIAL
Past employment records show that a high percentage of graduates are working in course-related fields. Graduates have found jobs as typesetters, paste-up artists, presspeople, salespeople, production controllers, and cost estimators. Others have found employment in allied service industries, such as paper and ink companies, machinery suppliers, and advertising departments. Some graduates work in specialized shops as typesetters and as negative strippers. Job opportunities have been available in both union and non-union shops.

COURSE OUTLINE
Term 1
Block 1, 2 or 3 (see subject Blocks below)*
B16-E105 English - Introductory
B18-G641 Graphic Arts Typing

Term 2
Block 1, 2 or 3 (see subject Blocks below)*
B16-E215 Graphic Arts English-Intermediate
B18-G642 Graphic Arts Typing

Term 3
Block 1, 2 or 3 (see subject Blocks below)*
B16-E315 Graphic Arts English - Advanced
B18-G643 Graphic Arts Typing

*BLOCK 1
B03-G102 Photocomposition
B03-G113 Introduction to Electronic Publishing

or

B03-G114 Advanced Electronic Publishing

*BLOCK 2
B03-G108 Paste Make Up
B03-G110 Camera & Darkroom
B03-G111 Offset Press
B03-G112 Bindery Operations
B03-G115 Work Experience I

or

B03-G116 Work Experience II

*BLOCK 3
B03-G107 Platen And Cylinder Press
B03-G112 Offset Imposition And Platemaking
B03-G111 Offset Press
B03-G112 Bindery Operations
B03-G115 Work Experience I

or

B03-G116 Work Experience II

SUBJECT DESCRIPTIONS
B03-G102 PHOTOCOMPOSITION
The students will learn the principles of operation and maintenance of phototypesetting equipment consisting of magnetic floppy-disk systems. Practical applications of mark-up and typesetting will be accomplished by a series of exercises very similar to commercial and newspaper situations. This includes font changing, main memory and width table loading, tabular, and correction terminal experiences. Also, theoretical analysis of paper, processors, VDT, OCR, WP, and advanced keyboard techniques will be emphasised.

B03-G103 DESIGN & LAYOUT
The students will learn to apply the principles of display advertising and the creative use of typography which includes typeface identification and lettering techniques, and production of finished working layouts for advertisements, social stationary, book design, commercial job design, and newspaper layouts. Use of black and white, and color will be encouraged in the designing and layout.

B03-G107 PLATEN AND CYLINDER PRESS
Press mechanisms; make ready; operating adjustments; anti-offset sprays; characteristics of paper and ink; lockup and imposition will be taught in this subject.
B03-G108 PASTE MAKE UP
Various techniques to assemble type, art, photographs and other material into camera-ready mechanicals for the printing of business forms, posters, brochures and newspapers will be covered.

B03-G109 CAMERA & DARKROOM
Students will study camera theory and produce practical projects on the following topics: light and illumination; lenses and refraction; various types of copy; densitometry; photo materials and their properties; contacting procedures; line and halftone techniques; duotones, posterizing; and special effect screens.

B03-G110 OFFSET IMPOSITION AND PLATEMAKING
Imposition layouts; negative stripping; screen tints; step and repeat forms; chemistry of piatemaking; types of press plates are taught in this subject.

B03-G111 OFFSET PRESS
Principles of lithography; press feeders, deliveries; chemistry of lithography; checking press register; running a single-colour press; printing multi-colour and process colour work will be taught.

B03-G112 BINDERY OPERATIONS
Cutting, folding, drilling, perforating and stitching paper and booklets; manufacture and specifications of various types of paper will be taught.

B03-G113 INTRODUCTION TO ELECTRONIC PUBLISHING
An introduction to Desktop Publishing. The learner in this subject will develop applied skills in the software and hardware use for electronic publishing. PageMaker software with Microsoft Windows will be taught on IBM compatible computers.

B03-G114 ADVANCED ELECTRONIC PUBLISHING
Advanced Desktop Publishing skills will be taught in this subject. The learner will develop the skills necessary to create well-designed documents for advertising, public relations, and publications. PageMaker software will be taught on IBM compatible computers with a PCL laser printer.

B03-G115 WORK EXPERIENCE I
The learner will participate in two work-experience placements, each two weeks long, while enrolled in the Graphic Arts program. This work placement will take place at the end of the Fall term. The learner will work in a graphic arts house or printing shop and will gain first-hand knowledge of the operation, procedures and expectations of the industry.

B03-G116 WORK EXPERIENCE II
The learner will participate in two work-experience placements, each two weeks long, while enrolled in the Graphic Arts program. This work placement will take place at the end of the Winter term. The learner will work in a graphic arts house or printing shop and will gain first-hand knowledge of the operation, procedures and expectations of the industry.

B16-E105 ENGLISH - Introductory
This course is designed to help students to understand the working principles of the English language, to develop facility with words and other skills necessary to the printer and proofreader. Emphasis is on grammar principles and vocabulary development.

B16-E215 ENGLISH - Intermediate
This course is designed to help students to develop facility with words and other skills necessary to the printer and proofreader. Emphasis is on job search skills and vocabulary development.

B16-E315 ENGLISH - Advanced
This course is designed to help students to understand the working principles of the English language and to acquire related skills necessary to the printer and proofreader. Emphasis is on sentence structure, punctuation, mechanics and vocabulary development.

B18-G641 GRAPHIC ARTS TYPING
An introductory course, designed to provide the student with basic typing skills which could be adapted to the Graphic Arts discipline. Desired speed is 25 wpm.

B18-G642 GRAPHIC ARTS TYPING
Continuation of B18-G641. Desired speed is 35 wpm.

B18-G643 GRAPHIC ARTS TYPING
Continuation of B18-G641. Desired speed is 40 wpm.
HAIRSTYLING

PURPOSE
To develop the skills, techniques and knowledge to function effectively as a hairstylist and meet provincial government licensing requirements.

COURSE
Barber/Styling is a ten-month certificate course with a September entry date. The course includes 400 hours of theoretical and 1,000 hours of practical training designed to prepare you for the government exams necessary to obtain a hairstyling licence. (There is also some opportunity for part-time study in specific subjects, as time and space permits.) Course curriculum covers all aspects of male and female hairstyling practiced in shops today. This is required in today's industry, especially in modern unisex salons.

ENTRANCE REQUIREMENTS
A - 7 high school credits (Manitoba Grade 10 or equivalent secondary school preparation) with English 100 or 101 and Mathematics 100 or 101;
  or
- Adult Basic Education 7-10 program completion; and

B - submission of recent X-ray, medical, and dental certificates attesting to general good health (required after the applicant receives notice of acceptance);
  and

C - successful completion of entrance testing which includes both a written academic aptitude test and a test of manual dexterity.

Mature Student Admission. Mature student applicants may submit other educational equivalents, including G.E.D. standing (scores on each of the five tests must be 41 or higher), in lieu of 7 credits; however, they must have successfully completed one of Mathematics 100, 101, 190, or Practical Mathematics - Elementary/Junior High Level, and one of English 100, 101, 190, or Adult English (I & II). Mature students must also meet entrance requirement (B) above and be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

EMPLOYMENT POTENTIAL
As a graduate of the Hairstyling course, you will be required to successfully complete provincial government theory and practical examinations to qualify you to work in the field, followed by a year's apprenticeship to meet the requirements for certification.

Most graduates find work as hairstylists, hair-colouring technicians and permanent-wave technicians. Some graduates are employed as sales representatives for beauty supply companies.

COURSE OUTLINE
B07-B111 Health and Sanitation
B07-B112 Shaving
B07-B113 Hairstyling-Men's
B07-B114 Hairstyling-Women's
B07-B115 Anatomy and Physiology
B07-B116 Skin Treatments and Disorders
B07-B117 Hair Treatments and Disorders
B07-B119 Permanent Waving
B07-B120 Haircoloring
B07-B121 Hairpieces
B07-B122 Shop Management
B07-B123 Work Experience
B07-B124 Communications for Hairstylists
B11-A251 Accounting for the Small Business

SUBJECT DESCRIPTIONS

B07-B111 HEALTH AND SANITATION
This component involves learning basic healthy living practices including personal hygiene, bacteriology, sanitation and sterilization.

B07-B112 SHAVING
In this component, the student learns the fundamentals of shaving including a) how to hold a razor; b) the various different strokes; and c) the procedure for doing a shave.

B07-B113 HAIRSTYLING - MEN'S
The hairstyling components require an accepted competency level in the following skills: a) learning a wide variety of haircutting techniques; b) developing a conceptual and practical ability to perform both men's and ladies' hairstyles in many different forms; and c) learning the procedures necessary to complete desired results.

B07-B114 HAIRSTYLING - WOMEN'S
The hairstyling components require an accepted competency level in the following skills: a) learning a wide variety of haircutting techniques; b) developing a conceptual and practical ability to perform both men's and ladies' hairstyles in many different forms; and c) learning the procedures necessary to complete desired results.

B07-B115 ANATOMY AND PHYSIOLOGY
This component involves the study of the nerves, muscles and bones of the head, face and neck, and how this knowledge may be applied in the hairstyling field.

B07-B116 SKIN TREATMENTS AND DISORDERS
This component deals with the physiological makeup of the skin and hair, and treatments that may be used to enhance both skin and hair condition.

B07-B117 HAIR TREATMENTS AND DISORDERS
This component deals with the physiological makeup of the skin and hair, and the treatments that may be used to enhance both skin and hair condition.

B07-B119 PERMANENT WAVING
This component involves the acquisition of the following skills: a) learning the chemistry of different types of permanent waves; b) learning and developing practical skills in knowing when to use various wrapping patterns, and assorted perming tools.

B07-B120 HAIRCOLOURING
The haircolouring component deals with the study of the following: a) knowledge of the different categories of haircolouring products; b) being able to determine the correct product to use to achieve desired results; and c) development of the practical skills necessary to perform colouring services.
B07-B121 HAIRPIECES
The study of hairpieces involves the following: a) the study of different forms of baldness, the causes and possible remedies; b) the study of the most practical types of surgical hair replacement procedures and their ramifications; and c) how to measure, cut in, and care for various types of hairpieces.

B07-B122 SHOP MANAGEMENT
This component involves a study of: a) different categories of salons, their advantages, disadvantages and peculiarities; b) good salon management procedures and salon deportment; c) how to set up and design a salon; and d) different types of remuneration systems.

B07-B123 WORK EXPERIENCE
Presently, three weeks of work experience (placement in various salons around Manitoba) are included in the course - one week just prior to Christmas, and the other two in late April or early May. Students have an opportunity to observe the operation of different salons on a first-hand basis.

B07-B124 COMMUNICATIONS FOR HAIRSTYLISTS
This subject is a practical program designed for the student to develop communication skills needed by a Barber/Stylist on the job. It includes both oral and written communications. Oral communication activities include telephone etiquette, listening, interpreting oral and non-oral messages, and oral presentations. Written communication activities include business letters, memos, application letters and resumes.

B11-A251 ACCOUNTING FOR THE SMALL BUSINESS
This course is designed to give the student an understanding of the basic accounting equation, the balance sheet and income statement preparation using the synoptic payroll accounting and bank reconciliations.
**HEALTH RECORD TECHNICIAN**

**PURPOSE**
To develop the knowledge and skills needed for the collection, retention, analysis and dissemination of health-care information required for patient care, research and education.

**COURSE**
Health Record Technician is a ten-month certificate course with a September entry date. The course is designed to train students for the specialized techniques required for the collection, analysis and dissemination of health information and has been fully accredited by the Canadian College of Health Record Administrators.

**ENTRANCE REQUIREMENTS**
A - 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation) with one of English 300 or 301 and at least one of Biology 300 or 301 or Chemistry 300; or
- Adult Basic Education 11B with science supplements; and

B - successful completion of tests measuring reading comprehension and completeness of thought, spelling ability, and typing skills. (Applicants must achieve a basic typewriting speed of 40 w.p.m. with a maximum of three errors on a five-minute timing.)

C - an interview with the Health Records Technician Selection Committee.

Mature Student Admission. Mature student applicants may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits; however, they must have credits in English and science, as noted in (A) above. Mature students must also complete entrance requirements (B) and (C) and be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

This is a special selection course. The Selection Committee chooses candidates on the basis of educational background and aptitude for a career in the health records field. Applicants are encouraged to do some background research on this health profession before attending the interview.

Because this special selection course has a cut-off date, applications should be submitted as early as possible. Please contact the Admissions Office at 632-2327 to confirm the exact date.

**EMPLOYMENT POTENTIAL**
Most graduates have found employment in hospital health record departments. Some graduates work in clinics, paramedical and government agencies. Others are employed as sole-charge technicians in rural health care facilities.

Graduates are eligible to write the national certification exam of the Canadian College of Health Record Administrators.

**COURSE OUTLINE**
**Term 1**
B19-M751 Medical Terminology I
B19-R741 Health Records Science I
H03-L113 Anatomy And Physiology I

**Term 2**
B15-S310 Microcomputer Data-Base
B19-C762 Medical Coding II
B19-E752 Communications
B19-M752 Medical Terminology
B19-R752 Health Records Science II
H03-L213 Anatomy & Physiology II

**Term 3**
B12-L367 Legal Aspects of Health Records
B13-M610 Organization & Management
B13-R704 Statistics for Health Record Technicians
B19-C763 Medical Coding III
B19-E753 Business Communications
B19-N751 Medical Transcription
B19-P303 Hospital Practicum

**SUBJECT DESCRIPTIONS**

**B12-L367 LEGAL ASPECTS OF HEALTH RECORDS**
An introduction to the legal system with emphasis on the importance of medical records as a legal document and the proper release of information from medical records and the legal procedures involved in court disclosure of medical records.

**B13-M510 ORGANIZATION AND MANAGEMENT**
An introduction to management principles for supervisors and staff in the health care delivery system and descriptive study of the structure of the health care system.

**B13-R704 STATISTICS FOR HEALTH RECORD TECHNICIANS**
Prerequisite: A fundamental knowledge of basic arithmetic. A basic electronic calculator with memory and square root is recommended. The objective is to focus on the principles of statistics as they apply and are applied to the medical sciences. Statistics and health sciences go together very well: (1) identifying the problem and (2) deciding on a course of action. Medical records form a part of the first step - data collection. The Health Record Technician can assist medical research staff and administration in their effort to evaluate, research and plan. The intent is to provide a basic knowledge of statistics for this purpose.

**B13-S504 PSYCHOLOGY**
An introduction to humanistic psychology allows the student through various exercises and group participation to use his or her own insights and the application of humanistic psychology to personal, interpersonal, and organizational behavior.

**B15-S310 MICROCOMPUTER DATA-Base**
This course is designed to familiarize students with the basic principles of information processing and the data base package - RBASE 5000. Instruction is six hours per week: one hour of computer literacy, five hours of data base - hands-on the IBM PC's. The students study and follow through the development of a data base as illustrated in the text book. As they are progressing, they are developing a medical data base as assignments.
This course is designed to introduce the student to the concepts of word processing. Topics included are: input, output, reprographics, distribution, systems, career paths.

An introduction to coding principles and the various systems for the classifications of diseases, conditions and operations in health care institutions and agencies. Special emphasis is placed on ICD-9CM coding which is currently used by all hospitals in Manitoba.

A continuation of B19-C762 designed to develop proficiency in ICD-9CM coding. The value and content of indices, registers and abstracting of health information is included. Prerequisite: B19-C762

This course is designed to provide a foundation in the fundamentals of grammar, vocabulary enrichments, and spelling.

This course is designed to provide a foundation in the fundamentals of punctuation; the use of capitals, abbreviations, and figures; proper sentence and paragraph writing; effective job applications; and the proper organization and preparation of research materials in report form. It will also provide further spelling and vocabulary enrichment. Prerequisite: B19-E751

Prerequisite: The ability to spell accurately. An introduction to the technical language of medical science through the study of combining forms, roots, stems, prefixes, suffixes, derivatives, synonyms, homonyms, common disease terms and specialty classifications.

A continuation of the technical language of medicine through the study of abbreviations, laboratory tests, drugs and drug classifications, and the study of diseases relevant to each system of the body. Prerequisite: B19-M751

A course designed to develop the practical skills necessary for accuracy and speed in the transcription of dictated medical and surgical reports and to gain knowledge of the format and procedures utilized in health care facilities. Prerequisites: B19-M751, B19-M752, H03-L113, H03-L213, B19-T751, B19-E751 and B19-E752.

This is a three to four-week in-hospital training program designed to provide the student with an opportunity to apply the knowledge gained during the course of study and in so doing, prepare the student for active participation in the health care field. The practicum is spent in accredited institutions (in rural Manitoba and in Winnipeg) supervised by qualified health record practitioners. Prerequisites: B19-R752, B19-M752, H03-L201.

An introduction to the development of the health records field and study of the fundamental standards for health records, numbering and filing systems, analysis and maintenance of health records, indices and retrieval of records, microfilming, retention of health records. Emphasis on the professional organizations in health records, especially the CCHRA and CHRA and the Code of Practice for health records personnel.

The compilation of health statistics and computation of ratios; emphasis on confidentiality and legal aspects of medical records; the problem-oriented medical record; medical audit. Prerequisite: B19-R741, B19-M751, H03-L101, B13-R704.

Introduction to human anatomy and physiology. The study of the individual cell and organelles, basic primary tissue and structure. The study of the skeleton, skeletal muscles, their relation to movement, posture and function.

The cardiovascular system, structure and function. The lymphatic system and its relation to immunity. The respiratory system, and gaseous exchange. The nervous system and the brain, structure and function. The special senses. Prerequisite: H03-L113
PURPOSE
To develop a potential for hotel and restaurant management through the study of hospitality-related subjects, practical lab training and off-campus work experience.

COURSE
Hotel & Restaurant Administration is a 20-month diploma course with a September entry date. The 20 months are consecutive and there is no summer break. The course was designed in cooperation with the Manitoba hospitality industry and is noted for both its cooperative education component and its competency-based learning (CBL) format.

Cooperative education aims at an effective blend of classroom study and off-campus work experience in course-related industry. This means that the student spends alternate three-month periods in the work force and is paid an hourly rate. The course comprises six continuous terms: four on campus, and two employment terms.

CBL is a modularized approach to learning which allows a moderate degree of self-placing. It requires initiative in planning a study schedule, completing requirements in a reasonable time, and in managing time wisely and effectively to meet self-imposed deadlines.

All course skill areas have been identified by the hospitality industry in terms of required competencies, and curriculum has been designed to achieve these competencies.

ENTRANCE REQUIREMENTS
A - 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation). English 300 or 301 and Mathematics 300 or 301 are strongly recommended. (Many students have found Accounting 202 and 302 to be very helpful in this course);

or

- Adult Basic Education 11B;

and

B - submission of an applicant information sheet. (Questions to be answered in writing will be sent to the applicant after an application form and proof of education are received by the Admissions Office);

and

C - an interview with the Hotel and Restaurant Administration selection committee;

and

D - proof of good health, substantiated by recent medical, dental, and chest X-ray certificates (to be submitted after notification of acceptance is received by the applicant).

Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits. Specific credits in English and mathematics as outlined in (A) above are recommended. Mature students must also meet entrance requirements (B), (C), and (D) and be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

This is a special selection course. The committee interviews those applicants who have successfully completed entrance requirements (A) and (B). The committee selects applicants who enjoy working with people, have a genuine interest in hospitality industry careers, and a basic understanding of the type of work involved. Some related industry work experience is a definite asset.

EMPLOYMENT POTENTIAL
It is difficult to forecast typical jobs that graduates can expect after graduation as much depends on the individual graduate’s industry employment record, attitude, motivation and maturity. Statistics indicate that more than half of the Hotel and Restaurant Administration graduates move directly into supervisory or management-trainee positions. Other graduates begin their careers in entry-level positions.

Most graduates have experienced little difficulty in moving into junior-to-middle management positions as they gain a broader range of work experience. Hotel and Restaurant Administration graduates are currently employed in major hotels as front-desk managers and supervisors, banquet managers and captains, sales managers, food and beverage managers and controllers, and executive housekeepers. They are also employed in smaller hotels as general managers and assistant managers, and in management and supervisory positions in restaurants, private clubs, and food service departments.

COURSE COMPETENCIES
Year 1
B09-H662 Bartending Skills
B09-0A00 Demonstrate Basic Food Preparation Skills
B09-0A01 Explain Basic Sanitation Principles & Procedures
B09-0A02 Explain Basic Kitchen Safety Rules & Procedures
B09-0A03 Explain Safe & Efficient Use of Kitchen Equipment
B09-0A04 Use Kitchen Knives Safely & Efficiently
B09-0A05 Explain Standard Recipes, Measurements & Conversions
B09-0A06 Prepare Stocks
B09-0A07 Prepare Soups
B09-0A08 Prepare Sauces
B09-0A09 Cook Meat, Poultry & Fish
B09-0A10 Cook Vegetables, Rice & Pasta
B09-0A11 Prepare Salads & Dressings
B09-0B00 Serve Lunch, Dinner & Set Menus In the Dining Room
B09-0B01 Explain Dining Room Sanitation Principles
B09-0B02 Explain Dining Room Safety Procedures
B09-0B03 Post Customer Order on Electronic Cash Register
B09-0B04 Prepare for Service
B09-0B05 Describe Types of Dining Room Service & Serve Customers
B09-0C00 Demonstrate Basic Front Office Skills
B09-0C01 Describe Guest Services
B09-0C03 Explain Room Management & Control
B09-0C04 Describe Guest Reception
B09-0C05 Post Charges Using an Electronic Cash Register
B09-0C06 Describe Guest Check-Out, City Ledger & Cash Control
B09-0C07 Explain Control/Record Room Reservations & Occupancy

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B09-0C08 Describe Night Audit Procedures & Front Office Reports

B09-0K00 Demonstrate Word Processing Skills
B09-0K01 Document Creating & Editing Using WordPerfect
B09-0K02 Document Formatting & Printing Using WordPerfect
B09-0K03 Advanced Type/Edit Enhancements, WordPerfect Spell

B09-0N00 Operate Accounting System
B09-0N01 Record Basic Accounting Entries, Take Trial Balance
B09-0N02 Prepare Period End Entries & Trial Balances
B09-0N03 Work Through Accounting Cycle for Non-Merchandising Firm
B09-0N04 Work Through Accounting Cycle for Merchandising Firm
B09-0N05 Subsidiary Ledgers, Control Accounts & Special Journals
B09-0N06 Demonstrate Principles & Procedures for Internal Cash Control
B09-0N07 Duties of Petty Cashier & Petty Cash Fund
B09-0N08 Prepare Bank Reconciliation/Correcting Journal
B09-0N09 Account for Bad Debts with Direct/Allowance Methods
B09-0N10 Initiate & Maintain Inventory Systems
B09-0N18 Analyse Business Transactions & Effects

B09-0O00 Demonstrate Hospitality Industry Employment Qualifications
B09-0O01 Demonstrate Hospitality Industry Practical Job Skills
B09-0O02 Analyse/Evaluate Personal/Professional Development

B09-0X00 Explain Inventory Management & Control of Food and Beverage Sales
B09-0X01 Describe the Basic Elements of the Purchasing Function
B09-0X09 Identify Purchasing Criteria for Major Food Products
B09-0X10 Identify Purchasing Criteria for Minor Food Products
B09-0X11 Describe Purchasing Criteria for Non-Food and Beverage Items
B09-0X12 Describe Receiving, Storing and Issuing Procedures
B09-0X13 Calculate Daily Food Cost
B09-0X14 Explain Yield Tests and Pre-Cost a Menu
B09-0X15 Explain Dining Room Controls and Procedures
B09-0X16 Explain Purchasing, Receiving, Storing and Issuing Procedures for Alcoholic Beverages

B09-0Z00 Describe Human Factors in the Work Environment
B09-0Z01 Define Purpose of Understanding Human Behavior
B09-0Z02 Understand Perceptual Systems
B09-0Z03 Describe the Dynamics of Small Groups
B09-0Z04 Demonstrate Understanding of Motivation
B09-0Z05 Apply the Principles of Organization
B09-0Z06 Describe Leadership Skills & Leadership Challenges
B09-0Z07 Describe a Humanized Work Place (Morale)
B09-0Z08 Describe Dynamics of Change in a Work Environment
B09-0Z09 Identify Equal Employment Opportunities
B09-0Z10 Appropriate Personal Attitude & Stress Management

Year 2

B09-H214 Design & Physical Layout
B09-H404 Management Seminar
B09-H423 Building and Maintenance
B09-H621 Introduction to Spreadsheets
B09-H666 Advanced Foods & Service
B09-E00 Apply Economic Principles for Profit Maximization

B09-E01 Associate Scarcity Concept with Modern Industrialized Society
B09-E02 Access Market Price System in a Mixed Economy
B09-E03 Recognize Three Forms of Business Organization & Its Advantages or Disadvantages
B09-E04 Develop Market Demand/Price Determination Data
B09-E05 Calculate/Relate Demand Elasticity to Gross Revenue
B09-E06 Prepare Total & Unit Cost for Room Rental Division
B09-E07 Estimate Rate Schedule to Maximize Profits in Non-Competitive Market
B09-E08 Estimate Price Policy to Maximize Profits/Competitive Condition

B09-H000 Explain Housekeeping Department Operation & Management
B09-H001 Describe Function & Administration of Housekeeping Department
B09-H002 Explain Linen Room as a Communication/Control Centre
B09-H003 Describe Cleaning & Maintenance Services
B09-H004 Describe Types & Cleaning of Linen & Bedding
B09-H005 Describe Types & Cleaning of Floors, Walls & Windows
B09-H006 Explain Staff Recruitment, Training, Supervision & Evaluation

B09-H000 Explain the Origin, Production and Characteristics of Wine, Spirits and Beers

B09-J00 Explain the Classification of Alcoholic Beverages & Factors that Affect Selection, Consumption and Regulation
B09-J02 Describe the Viticulture and Vinification Processes
B09-J08 Explain the History, Production, Classification & Control Systems of French & German Wines
B09-J09 Explain the History, Production, Classification & Control Systems of Italian, Spanish, Portuguese and Other European Wines
B09-J10 Explain the History, Production, Classification & Control Systems of Non-European Wines
B09-J11 Select Appropriate Wines
B09-J12 Explain the History, Production, Classification & Control Systems of Spirits
B09-J13 Explain the History, Production, Classification & Control Systems of Beers
B09-J14 Describe Merchandising Strategies for Wine, Spirits and Beers

B09-L00 Application of Hotel and Restaurant Administration Laws

B09-L01 Legally Classify Hotel and Restaurant Establishments
B09-L02 Examine Innkeeper's Responsibilities to Guests
B09-L03 Examine Contract Legality in Hotel Bookings
B09-L04 Ascertain the Safety of Guests
B09-L05 Determine the Care of Guests' Property
BO8-H662  BARTENDING SKILLS
This course provides practical training in bar setup, mixing of drinks, and handling of bottled beverages.

BO9-H666  ADVANCED FOODS AND SERVICE
This section is divided into two parts. Section one, provides for experiences in Flambe preparation, serving foods French style, serving and presenting wines and for the making of a variety of drinks. Section two, provides for experiences in the preparation of a variety of typical gourmet foods and for developing greater knowledge in kitchen operations.

B15-E311  COMMUNICATIONS I
The objective of this subject is to introduce the student to a variety of basic communication concepts and techniques. The student will learn to develop main ideas and topic sentences, demonstrate effective organizational strategies, develop coherent, unified paragraphs, develop memos and letters using the direct strategy, demonstrate correct grammar and punctuation principles, and apply appropriate tone and style.

B16-E161  COMMUNICATIONS II
The objective of this course is to introduce the student to a variety of advanced business formats and procedures. The student will learn to organize and write a formal report using standard business format; prepare and deliver an informative or persuasive speech (as required); plan and write a proposal; write a letter or memo, using indirect strategy; design and write a functional resume and cover letter; and participate in a simulated business meeting to solve a problem.

B16-E194  COMMUNICATIONS III
Students will learn to identify and overcome barriers to communication such as poor organization, lack of feedback, information overload, or noise; analyze the needs of the audience and choose the most effective means of meeting those needs; recognize the importance of nonverbal communication and use appropriate body language in interpersonal communication; organize a speech using outlines and note cards; prepare and deliver a short informal speech; prepare for a job interview as applicants; conduct an interview on videotape and analyze their performance; deliver a free speech in which they explain, persuade, or describe effectively; recognize the importance of using formal, spoken English in public situations; employ the appropriate level of formality in their spoken English; and use the telephone efficiently and politely.

B16-T100  KEYBOARDING FOR INFORMATION PROCESSORS
This course is designed to prepare students to use touch typing techniques on a typewriter keyboard. Concentrates on familiarizing students with letters, symbols, and numbers of the typewriter keyboard. (These keys are identical with most microcomputer and word processor keyboards.) Numerous word and sentence drills develop accuracy and speed. A minimum keyboarding speed of 20 words per minute is required (or must be achieved).
INDUSTRIAL ARTS TEACHER EDUCATION

PURPOSE
To develop teaching and technical skills in the industrial technologies.

COURSE
Industrial Arts Teacher Education is a four-year Red River Community College and University of Manitoba integrated Bachelor of Education degree program with a September entry date. Emphasis is directed at four areas: manufacturing, power and energy, graphic communications and construction. Technical skills, teaching skills and broad general knowledge about society are all important components in the program.

ENTRANCE REQUIREMENTS
20 high school credits (Manitoba Grade 12 or equivalent high school preparation) with English 300, Mathematics 300 or 301. A minimum of three subjects must be at the 300 (academic preparation) level.

Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits. Mature students are strongly advised to include formal course work in mathematics and English at the 300 or 301 level as part of their preparation for college. Applicants applying for admission as mature students must be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Department Head, Teacher Education, for review.

EMPLOYMENT POTENTIAL
Graduates are eligible to teach in the junior high and secondary schools in Manitoba. The majority of job opportunities are available in rural areas of the province.

COURSE OUTLINE
First Year - Red River Community College
Term 1
B23-C102 Construction - Introduction (optional)
B23-E105 General Teaching Methods I
B23-M102 Manufacturing - Introduction (optional)
B23-P102 Power & Energy - Introductory (optional)

Term 2
B23-C102 Construction - Introduction (optional)
B23-G102 Graphic Communications - Introduction
B23-M102 Manufacturing - Introduction (optional)
B23-P102 Power & Energy - Introduction (optional)

Term 3
B23-T102 Seminar & School Experience
B23-W102 Cooperative Business/Industrial Education

Second Year - University of Manitoba

Third Year - Red River Community College
Term 4
B22-E204 Educational Testing & Evaluation (optional)
B23-C202 Construction - Advanced (optional)
B23-E103 Audiovisual Education
B23-E201 Organizing Industrial Education Facilities
B23-E203 Course Development in Industrial Education

B23-G202 Graphic Communications - Advanced
B23-M202 Manufacturing - Advanced

Term 5
B22-E203 Course Development in Business Education
B23-C202 Construction - Advanced (optional)
B23-E205 General Teaching Methods II
B23-P202 Power & Energy - Advanced (optional)

Term 6
B23-T202 Student Teaching

Fourth Year - University of Manitoba

Please note that the Course Outline above and the Subject Descriptions below include Red River Community College subjects only. For further information on the University of Manitoba subjects, please see the Industrial Arts Teacher Education course brochure.

SUBJECT DESCRIPTIONS
B22-E203 COURSE DEVELOPMENT IN BUSINESS EDUCATION
Development of an orderly procedure for the identification of concepts and instruction units to be used in teaching. The culminating project will be a course outline involving analysis of content, instructional objectives, resource units and sample tests.

B22-E204 EDUCATIONAL TESTING AND EVALUATION
Construction, administration and evaluation of tests. Methods of evaluation of student progress during the school year. Mastery of the statistical analysis necessary for testing and evaluation.

B23-C102 CONSTRUCTION - INTRODUCTION
An in-depth introduction and study of many tools, equipment and methods employed in the construction industry, with a special emphasis placed on safety.

B23-C202 CONSTRUCTION - ADVANCED
The study of building principles both commercial and residential. Topics covered are: materials, wood identification, hardware, roof designs, interior and exterior finishing, stairs, cabinet design and layout. Laboratory activities will center around jig and fixture design for the high school projects, cabinets and millwork, with special emphasis placed on the use of tools and equipment common to a high school program.

B23-E103 AUDIOVISUAL EDUCATION
Communication principles related to the application of audiovisual media to education. Audiovisual materials and equipment: their selection, preparation, utilization, and evaluation in industrial education.

B23-E105 GENERAL TEACHING METHODS I
B23-E201 ORGANIZING INDUSTRIAL EDUCATION FACILITIES
Principles of effective and safe planning of industrial education facilities in relation to the objectives to be fulfilled. Emphasis on location, size, shape of laboratory, and its physical requirements: specifications, purchasing and placement of required equipment and supplies.

B23-E203 COURSE DEVELOPMENT IN INDUSTRIAL EDUCATION
Development of an orderly procedure for the identification of concepts and instructional units to be used in teaching. The culminating project will be a course outline involving analysis of content; instructional objectives; resource units and sample tests.

B23-E205 GENERAL TEACHING METHODS II
Prerequisite: B23-E105 "General Teaching Methods 1". Continuation of "General Teaching Methods I" with emphasis on teaching methods not covered previously. Additional areas of study include: class organization and management, public relations, professionalism, and research related to teaching methods in industrial education.

B23-G102 GRAPHIC COMMUNICATIONS - INTRODUCTION
Exploring the processes and methods used in graphic communications. Areas studied relate to communication theory, general layout and design, drafting, screen process printing, basic photography and relief printing as applied to the teaching of graphic communications related to industrial arts education.

B23-G202 GRAPHIC COMMUNICATIONS - ADVANCED
Continuation of exploring the processes and methods used in graphic communications. Areas studied relate to lithographic, office duplicating, graphic careers, microfilm, and binding, finishing and packaging as applied to the teaching of graphic communication as related to industrial arts education. Prerequisite: B23-G102.

B23-M102 MANUFACTURING - INTRODUCTION
Exploration of the wood, metal and plastics fields, including tools, materials and processes, to determine to what extent these materials, tools and processes should be applied at the public school level in Industrial Arts classes. Also included in the course is a short period of instruction on mass-production systems, and some hands-on experience for the students in the production of interchangeable parts.

B23-M202 MANUFACTURING - ADVANCED
An in-depth study of the tools, materials and processes of the wood, metal and plastics fields with special emphasis on quality control within a manufacturing system. Also to include the business structure as well as the production structure. Each student will be involved in top management, middle management, sales, production and labor levels of a manufacturing system. Prerequisite: B23-M102.

B23-P102 POWER AND ENERGY - INTRODUCTION
A theoretical case and practical study of the basic principles of mechanical, fluid and electrical power, covering such topics as internal combustion engines, pneumatics and hydraulics, electron theory, series and parallel circuits, power supplies, motors and generators.

B23-P202 POWER AND ENERGY - ADVANCED
An in-depth theoretical and practical study of mechanical power, electrical power and fluid power, covering such topics as engine tune-up, engine analysis, superheterodyne receiver, amplification, hydraulic and pneumatic experimentation and digital electronics. Prerequisite: B23-P102.

B23-T102 SEMINAR AND SCHOOL EXPERIENCE
A period of student involvement in actual classroom practice. The student will be assigned to an experienced teacher in the public school to observe and participate in teaching activities. Informative conferences will be arranged to assist and evaluate the student teaching period.

B23-T202 STUDENT TEACHING
A continuation of B23-T102 with less emphasis on observation and more emphasis on actual teaching. The program will also require greater overall teaching responsibilities including planning, classroom management evaluation, and extracurricular activities.

B23-W1D2 COOPERATIVE BUSINESS/INDUSTRIAL EDUCATION
A special program designed to provide educational experiences relevant to an Industrial Arts or Business Teacher Education student in an industrial or business environment. The experience will involve as many aspects of the concerned industry or business as possible. The program will be individualized according to a student's background and a project summarizing the student's activities will be a major requirement.
INDUSTRIAL ELECTRONICS

PURPOSE
To develop the fundamental knowledge of electrical and electronic components, devices and circuits needed to set up, adjust and troubleshoot laboratory and industrial electronic equipment used in control circuits and/or instrumentation.

COURSE
Industrial Electronics is a ten-month certificate course with two entry dates: September and January. The course is a competency-based-learning (CBL) course, which is structured to allow mastery of each skill area. CBL requires initiative in planning a study schedule, completing requirements in a reasonable time, and in managing time wisely and effectively to meet deadlines. Training is designed to allow hands-on experience in all skill areas and there is close coordination of theory and application.

ENTRANCE REQUIREMENTS
- 14 high school credits (Manitoba Grade 11 or equivalent secondary school preparation) with one of Mathematics 200* or 301 and one of Physics 200 or Physical Science 201; or
- Adult Basic Education 11A.

Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. standing (scores on each of the five tests must be 43 or higher) in lieu of 14 credits; however, they must have successfully completed one of Mathematics 200*, 301, 290 academic, or 911 and one of Physics 200 or 290 or Physical Science 201. Mature students must also be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

* Mathematics 200, or its academic equivalent, is strongly recommended as minimum preparation. A strong background in mathematics is essential to the field of electronics.

EMPLOYMENT POTENTIAL
Jobs are available in any industrial area where electronic devices require installation, maintenance, and servicing. Graduates have found employment in automated factories as installers and maintenance staff, in medical electronics and computer services, and with public utilities.

COURSE OUTLINE
Term 1
B18-T651 Telecommunications Typing
T12-I001 DC Fundamentals
T12-I002 AC Fundamentals
T12-I004 Electronic Fundamentals
T12-I054 BJT Amplifier Theory & Operation
T12-I058 UJT & Thyristor Theory & Operation
T12-I060 Number Systems & Digital Logic
T12-I065 Control Devices & Applications
T12-I070 Microprocessors
T12-I073 Logic Control Circuits
T12-I074 Microprocessor/Computer/Interfacing
T13-M520 Electronics Math I
T14-C504 Communications

SUBJECT DESCRIPTIONS

B18-T651 TELECOMMUNICATIONS TYPING
An intensive course in touch typewriting skills. Desired speed is 40 wpm. The student will learn to produce business letters, memos and letter of application.

T12-I001 DC FUNDAMENTALS
Structure of atoms, conductors and insulators, electric charges, units of measurement, Ohm's law, circuit measurements and calculations, magnetism, capacity, inductance, time constants.

T12-I003 AC FUNDAMENTALS
Sinusoidal waveforms, frequency spectrum, reactance, impedance, calculations, resonance, phase relationships, practical considerations.

T12-I004 ELECTRONIC FUNDAMENTALS
Operation, characteristics, and handling techniques of diodes, bipolar transistors, UJT's, SCRs, control devices, amplifiers, power supplies, RC & LC oscillators.

T12-I054 BJT AMPLIFIER THEORY AND OPERATION
A practical in-depth study of the bipolar junction transistor from basic biasing requirements to the development of a confident approach to the understanding of circuit configurations found in commercial design. Theory and experiments used extensively to develop a broad fundamental knowledge of the topic.

T12-I058 UJT AND THYRISTOR THEORY AND OPERATION
The UJT as a control device. Thyristor family of P N P N device. Controlled rectification practises, Phase-Shifting Methods. Experimental procedures and analysis of circuits used in industry.

T12-I060 NUMBER SYSTEMS AND DIGITAL LOGIC
Binary and Hexadecimal number systems, sequential and combinational logic, encoders, displays and registers.

T12-I066 CONTROL DEVICES AND APPLICATIONS
Industrial control circuits including photo-sensitive devices, relays, FET's, operational amplifiers and Zener diodes. Students are involved in theory, lab activity, and the final report stressing demonstratable understanding.

T12-I070 MICROPROCESSORS
Three state devices, memories, number systems, 6800 microprocessor using Heathkit ET340 trainer, interfacing the MPU and writing basic programs.

T12-I073 LOGIC CONTROL CIRCUITS
Theory, operation, testing, and troubleshooting TTL and CMOS logic circuits and working systems.

T12-I074 MICROPROCESSOR/COMPUTER/INTERFACING
Assembler and machine language programming, Introduction to microprocessor and computer architecture and operation. Interfacing microprocessors to RAM, switches, keyboards, D/A and A/D converters, stepper motors, RS 232-C, and other data transmission methods.

T13-M520 ELECTRONICS MATH I
Algebra, powers of ten, exponents, ratio, trigonometry, logarithms, simultaneous equations, problem solving (AC and DC...
circuits), decibels, network analysis, number system, Boolean algebra.

T14-C504 COMMUNICATIONS
A self-paced practical course that develops communication skills from four viewpoints - job seeker, employee, junior supervisor, small-business owner. The course is tailored to fit the needs of individual students and the requirements of the Advisory Boards.
INSTITUTIONAL FOOD SERVICE SUPERVISOR

PURPOSE
To develop the skills required to function effectively at a junior supervisory level in the food service department of a health care facility or institution.

COURSE
Institutional Food Service Supervisor is a ten-month certificate course with a September entry date. The course was designed in cooperation with the Manitoba Association of Registered Dietitians and has been recognized by the Canadian Food Service Supervisors Association as an approved course.

The course is noted for its competency-based-learning (CBL) format. CBL is a modularized approach to learning which allows a moderate degree of self-pacing. It requires initiative in planning a study schedule, completing requirements in a reasonable time, and in managing time wisely and effectively to meet self-imposed deadlines.

Off-campus work experience is an integral part of the course.

ENTRANCE REQUIREMENTS
A - 14 high school credits (Manitoba Grade 11 or equivalent secondary school preparation) with English 200 or 201, Mathematics 200 or 201, and one of Chemistry 200 or 201 or Biology 200 or 201;

- Adult Basic Education 11C;

and

B - an interview with a special selection committee;

and

C - submission of recent dental and medical certificates, along with the results of a current chest X-ray, indicating proof of good health. (These documents are not required at the time of initial application but must be submitted once notification of acceptance is received by the applicant.)

Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. standing (scores on each of the five tests must be 43 or higher) in lieu of 14 credits; however, they must have successfully completed one of English 200, 201, 290, or 911; one of Mathematics 200, 201, 290, or 911; and one science at the 200, 201, or 250 level. Mature students must also meet entrance requirements (B) and (C) above and be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

This is a special selection course. The committee looks for applicants who have a genuine interest in a food service career and a basic understanding of the type of work involved. Some food industry work experience is preferred.

EMPLOYMENT POTENTIAL
The majority of graduates have found employment in health care facilities. Other opportunities may exist in commercial food service operations, such as company cafeterias and catering firms.

COURSE COMPETENCIES
B09-F102 On-the-job Training

B09-0D00 Demonstrate Food Preparation Skills
B09-0D01 Explain Basic Sanitation Principles & Procedures
B09-0D02 Explain Basic Kitchen Safety Rules & Procedures
B09-0D03 Explain Safe & Efficient Use of Kitchen Equipment
B09-0D04 Use Kitchen Knives Safely & Efficiently
B09-0D05 Explain Recipes & Measurement Procedures
B09-0D06 Explain the Preparation of Basic Stocks
B09-0D07 Prepare Soups
B09-0D08 Prepare Sauces
B09-0D09 Cook Meat, Poultry & Fish
B09-0D10 Cook Vegetables, Rice & Pasta
B09-0D11 Prepare Salads & Dressings
B09-0F00 Supervise Staff
B09-0F01 Describe Role of Supervisor
B09-0F02 Describe Organizational Structure
B09-0F03 Use Planning Aids
B09-0F04 Train Employees
B09-0F05 Recruit Employees
B09-0F06 Describe Job Performance Appraisal
B09-0F07 Handle Staff Problems
B09-0F08 Explain Staff Meetings
B09-0F09 Plan Staff Schedules
B09-0K01 Demonstrate Word Processing Skills
B09-0K01 Document Creating & Editing Using WordPerfect
B09-0K02 Document Formatting & Printing Using WordPerfect
B09-0K03 Advanced Type/Edit Enhancements, WordPerfect Spell
B09-0N00 Operate Accounting System
B09-0N01 Record Basic Accounting Entries, Take Trial Balance
B09-0N06 Demonstrate Principles & Procedures for Internal Cash Control
B09-0N07 Duties of Petty Cashier & Petty Cash Fund
B09-0N08 Prepare Bank Reconciliation/Correcting Journal
B09-0N13 Calculate & Record Payroll
B09-0N14 Initiate & Employ a Payroll Application
B09-0N18 Analyze Business Transactions & Effects
B13-M612 Introduction to Business
B09-0Z00 Describe Human Factors in the Work Environment
B09-0Z01 Define Purpose of Understanding Human Behavior
B09-0Z02 Understand Perceptual Systems
B09-0Z03 Describe the Dynamics of Small Groups
B09-0Z04 Demonstrate Understanding of Motivation
B09-0Z05 Apply the Principles of Organization
B09-0Z06 Describe Leadership Skills & Leadership Challenges
B09-0Z07 Describe a Humanized Work Place (Morale)
B09-0Z08 Describe Dynamics of Change in a Work Environment
B09-0Z09 Identify Equal Employment Opportunities
B09-0Z10 Develop Appropriate Personal Attitude to Survive in the Organization
B13-S542 Sociology
B14-E116 Business Mathematics
B14-M101 Basic Marketing
B16-E112 Business Communications
B16-E113 Oral Communications
B18-T100 Keyboarding for Information Processors
B32-A000 Apply Nutrition Principles
B32-A001 Use Canada's Food Guide
B32-A002 Describe Energy Requirements
B32-A003 Analyze Body Requirements for Carbohydrates
B32-A004 Analyze Body Requirements for Fats
B32-A005 Analyze Body Requirements for Protein

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Analyze Body Requirements for Vitamins
Analyze Body Requirements for Minerals
Analyze Body Requirements for Water
Design Menus for Life Cycle Needs
Recognize Cultural Influences on Food Habits
Analyze Fed Diets
Apply Science Principle to Food Handling & Processing
Evaluate Food Quality Characteristics
Describe Water as a Food Component
Recognize Property Changes in Food Carbohydrates
Recognize Property Changes in Food Lipids
Recognize Property Changes in Food Protein
Recognize Food Regulations
Manage Food Services
Describe Functions of Management
Describe Time & Energy Control
Describe Kitchen & Cafeteria Design & Equipment
Design Cycle Menus
Describe Standardized Recipes
Order Food Supplies
Evaluate Receiving Procedures
Interpret Storage & Issuing Methods
Identify Production
Identify Distribution
Describe Quality Assurance
Plan Modified Diets
Interview Patient
Use SI in Diet Planning
Explain Diet Order Implementation
Interpret Routine Hospital Diets
Plan G.I. Diets
Plan Weight Control Diets
Plan Diabetic Diets
Plan C-V Diets
Plan Renal Diets
Describe Palliative Care Diets
Describe Tube Feedings & T.P.N.
Practice Cost Controls
Explain Cost Control
Calculate Daily Food Cost
Explain Yield Tests & Pre-cost Menus
Employ Labour Control Measures
Evaluate Food Quality Characteristics
Describe Water as a Food Component
Recognize Property Changes in Food Carbohydrates
Recognize Property Changes in Food Lipids
Recognize Property Changes in Food Protein
Recognize Food Regulations
Manage Food Services
Describe Functions of Management
Describe Time & Energy Control
Describe Kitchen & Cafeteria Design & Equipment
Design Cycle Menus
Describe Standardized Recipes
Order Food Supplies
Evaluate Receiving Procedures
Interpret Storage & Issuing Methods
Identify Production
Identify Distribution
Describe Quality Assurance
Plan Modified Diets
Interview Patient
Use SI in Diet Planning
Explain Diet Order Implementation
Interpret Routine Hospital Diets
Plan G.I. Diets
Plan Weight Control Diets
Plan Diabetic Diets
Plan C-V Diets
Plan Renal Diets
Describe Palliative Care Diets
Describe Tube Feedings & T.P.N.
Practice Cost Controls
Explain Cost Control
Calculate Daily Food Cost
Explain Yield Tests & Pre-cost Menus
Employ Labour Control Measures

Please note that because the competencies listed above are self-explanatory, no subject descriptions are required for those skill areas. Descriptions are included only for the subject numbers listed below.

B09-F102 ON-THE-JOB TRAINING
A fourteen-week work experience within an institutional or health care environment, providing an opportunity for the student to apply acquired knowledge and skills. The student will work under the supervision of a registered diettitian or a food service manager/supervisor.

B13-M612 INTRODUCTION TO BUSINESS
A broad analysis of business concepts, functional internal characteristics of a business and the interrelationships among business, government, and the consumer.

B13-S542 SOCIOLOGY
This course is an introduction to the perspective of sociology and how it helps us to understand our social existence. It calls attention to the continuous interplay between the individuals and the social content in which they live out their lives. Special emphasis is placed on the presentation of an historical, theoretical and cross-cultural perspective of Canadian society in a time of rapid change.

B14-B116 BUSINESS MATHEMATICS
This subject focuses on the study and practice of common mathematical applications encountered in retailing, wholesaling, banking, credit granting, industrial selling. Emphasis is on the practical application of mathematics to standard business problems dealing with discounts, margins, installment buying, interest calculations, etc.

B14-M101 BASIC MARKETING
A study of industrial and consumer marketing with emphasis on marketing institutions and principles. The vital role of marketing in society is presented from the perspective of the modern marketing concept. The student develops and learns to apply an understanding of marketing strategy involving selection of target markets and development of marketing mixes.

B16-E112 BUSINESS COMMUNICATIONS
This subject deals with practical business applications of written communication skills. You will become familiar with the principles of effective writing, with business letter and memo format and with several types of business letters.

B16-E113 ORAL COMMUNICATIONS
This subject is designed to increase the students ability to listen and to speak well. Two hours per week have been scheduled for lectures and workshops.

B18-T100 KEYBOARDING FOR INFORMATION PROCESSORS
This course is designed to prepare students to use touch typing techniques on a typewriter keyboard. Concentrates on familiarizing students with letters, symbols, and numbers of the typewriter keyboard. (These keys are identical with most microcomputer and word processor keyboards.) Numerous word and sentence drills develop accuracy and speed. A minimum keyboarding speed of 20 words per minute is required (or must be achieved).
INSTRUMENTATION ENGINEERING TECHNOLOGY

PURPOSE
To develop the knowledge and skills required to design, construct, troubleshoot and maintain a wide variety of control systems.

COURSE
Instrumentation Engineering Technology is a two-year diploma course with a September entry date. It is a multi-discipline course encompassing electronic, electrical and mechanical subjects, ranging from microprocessors and power electronics to control valves and chemistry.

Instrumentation, Electrical, Computer and Electronic Engineering Technology courses have a common first year of training.

ENTRANCE REQUIREMENTS
- 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation) with Mathematics 300, English 300 or 301, and Physics 300* or Physical Science 301;
- Adult Basic Education Pre-Technology (Adult 12) program completion

Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits; however, they must have specific credits in mathematics, English, and science* as outlined above. Mature students must also be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

* Physics 300 is strongly recommended as a more appropriate background for technology.

EMPLOYMENT POTENTIAL
Graduates have found employment as instrument mechanics, working with tools; as instrument technologists in engineering offices; as junior designers; and as technical sales people. With broad experience and additional training, some graduates have moved into management positions.

For further information on possible transfer of credit, see the Instrumentation Engineering Technology course brochure.

COURSE OUTLINE

Term 1
ELE-E101 Electric Circuits
ELE-E102 Electrical Instruments
ELE-E104 Personal Computers I
ELE-E106 Drafting
ELE-M102 Mathematics
ELE-P109 Physics
ELE-R100 Report Writing

Term 2
ELE-E201 Electric Circuits
ELE-E202 Electrical Instruments
ELE-E204 Personal Computers II
ELE-E207 Basic Electronics
ELE-M202 Calculus
ELE-P209 Physics

ELE-R200 Report Writing

Term 3
ELE-E301 Electric Circuits
ELE-E303 Introductory Logic Circuits
ELE-E305 Introductory Microprocessors
ELE-E307 Basic Electronics
ELE-M302 Calculus
ELE-P309 Physics

Term 4
ELE-I432 Process Devices
ELE-I435 Computer Overview
ELE-I436 Electrical Practices
ELE-I437 Instrumentation Electronics
ELE-I539 Basic Process Control
ELE-I538 Fluid Mechanics
ELE-M432 Calculus

Term 5
ELE-I438 Final Control Elements
ELE-I532 Process Measurements
ELE-I535 Industrial Computer Interfaces
ELE-I536 Electrical Practices
ELE-I537 Power Electronics
ELE-I539 Linear Process Control
ELE-K531 Intro Chemical Instrumentation
ELE-M532 Calculus

Term 6
ELE-I632 Process Measurements
ELE-I637 Power Electronics
ELE-I638 Industrial Controls
ELE-I639 Computer Process Control
ELE-K631 Chemical Instrumentation
ELE-R630 Report Writing

SUBJECT DESCRIPTIONS

ELE-E101 ELECTRIC CIRCUITS
Basic concepts of electricity and electric circuits. Ohm's law, power, energy and efficiency, Kirchhoff's voltage and current laws, voltage and current divider rules. Problem solving methods for simple DC circuits. Analysis of more complex DC electric circuits using network theorems, network conversions, branch, mesh and nodal methods.

ELE-E102 ELECTRICAL INSTRUMENTS
ELE-E102 Basic Electrical Instruments is an applied Ohms Law Laboratory course for the ELE-E101 Electric Circuits course. It includes instruction in human electrical safety and how to calibrate, measure and communicate instrument readings. Basic instrument design, circuit calculations as well as instrument characteristics are also covered. The instruments discussed include the VOM, DMM, VTVM, DC Bridge, and potentiometer.

ELE-E104 PERSONAL COMPUTERS I
This subject will provide students with a brief introduction to personal computer hardware and the most often used DOS commands with the intent of facilitating use of personal computer based programs. A Typing Tutor program, to improve basic keyboard skills, will be followed by an introduction to the WordPer-
fect word-processing program. The final weeks will be spent using the ORCAD drafting program to produce a simple circuit diagram.

ELE-E201 ELECTRIC CIRCUITS
Continuation of Electric Circuits ELE-E101. Fundamental concepts of sinusoidal voltage and current, time and phasor domains; instantaneous average and effective values. Resistor, inductor and capacitor in AC sinusoidal circuit; impedance and admittance. Problem-solving methods for simple AC circuits. Analysis of more complex AC electric circuits using network theorems, network conversions, mesh and nodal methods. Single-phase AC power: average, reactive and apparent, power factor; measurement of power in a single-phase AC circuit using a wattmeter.

ELE-E202 ELECTRICAL INSTRUMENTS
This course is a continuation of ELE-E102 Basic Electrical Instruments and is the lab course for ELE-E201 Electric Circuits. It concentrates on the calibration and proper use of instruments for measurement in AC circuits. The Instruments discussed are the Function generator, VOM, VTVM, DMM and the oscilloscope. The course consists mainly of practical lab work.

ELE-E204 PERSONAL COMPUTERS II
This introductory programming subject in the BASIC language emphasizes a structured approach to problem-solving and programming. The focus of this approach is to develop an algorithm, translate it into a program, check the program for accuracy and debug the program as necessary. The three hours per week of formal class time is spent in the PC room or a classroom working on one of the series of tutorial/assignments which are keyed closely to the text and supplemented with material more relevant to applications in the Electronics, Electrical, Computer and Instrumentation Engineering Technology areas.

ELE-E207 BASIC ELECTRONICS
This course is a first course in Solid State electronics. Upon the completion of this course the student will be able to analyze, design and build simple diode rectifier circuits, Zener diode circuits and Transistor biasing circuits.

ELE-E301 ELECTRIC CIRCUITS

ELE-E303 INTRODUCTORY LOGIC CIRCUITS
The purpose of this course is to familiarize the student with popular digital integrated circuit devices and to develop students to the point where they can describe their operation and apply them in digital circuits. The course consists of approximately 25% lecture time in which specific blocks of material are dealt with in preparation for a follow-up laboratory exercise.

ELE-E305 INTRODUCTORY MICROPROCESSORS
This subject starts by providing a general hardware description of microprocessor systems at the block diagram level. It then continues with an introduction to microprocessor programming at the assembly language level, including use of the TASM Cross Assembler. Assembly language programming is implemented on systems which use the Z80 microprocessor. This subject lays the foundation for the more advanced microprocessor training contained in the second year of all Electrical, Electronic, Instrumentation and Computer Engineering Technology programs.

ELE-E307 BASIC ELECTRONICS
This course is a continuation of Term 2 Basic Electronics Introduction to the AC analysis and design of Junction Transistor, Field Effect, and MOS transistor circuits. It concentrates on analysis techniques to predict the terminal behaviour of small signal amplifiers. It is primarily a lecture and lab-related course and consists of six hours a week.

ELE-I435 COMPUTER OVERVIEW
Reviews the architecture of a basic single board computer along with programming concepts in assembly, language and BASIC for the purpose of counting, time delay, sequencing and the handling of interrupt inputs. Topics: computer hours; CPU registers and control lines; memory types, organization and decoding; parallel port registers; timer registers; stack operation and interrupt operation.

ELE-I436 ELECTRICAL PRACTICES
This course is intended to give a broad overview of modern electrical power technology. It covers the basic principles of transformers and rotating machines, transmission and distribution systems associated with this field. Toward this end, the subject matter has been divided into five distinct parts: 1) Fundamentals, 2) Electrical Materials, 3) Alternating Current Circuits, 4) Transformers and 5) Rotating Machinery.

ELE-I437 INSTRUMENTATION ELECTRONICS
Linear integrated circuits course which introduces the operational amplifier and describes the rudimentary circuits used for the acquisition and conditioning of analog signals. Topics: op-amp characteristics; single ended and differential input amplifiers; integrators; differentiators; analog switches and voltage regulators.

ELE-I438 FINAL CONTROL ELEMENTS
Throttling devices, valves, regulators, variable speed pumping, valve family characteristics, liquid sizing, valve trim, installed versus inherent trim, trim selection for application, trim problems.

ELE-I438 BASIC PROCESS CONTROL
Introduction to closed loop control, basic pneumatic systems, force balance and motion balance mechanisms. on-off, proportional plus bias, integral, derivative control mechanisms, commissioning control loops, basic training operations.

ELE-I532 PROCESS MEASUREMENTS
Force, motion transducers, applications, circuits, transmitter electronics, two wire, four wire, sensors types, scalers, current driver, loop power, drive limitation, practical measurement fundamental, tubing fittings, bending, taping into lines, impulse lines, freeze protection, seal fluids, process noise, chemical seals, remote seals, purging, chemical compatibility, vacuum measurement, mechanical gauges, manometers, thermal conductivity, ionization, level measurement, direct, inferential techniques, hydrostatic
tank gauging.

ELE-1535 INDUSTRIAL COMPUTER INTERFACES
Describes operations, specifications and applications of most commonly used DAC, ADC, and serial data communication standards. Topics: DAC operation and specifications; ADC, successive approximation and dual slope; ADC MUX operation, input protection, aliasing filter and sampling rate; serial data communication standards, RS-232, RS-422 and RS-485.

ELE-1536 ELECTRICAL PRACTICES
The Electrical Practices course is intended to familiarize the student with the current practices that are used in electrical power systems within the regulations of the Canadian Standards Association. The Instrumentation Engineering Technology students are taught how to circuit and control electrical machines. The theory and operation of A.C. and D.C. motors, on a practical level, is covered so that the student can understand why and how these devices are used.

ELE-1537 POWER ELECTRONICS
Introduces thyristers devices for the purpose of describing the operation and application of AC power controllers. Topics: thyristers characteristics and control circuits and protective circuits; AC power controllers, both phase controlled and zero crossing controlled; RFI comparators and timers.

ELE-1538 FLUID MECHANICS
Properties of fluids, conversions, fluid statics, hydrostatic head to derive level. Density, Interface, Archimedes Principle, applications for level and density, Bernoulli's Principle and Significance to pressure and velocity, Equation of continuity, Reynolds's number, laminar flow, turbulent flow, frictional calculations, head flow measurement, types, characteristics, design, size calculations, flanges, tapping locations, impulse lines, manifolds, correct operation of manifolds, area flow meter wires, flumes, rotometers, applications, considerations, turbine flow meters, magnetic flow meters, vortex flow meters, positive displacement meters, metering pumps.

ELE-1539 LINEAR PROCESS CONTROL
Tuning control loops via - Seat of Pants, Ziegler–Nichols, Cohan & Coon Pessen, Allman using Ultimate Cycling and Process Reaction Curve Techniques, Importance of F(n), ratio control, cascade control, windup protection techniques, design criteria, start up procedures, selective control loops, high, mid, low types, applications, control only if necessary systems (regulatory), feed forward, design of feed forward level loop, design of heat exchanger loop, scaling, definition, rules of scaling, application, design examples, hardware mechanization.

ELE-1632 PROCESS MEASUREMENTS
Temperature scales, filled systems, Bimetal devices, Chemical indicators, RTDs, wire and film types, semi-conductors, Thermistor characteristics, thermocouples, thermocouple laws, Reading and calibrating temperature instruments, pyrometry, optical and radiation theory, humidity, concept, psychrometric charts calculating RH, sensors, density and specific gravity concepts, velocity sensors, vibration, concept, combustible gas, combustion triangle, methods of sensing combustibles, nuclear radiation, nature, characteristics, ionization, proportional, G-M tube, semiconductor, scintillation detector.

ELE-1637 POWER ELECTRONICS
Introduces three-phase rectifiers, converters, and variable frequency inverters for the purpose of describing the various types of DC and AC motor drives. Topics: three-phase bridge rectifier, both six pulse and twelve pulse; converters, both full control and half control; three-phase converter, both PWM output and six step output; DC drives, one quadrant, two quadrant and four quadrant; AC drives, variable voltage, variable frequency slip power recovery, eddy current and cycloconverter.

ELE-1638 INDUSTRIAL CONTROLS

ELE-1639 COMPUTER PROCESS CONTROL

ELE-K531 INTRO CHEMICAL INSTRUMENTATION
Atoms, molecules, perioic table, ions, ionic bonding, covalent bonding, valency, oxidation numbers, chemical equations, balancing, stoicheometry, solutions, solvent effects, concentrations, interaction between electromagnetic radiation and matter, particle properties of light, photoelectric effects, refactive index, Beer's law.

ELE-K631 CHEMICAL INSTRUMENTATION
Ultra Violet and visible spectrophotometry, radiaion sources, monochromaters, sample containers, optics, radiation detectors, electronics, nature of absorption, quantitative analysis, qualitative analysis, photometric titration, atomic absorption, radiation source, interference from impurities, accuracy of analysis, infrared analysis, molecular vibration, qualitative analysis, care of cells, fluorescence, nuclear magnetic resonance, theory and application, radiation chemistry, theory, half cells, pH meters, electro conductivity, theory, application, gas chromotraphy principles, components, operation, interpretation, sample and column preparation.
ELE-M102 MATH
Pre-calculus "review": linear, quadratic, logarithmic, exponential and simultaneous (linear) equations. Some factoring, graphing, formula manipulation, functional rotation, complex numbers. Right triangle, trig, radians, and problem solving. Emphasis is on doing and in the process of orderly developments. 56 hours in-class, plus testing.

ELE-M202 CALCULUS
Differential Calculus. Slope, straight line, parabolas, circle, translation of axes, trapezoid rule for areas. Derivatives of: polynomials, powers, products, quotients: implicit expressions, trig and inverse trig, logarithms and exponentials. Tangents, normals, motion, rel. rates, max/min, small changes and "Newton's Roots". 54 hours in-class, plus testing.

ELE-M302 CALCULUS
Integral calculus. Work with trig identities and equations: reciprocal, pythagorean, angle sum, double and half angle relations. Integrate algebraic, log, exponential, trigonometric quantities. Use substitution and "by-part" techniques. Find areas, average and RMS values, and work with integrals with current, charge and voltage. 46 hours plus testing.

ELE-M432 CALCULUS
Applied Calculus for Instrumentation Technology - differential equations with emphasis on LaPlace transform methods. Applications include: transients in series circuits and uncontrolled first order systems and simulation of natural and controlled systems using TUTSIM software.

ELE-M532 CALCULUS
1) Use of dynamic system simulation software, Tutsim for process control systems (introduction) - fluid tank level, single, cascaded, uncontrolled, controlled (proportional with bias, proportional-integral). 2) Use of MathCad mathematical software - Fourier series, Fourier transform (introduction).

ELE-P109 PHYSICS
An introductory course in engineering mechanics and electricity with emphasis on solving problems and dealing with such topics as the nature of physics, physical quantities, systems of measurements, significant figures, translational motion in one and two dimensions, Newton's laws of motion, free body diagrams, work, power and energy, discreteness of electric charge, electrostatic force and field, Coulomb's law and Gauss' law, electrostatic potential and potential energy, capacitance and electron ballistics. A total of 50 hours of instructional time is divided into 30 hours of lectures and 20 hours of labs.

ELE-P209 PHYSICS
An intermediate-level course in engineering mechanics and electromagnetism with emphasis on solving problems and dealing with such topics as rotational kinematics & dynamics of rigid bodies, conservation of angular momentum, work power and energy in rotation, motion of simple, damped and driven oscillating mechanical systems and their electrical analogues, resouce and Q value, magnetic fields due to different current configurations, force on moving charge and current carrying wire in a magnetic field, electromagnetic induction, self & mutual inductance and magnetic properties of materials. A total of 40 hours of instructional time split evenly between labs and lectures.
LEGAL ASSISTANT

PURPOSE
To develop the knowledge and skills required to perform basic legal procedures, investigations and examinations, under the direction of a lawyer.

COURSE
Legal Assistant is a two-year diploma course with a September entry date. (Part-time students may be considered for entry on a limited basis as space becomes available.) The course is designed to provide students with specific knowledge of the procedural aspects of legal practice, basic knowledge of related substantive aspects of law, general knowledge of law office management and the required clerical skills.

ENTRANCE REQUIREMENTS
A - 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation) with one of English 300 or 301 and one of Mathematics 200 or 301;

or

- Adult Basic Education 11B;

and

B - successful completion of entrance testing which includes an assessment of reading ability;

and

C - an interview with the Legal Assistant Selection Committee

Mature Student Admission. Mature student applicants may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. standing in lieu of 20 credits; however, they must have specific credits in one of English 300 or 301 and in one of Mathematics 200, 290 (academic), or 301, at a minimum. Mature students must also complete requirements (B) through (D) above and be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

This is a special selection course. Students are selected on the basis of academic preparation, motivation, and suitability for the kinds of legal careers in the labour market.

Because this special selection course has a cut-off date, applications should be submitted as early as possible. Please contact the Admissions Office at 632-2327 to confirm the exact date.

EMPLOYMENT POTENTIAL
Although the demand for legal assistants is a relatively recent professional development in Manitoba, the future for this type of work appears promising. The degree of responsibility that a graduate will assume, and the salary that he or she will receive, will vary, depending on the calibre of the graduate. Graduates have found employment primarily in law offices. However, job opportunities may be available in various other areas, such as government agencies and legal departments of large corporations.

COURSE OUTLINE
Term 1
B17-C742 Contracts I
B17-E751 Communications
B17-I731 Introduction to the Legal System
B17-L741 Litigation I
B17-R741 Real Estate I

B17-V721 Legal Vocabulary I
B18-T701 Legal Typing I

Term 2
B17-B742 Corporate Law
B17-C732 Legal Research
B17-E753 Legal Letter Writing
B17-L742 Litigation II
B17-R742 Real Estate II
B17-0721 Law Office Management I
B18-T753 Legal Typing II

Term 3
B17-A451 Accounting
B17-C743 Contracts II
B17-F753 Family Law
B17-L743 Litigation III
B17-R743 Real Estate III
B17-V733 Legal Vocabulary II
B17-W753 Wills And Estates I
B18-D723 Machine Transcription
B18-W733 Word Processing/Legal Application

Term 4
B17-A734 Legal Accounting/Computer Applications
B17-B744 Commercial Law
B17-C734 Criminal Law
B17-L744 Litigation IV
B17-O723 Law Office Management
B17-R744 Real Estate IV
B17-W754 Wills & Estates II

SUBJECT DESCRIPTIONS
B17-A451 ACCOUNTING
An in-depth study of basic accounting principles as applied to journaling, posting, financial statements, adjustments, petty cash and bank reconciliation.

B17-A734 LEGAL ACCOUNTING/COMPUTER APPLICATIONS
This course includes the one-write accounting system for law offices. In addition, students will learn computer applications in accounting.

B17-B742 CORPORATE LAW
This course is designed to introduce the student to the corporation as a legal entity, together with providing the fundamental knowledge of its internal and external workings. Procedural emphasis is on the method of incorporation and routine corporate housekeeping thereafter.

B17-B744 COMMERCIAL LAW
This course introduces the student to commercial concepts, in particular commercial financing, Personal Property Security Act, commercial leases, bankruptcy and receiverships, and acquisitions.

B17-C732 LEGAL RESEARCH
This course introduces the student to the primary and secondary
sources of law and the material available to summarize and aid in finding legal reports. Familiarization with computerized legal research techniques is included in the course.

B17-C734 CRIMINAL LAW
This course introduces the student to principles of criminal law as well as criminal procedure, using the criminal code and the various acts and appeal procedures relevant to criminal law.

B17-C742 CONTRACTS I
This course gives the student a basic understanding of the law of contract.

B17-C743 CONTRACTS II
This course examines special forms of contractual obligations such as bailment, insurance, employment, contracts and financial contractual obligations.

B17-E751 COMMUNICATIONS
Grammar, sentence structure & basic punctuation form the syllabus for this subject, preparatory to legal letter writing.

B17-E753 LEGAL LETTER WRITING
This course includes composing correspondence for various situations that a legal assistant will encounter in the daily routine in a legal office, as well as reports and memoranda of law.

B17-F753 FAMILY LAW
This course is designed to introduce the student to the concepts of divorce practice and to provide a fundamental knowledge of the procedures involved in preparing petitions and relevant documentation.

B17-L751 INTRODUCTION TO THE LEGAL SYSTEM
This course is designed to introduce the student to the Canadian legal system and to provide a background for subsequent studies in legal procedure.

B17-L751 LITIGATION I
This course is designed to introduce the field of civil litigation from a theoretical study of the law of torts to the daily workings of a litigation file.

B17-L752 LITIGATION II
This course covers civil appeals, collection procedures, and a comparison of non-judgment debts.

B17-L753 LITIGATION III
This course continues from Litigation II, and covers the areas of costs and billings; civil appeals, particular applications; and a study of the Seizures Act and the Builder’s Lien Act.

B17-L754 LITIGATION IV
This course continues from Litigation III and covers procedures following judgement - taxing costs, collections, garnishers, writ of attachment, the role of the receiver, injunctions and replevin.

B17-O723 LAW OFFICE MANAGEMENT
Weekly seminars cover topics relating generally to the legal profession, and the practice of law, etiquette and ethics in legal practice; the functions and responsibilities of legal assistants and the organization, management and administration of a law office. The course is designed to prepare students for their practicum experience.

B17-R741 REAL ESTATE I
This course is an introduction to the laws governing interests in land; the requirement for registering such interest; and the law relating to land transactions.

B17-R742 REAL ESTATE II
continuing from Real Estate I, this course examines mortgages and their affect on land, contracts affecting the sale of land, and transactions involving the purchaser’s solicitor.

B17-R743 REAL ESTATE III
This course continues from Real Estate II and deals with the practice and procedures relating to sale, and mortgage of land from the vendor’s point of view, required title searches, and procedures involved in closing a real estate transaction.

B17-R744 REAL ESTATE IV
This course deals with the practice and procedures relating to the sale of property from the vendor’s position; the mortgage statement and discharge of mortgage, as well as the procedures involved in closing a real estate transaction.

B17-V721 LEGAL VOCABULARY I
This course will teach students legal vocabulary and Latin terms associated with first-year law courses, as well as spelling and word-division rules.

B17-V733 LEGAL VOCABULARY II
This course is designed to teach students legal terminology associated with second-year law courses. Students will also learn spelling and word-division rules associated with these legal terms.

B17-W753 WILLS AND ESTATES I
This course is designed to introduce the student to estate planning in its most common form - the will. It is an introduction to the law relating to estate succession on a testacy or intestacy and the essentials of a valid will.

B17-W754 WILLS & ESTATES II
This course will familiarize the student with estate procedures. Students will receive instruction in the various applications in the Surrogate Division, review applicable statutes and study litigation aspects of estate administration.

B17-O721 LAW OFFICE MANAGEMENT I
Weekly seminars cover topics relating to legal office procedures and management techniques. In addition, students will gain practical experience through on-job training in a law office during the latter part of the course.

B18-D723 MACHINE TRANSCRIPTION
This course is designed to familiarize students with machine recorders and transcribers; to give the student practical experience in dictating letters, memos and instructions and to teach students to transcribe from recorded dictation tapes.
B18-T701 LEGAL TYPING I
This course is designed to teach students to type, utilizing legal applications. Keyboarding, business memos, letters, legal letters and manuscripts with footnotes form the subject content.

B18-T753 LEGAL TYPING II
The student learns to type on legal paper and legal forms; and prepare basic legal documents such as power of attorney, affidavit, declaration, release affidavit, will, and notarial certificate.

B18-W733 WORD PROCESSING/LEGAL APPLICATION
This course teaches students how to operate a word processor, utilizing legal applications, legal forms and documentation.
LIBRARY TECHNICIAN

PURPOSE
To develop basic public service and technical skills which will enable the graduate to serve as a competent library employee.

COURSE
Library Technician is a ten-month certificate course with a September entry date. The course is designed to prepare the graduate to work as a middle-level library employee whose knowledge of library techniques is superior to that of a clerk, but without the theoretical background or subject knowledge of a librarian. The student will gain a general knowledge of library systems, a practical background in basic, day-to-day library procedures, and an understanding of the relationships of the different procedures throughout the library.

ENTRANCE REQUIREMENTS
A - 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation) with English 300. A Computer Awareness course is strongly recommended; or
- Adult Basic Education 11B;
and
B - successful completion of the reading skills assessment test at the minimum required competency level; and
C - proof of typing speed of not less than 35 w.p.m. on a recent test; and
D - an orientation session/selection interview with the Library Technician Selection Committee.

Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits but applicants must also have specific credit in English 300. Mature student applicants are advised that an introductory computer course would be to their benefit. As well, mature students must meet entrance requirements (B), (C), and (D) above and be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

This is a special selection course. The Selection Committee chooses candidates on the basis of educational background and potential suitability for a library career. Applicants are encouraged to do some research on libraries and library technicians before attending the interview.

EMPLOYMENT POTENTIAL
Graduates have found employment in schools, public libraries, and in academic, hospital or government libraries.

Library Technician graduates are also eligible to enroll for the equivalent of an additional 10 months in a program leading to a Diploma in Library Technology. The diploma program provides the graduate with the opportunity to continue training in specific interest and career-related subjects.

COURSE OUTLINE
Term 1
B01-A131 Audio-Visual Materials Equipment & Production
B05-L111 Cataloguing
B05-L112 Reference & Public Service
B05-L113 Acquisitions & Processing of Materials
B05-L114 Library Practicum
B05-L115 Work Practice
B15-S103 Intro to Data Processing
B18-L641 Library Technician Typing

Term 2
B05-L211 Cataloguing
B05-L212 Reference & Public Service
B05-L213 Acquisitions & Processing of Materials
B05-L215 Work Practice
B13-S521 Psychology I (optional)
B16-E251 Introduction to Canadian Literature
B16-E556 Children's Literature (optional)
B18-L642 Library Technician Typing

Term 3
B05-L311 Cataloguing
B05-L315 Work Practice
B05-L316 Issues in Canadian Society
B05-L317 Administration of Libraries
B13-S531 Psychology II (optional)
B16-E351 Canadian Literature
B16-E656 Children's Literature (optional)

SUBJECT DESCRIPTIONS
B01-A131 AUDIO-VISUAL MATERIALS EQUIPMENT AND PRODUCTION
An introduction to the use and production of audio and visual materials such as transparencies, slides, audiotapes, videotapes, posters and display boards, etc. Also, an Introduction to the operation of various types of equipment, including projectors (movie, slide, overhead, etc.), video and audio recorders, microform readers, and production equipment such as thermocopy machines, etc.

B05-L111 CATALOGING
An introduction to copy cataloguing and descriptive cataloguing (ISBD format) of monographs as well as procedures for the maintenance of card catalogues.

B05-L112 REFERENCE AND PUBLIC SERVICE
The fundamentals of library public service functions including circulation and shelving routines, and reference work. Students will be introduced to the contents and uses of the major types of reference tools, with emphasis on Canadian sources.

B05-L113 ACQUISITIONS & PROCESSING OF MATERIALS
An introduction to selection, verification and ordering procedures for book materials, and an examination of the organization and functions of the Acquisitions Department. This course includes the acquisition procedures for out-of-print books and French language materials, as well as procedures for handling gifts and exchanges, inventory, weeding, and library supplies.
B13-S531 PSYCHOLOGY II
Humanistic psychology is taught in trimester two and three of the library technician one-year course. Students are expected to learn basic principles in psychology and how these principles apply to their own behavior and the behavior of others. Humanistic psychology allows the student through exercises and group participation to use his or her own insights and experiences to discover and validate psychological concepts.

B15-S103 INTRO TO DATA PROCESSING (LIBRARY TECHNICIAN)
An introduction to basic electronic data processing concepts which are pertinent to automated library operations. Topics covered include a general overview of computers and data storage, input/output media and devices, file searching, flow charting, remote computing concepts, and microcomputers and minicomputers.

B16-E251 INTRO TO CANADIAN LITERATURE
This subject is designed to introduce students to works by Canadian and other writers and to develop basic skills in writing about literature and doing research in literary areas. Students will look at a variety of works and examine such terms and concepts as imagery, irony, point of view and genre. Introduction to Canadian Literature acts as a prelude to the subject, Canadian Literature, which is an intensive overview of literature in Canada.

B16-E351 CANADIAN LITERATURE
Students will study the work of various Canadian authors. Emphasis will be given to the techniques used by these authors to present the Canadian idea.

B16-E556 CHILDREN'S LITERATURE
This subject is designed to cover the many aspects of children's literature to aid the student in the choice and recommendation of books for children. The practicum includes story-telling as well as leading children in discussion and interpretation of the literature.

B18-L641 LIBRARY TECHNICIAN TYPING
This is designed to prepare the student with adequate typing skills to meet the needs and requirements of general library work, which would include typing of cards, book lists, bibliographies, and business correspondence.

B18-L642 LIBRARY TECHNICIAN TYPING
Continues B18-L641, with emphasis on production and improving typing speed.
MACHINE DRAFTING

PURPOSE
To develop the skills and knowledge needed to assemble and produce working drawings, manually and computer-generated, as required by the industrial and manufacturing industries.

COURSE
Machine Drafting is a ten-month certificate course with a September entry date. The course is designed to train the student to produce working drawings of machines and their components and focuses on the development of both traditional manual drafting skills and high technology methods using computer-assisted drafting systems.

ENTRANCE REQUIREMENTS
- 14 high school credits (Manitoba Grade 11 or equivalent secondary school preparation) with one of Mathematics 200* or 201. Standing in Physics 200 or Physical Science 201 is strongly recommended;
- Adult Basic Education 11A

Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. standing (scores on each of the five tests must be 43 or higher) in lieu of 14 credits; however, they must have successfully completed one of Mathematics 200*, 201, 290 academic, or 911. Formal credit in one of Physics 200 or 290 or Physical Science 201 is recommended. Mature students must also be 20 years of age or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

* Mathematics 200, or its academic equivalent, is advised. A strong background in mathematics is essential to the drafting field.

EMPLOYMENT POTENTIAL
Job opportunities have been found as junior draftspersons with machinery manufacturers and in tool and die production shops. Some graduates have found employment with structural fabricators, equipment manufacturers and in the aircraft industry. Other graduates are working in consulting engineering offices. After gaining experience, many have found employment as technical representatives or salespeople for metal-working equipment and product companies, or as shop inspectors, estimators and designers.

COURSE OUTLINE

Term 1
T03-M101 Fundamentals of Delineation
T03-M102 Applied Machine Drafting I
T03-M103 Computer-Aided Drafting I
T13-M524 Drafting Math

Term 2
T03-M201 Strength of Materials
T03-M202 Applied Machine Drafting II
T03-M203 Computer-Aided Drafting II

Term 3
T03-M301 Mechanics

T03-M302 Applied Fabrication Drafting
T03-M303 Computer-Aided Drafting III
T14-R504 Communications

SUBJECT DESCRIPTIONS

T03-M101 FUNDAMENTALS OF DELINEATION
Practice in the use of engineering, architectural and metric scales, basic letter form, material symbols, sectioning, axonometrics, orthographic drawing and dimensioning.

T03-M102 APPLIED MACHINE DRAFTING I
Production of working drawings of machines, with emphasis on the detailing of castings and machined components, and the techniques of assembly drawings and parts lists. Advanced dimensioning and tolerancing. First and second auxiliaries.

T03-M103 COMPUTER- AIDED DRAFTING I
Introduction of AutoCAD computer-aided drafting system, including geometric entities, input modes, coordinate types, drawing creation, drawing/editing and manipulation, block creation and use, layer concept and output to printer and plotter software.

T03-M201 STRENGTH OF MATERIALS
Consists of instruction in and solution of problems in strength of materials as it applies to the field of machine drafting. Includes stress-strain relationship, bolted and welded joints and shear and moments in beams.

T03-M202 APPLIED MACHINE DRAFTING II
Production of advanced working drawings of machine components, mechanical assemblies, gears and cams.

T03-M203 COMPUTER- AIDED DRAFTING II
Instruction in advanced commands of AutoCAD drafting system including moving and duplicating objects, array, modifying and maneuvering, notes and specifications, blocks, library creation and attributes.

T03-M301 MECHANICS
Consists of instruction and solution of problems in torque, work and power as they apply to the field of drafting.

T03-M302 APPLIED FABRICATION DRAFTING
Production of working drawings in the areas of welding, structural piping and sheet/plate metal fabrication.

T03-M303 COMPUTER- AIDED DRAFTING III
Use of AutoCAD to produce advanced discipline-related working drawings. AutoCAD 3D and Introduction to AutoLISP programming.

T13-M524 DRAFTING MATH
Solution of engineering-related problems using algebra, geometry and trigonometry.

T14-R504 COMMUNICATIONS
The course of instruction develops career-related communication skills, knowledge and behavior. The purpose is to enable students to send and receive messages more effectively and efficiently through writing, speaking and listening.
MACHINE SHOP PRACTICE

PURPOSE
To develop the knowledge and skills to safely and efficiently operate machine tools and machine-shop equipment, interpret mechanical drawings and sketches, and to weld, braze and solder.

COURSE
Machine Shop Practice is a ten-month certificate course with a September entry date. The course is designed to develop the knowledge and skills to set up and operate lathes, milling machines, shapers, grinding machines and drilling machines to produce a product according to specifications; to interpret mechanical drawings and sketches; to perform manual-arc and oxyacetylene welding processes; and braze and solder.

Please note that because Workers Compensation regulations stipulate that steel-toed footwear must be worn in industrial workplaces, students are required to provide and wear appropriate safety footwear in welding and machine shops, both in the college and during in-industry placements.

ENTRANCE REQUIREMENTS
- 7 high school credits (Manitoba Grade 10 or equivalent secondary school preparation) with Mathematics 100 or 101 and Science 100 or 101. English 100 or 101 is strongly recommended; or
- Adult Basic Education 7-10 program completion.

Mature Student Admission. Mature student applicants may submit other educational equivalents, including G.E.D. standing (scores on each of the five tests must be 41 or higher), in lieu of 7 credits; however, they must have successfully completed one of Mathematics 100, 101, 190 or Practical Mathematics - Elementary/Junior High Level and one of Science 100, 101 or 190. Mature students must also be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

EMPLOYMENT POTENTIAL
Many graduates have found employment as machine tool operators or as machinist apprentices in the areas of manufacturing, repair or servicing in aircraft, automotive, mining, construction and agricultural-equipment industries. Other graduates have found that the knowledge and skills gained through this course have provided a sound basis for related occupations, such mechanical draftsman, mechanical technician, estimator and industrial salesperson.

For further information on apprenticeship and possible transfer of credit, please see the Machine Shop Practice course brochure.

COURSE OUTLINE
T03-R031 Blue Print Reading & Sketching for Machinists PE
T04-A520 Arc Welding
T04-G510 Related Gas Welding
T04-M010 In-Plant Training
T04-M012 Bench Work
T04-M014 General Operation & Control of Machine Tools, Theory & Practice
T04-M018 Power Saws
T04-M020 Lathe Operation & Theory
T04-M022 Milling Machine Operation & Theory
T04-M028 Grinding Machine Operation & Theory
T04-M062 Shaper, Planer, Slotter Theory & Practice
T13-M511 Machine Shop Math
T13-S511 Machine Shop P/E Science
T14-C502 Communication

SUBJECT DESCRIPTIONS
T03-R031 BLUE PRINT READING AND SKETCHING FOR MACHINISTS PE
Drawing interpretation as applied to the machinist trade.

T04-A520 ARC WELDING
Theory and practice pertaining to identification, selection and safe operation of weld shop equipment such as electric weld power sources, grinders, shears, etc. Identification and application of flux coated weld electrodes machine setting (voltage, amperage, polarity) for various electrode applications. Practice in striking and maintaining electrode arc. Running beads on steel plate using different electrodes. Welding butt, tee and lap joints in various positions (flat, vertical, up/down, etc.) to obtain satisfactory joints as to penetration, inclusion, undercut, build-up, etc.

T04-G510 RELATED GAS WELDING
Safety in setting up and using oxyacetylene equipment. Identifying and setting torch for carburizing, neutralizing, and oxidizing flame. Introduction to fusion welding, puddling and bead-running on sheet metal. Identification and selecting weld rods and fusing filler rod to base metal. Welding butt joints, tee joints, fillet welds and corner welds on sheet steel in the flat horizontal, vertical and overhead positions. Performing the same joints on sheet steel using bronze brazing rod. Safely operating flame-cutting equipment cutting various thickness of steel plate.

T04-M010 IN-PLANT TRAINING
The student will be attached to a shop to experience the atmosphere of the real world of work.

T04-M012 BENCH WORK
Practical shop work pertaining to selection, use and care of hand and bench tools such as files, punches, chisels, lay out tools, taps, and dies. Fitting and assembling.

T04-M014 GENERAL OPERATION & CONTROL OF MACHINE TOOLS, THEORY & PRACTICE
Theory and practice pertaining to the safety, care and maintenance of the engine lathe, drilling machines, (sensitive and radial arm) shaper, planer, milling machine, precision grinding machines, power saws, etc. Types of machines, principles of operation, features and advantages of their use, control systems and power systems. General machine shop practices.

T04-M018 POWER SAWS

T04-M020 LATHE OPERATION & THEORY
Theory and practice pertaining to engine lathe operating. Lathe principles and types. Work holding methods, work set-up techniques, parallel, tapered cylindrical turning, thread cutting, boring,
drilling, reaming, use of face plate. Cutting tool types, tool geometry, tool grinding. Speed and feed calculation, lathe gearing for feed and thread outlining thread calculation.

T04-M022 MILLING MACHINE OPERATION & THEORY

T04-M028 GRINDING MACHINE OPERATION & THEORY
Theory and practice pertaining to grinding machine operation, set-up and care. Types and principles of grinding machines; surface, cylindrical, universal, tool and cutter, and centreless grinding machines. Principles of abrasive wheels, types of abrasives, wheel shapes and their purposes. Wheel identification through standard marking system, manufacture of abrasive wheels. Safety in grinding machine operation.

T04-M082 SHAPE, PLANER, SLOTTER THEORY & PRACTICE
Theory and practical shop work involving work set-up, operation and care of shapers, planners and slotters. Cutting tool geometry and application. Cutting speeds and feeds. Horizontal, vertical, and angular surface machining.

T13-M511 MACHINE SHOP MATH
Review of basic operations applied to whole numbers, fractions, and decimals, numerical treatment: approximations, significant digits, scientific notation, square root using Newton's successive approximation method. Algebra: simple equations in one variable, formulas. Trigonometry: Phythagora's theorem, solution of right triangles, applications, length, area, volume and weight calculations, general problem solving, taper and surface speed calculations.

T13-S511 MACHINE SHOP P/E SCIENCE
Metallurgy, expansion, heat, stress and strain, forces and moments and torque, beams, work power, horse power and gear drive systems, belt and pulley systems, centroids.

T14-C502 COMMUNICATION
A program similar to T14-C504 but only 20 hours duration. T14-C504 is described as: "A self-paced course that develops communication skills from four viewpoints - job-seeker, employee, junior supervisor, small business owner. The course is tailored to fit the needs of individual students and the requirements of course Advisory Boards."
PURPOSE
To develop sufficient knowledge and skills to diagnose and service a wide range of domestic appliances including electric ranges, microwave ovens, washers, dryers, household refrigeration units, and some types of gas appliances. The graduate will also have knowledge of the fundamentals of electricity, elementary circuitry, AC motors and service techniques.

COURSE
Major Appliance Service Technician is a ten-month certificate course with a September entry date. The course is designed to train students to understand the operation and repair of most domestic appliances such as ranges, dryers, washing machines, refrigerators, gas appliances and microwave ovens.

ENTRANCE REQUIREMENTS
- 7 high school credits (Manitoba Grade 10 or equivalent secondary school preparation) with Mathematics 100 or 101 and Science 100 or 101. English 100 or 101 is strongly recommended; or
- Adult Basic Education 7-10 program completion.

Mature Student Admission. Mature student applicants may submit other educational equivalents, including G.E.D. standing (scores on each of the five tests must be 41 or higher), in lieu of 7 credits; however, they must have successfully completed one of Mathematics 100, 101, 190, or Practical Mathematics - Elementary/Junior High Level and one of Science 100, 101 or 190. Mature students must also be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

EMPLOYMENT POTENTIAL
Graduates have found employment with national manufacturers, independent service companies and dealer-operated service departments. With experience, some graduates have become self-employed.

COURSE OUTLINE
T04-G510 Related Gas Welding
T04-M510 Related Machine Shop
T11-A001 Fundamentals of Electricity
T11-A003 A.C. Fundamentals
T11-A007 Electrical Code
T11-A009 Elementary Circuitry Theory
T11-A011 Elementary Circuitry Practical
T11-A013 Electric Ranges Theory
T11-A015 Electric Ranges Practical
T11-A017 Microwave Ovens
T11-A019 Electric Dryers Theory
T11-A021 Electric Dryers Practical
T11-A023 Automatic Washing Machines Theory
T11-A025 Automatic Washing Machines Practical
T11-A027 Refrigeration (Household) Theory
T11-A029 Refrigeration (Household) Practical
T11-A031 Domestic Dishwashers
T11-A033 Solid State
T11-A049 In-Industry-M.A.S.
T13-M515 Appliance Servicing Math
T13-S515 Appliance Servicing Science

T14-C546 Communication, Small Business Organization, & Business Accounting
T15-A301 Appliance Repair-Gas

SUBJECT DESCRIPTIONS
T04-G510 RELATED GAS WELDING
Safety in setting up and using oxy-acetylene equipment. Identifying and setting torch for carburing, neutralizing, and oxidizing flame. Introduction to fusion welding, puddling and bead-running on sheet metal. Identification selecting weld rods and fusion filler rod to base metal. Welding butt joints, lap joints, fillet welds and corner welds on sheet steel in the flat, horizontal, vertical and overhead. Performing the same joints on sheet steel using bronze brazing rod. Safely operating flame-cutting equipment cutting various thickness of steel plate.

T04-M510 RELATED MACHINE SHOP
Basic metals, metal layout and measuring tools, metal working equipment and safety. One week (25 hours).

T11-A001 FUNDAMENTALS OF ELECTRICITY
Voltage-current relation in an electric circuit. Magnetism and effects of the changing magnetic field, measuring instruments, pilot devices.

T11-A003 A.C. FUNDAMENTALS
Voltage-current relation in AC circuits containing resistance, inductance, capacitance.

T11-A007 ELECTRICAL CODE
Application of the Canadian Electrical Code in the appliance field leading to a limited licence.

T11-A009 ELEMENTARY CIRCUITY THEORY
Theory and practice of circuits containing switches, relays, pilot devices, etc.

T11-A011 ELEMENTARY CIRCUITY PRACTICAL
Practical wiring of bell circuits, switching methods, relays, pilot devices and alarm systems.

T11-A013 ELECTRIC RANGES THEORY
Theory of disassembling, testing and replacing parts, checking out circuits, diagnosis of faults and repairs required.

T11-A015 ELECTRIC RANGES PRACTICAL
Disassembling, testing and replacing parts, checking out circuits, diagnosis of faults and repairs required.

T11-A017 MICROWAVE OVENS
Application of microwave ovens. Servicing procedures and safety checks of electrical interlocks.

T11-A019 ELECTRIC DRYERS THEORY
Theory of operation of dryers, testing and checking out circuits, diagnosis of faults, emphasis on circuitry and air circulating system.

T11-A021 ELECTRIC DRYERS PRACTICAL
Disassembling, testing and replacing parts, checking out circuits, diagnosis of faults and repairs required.
T11-A023 AUTOMATIC WASHING MACHINES THEORY
Theory of wash machines, testing and replacing of parts, checking out circuits and diagnosis of faults. Emphasis on mechanics of the machine.

T11-A025 AUTOMATIC WASHING MACHINES PRACTICAL
Disassembling, testing and replacement of parts, checking out circuits and diagnosis of faults. Emphasis on mechanical operation.

T11-A027 REFRIGERATION (HOUSEHOLD) THEORY
Basic refrigeration cycle. Replacing compressors, controls, repairing leaks, recharging system with refrigerant. Test run equipment, etc. (The students will use service manuals, parts and price lists, shop work orders, make out invoices, etc.)

T11-A029 REFRIGERATION (HOUSEHOLD) PRACTICAL
Testing units electrical system. Testing refrigeration circuits for problems. Repairing of refrigeration systems, order parts. Ship and receive goods. Use shop service manuals and shop order procedure.

T11-A031 DOMESTIC DISHWASHERS
Theoretical and practical repair of dishwashers to include disassembling, testing and replacing of parts, checking out circuits and diagnosing faults. Emphasis on operation and mechanics of the machine.

T11-A033 SOLID STATE
An introduction to electronics and solid state devices, half and full wave rectification, diode applications, transistors and power supplies. Solid state devices, e.g. dimmers, phototubes timers, speed control and testing of devices in appliance applications. Lab hours with introduction to test equipment and their uses.

T11-A049 IN-INDUSTRY-MA.S.
1. To provide major appliance course pre-employment students with practical on the job experience.
2. To expose students to actual job conditions and industry requirements.
3. To help instill good work habits and a positive attitude in students.
4. To introduce major appliance service companies to possible technician candidates.
5. To make major appliance service companies aware of college programs and students, with a view of providing input.

T13-M515 APPLIANCE SERVICING MATH

T13-S515 APPLIANCE SERVICING SCIENCE
Work and power, gas pressure, heat energy, friction and lubricants, strength of materials, water solutions and water treatment, pH scale, psychrometrics, air and its properties, principles of refrigeration, corrosion, basic semi-conductor theory, abrasives and abrasive products.

T14-C546 COMMUNICATION, SMALL BUSINESS ORGANIZATION, & BUSINESS ACCOUNTING
Practical Industrial Communication - Students develop the written and oral communication skills needed in their roles as job seekers, employees, and junior supervisors. Small Business Organization - Students gain an overview of the procedures of structuring, financing, locating, and operating a business. Basic Accounting - Through solving a variety of accounting problems, students learn the mechanics and application of basic accounting in business.

T15-A301 APPLIANCE REPAIR-GAS
This is a three-week course designed to give appliance service students some understanding of gas piping, service, repair and correct methods of connecting and disconnecting gas appliances such as dryers and ranges.
MASONRY

PURPOSE
To develop skill and speed in bricklaying through the practical use of tools, and through an understanding of trade terminology, types of materials and bonds.

COURSE
Masonry is a five-month certificate course with two entry dates: September and February. The course is designed to develop a basic theoretical knowledge of all aspects of the trade; to acquire practical skills in masonry; to develop standards and pride of craftsmanship; and to develop proper working habits.

ENTRANCE REQUIREMENTS
- complete Manitoba Grade 9, or equivalent, with Mathematics 9 and Science 9. English 9 is strongly recommended; or
- Adult Basic Education 7-10 program completion.

Mature Student Admission. Mature students may submit other academic equivalents, including G.E.D. standing (scores on each of the five tests must be 41 or higher) or successful completion of one of Mathematics 090 or Practical Mathematics-Elementary/ Junior High Level, and Science 090. Mature students must also be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

* Applicants must be able to do basic operations in mathematics with whole numbers, fractions, and decimals and should be able to read with good comprehension at a Grade 9 level.

EMPLOYMENT POTENTIAL
Although there have been some job opportunities in related occupations for which the knowledge of masonry is an asset, almost all graduates have chosen to enter the apprenticeship program. After reaching journeyman level, graduates have worked in a variety of positions: mason, foreman, estimator, draftsman, contractor or building inspector, in maintenance or as a sales representative.

For further information on apprenticeship and possible transfer of credit, please see the Masonry course brochure.

COURSE OUTLINE
T02-M001 Introduction, Materials & Tools Used in Masonry
T02-M002 Practical Work
T02-M003 Masonry Bonds, Theory
T02-M005 Definitions, Theory
T02-M007 Walls, Theory
T02-M009 Estimating, Theory
T03-R019 Blue Print Reading & Sketching for Masonry PE
T13-M502 Masonry Math

SUBJECT DESCRIPTIONS
T02-M001 INTRODUCTION, MATERIALS & TOOLS USED IN MASONRY
History of trade, employment conditions and opportunities, objectives of course, masonry materials, concrete, tools, scaffolds and modern power equipment.

T02-M002 PRACTICAL WORK
Slaking lime/gauging/materials/mixing mortar/adding additives/mortar boards/handling brick trowel and hand tools; slicing mortar/furrowing (with hand/overhead)/Cross joints and buttering; flushing/making storey poles and gauge rods/Laying out or chasing bond; squaring corners/Leaving out for openings/bonding connecting walls and partitions/picking up and packing masonry units/cutting masonry units/checking levels/Plumbing and levelling/ranging corners/toothing/setting back/blocking/placing corner line blocks/line pins/stretching line/sighting line/setting strigs (twig)/tingle brick/setting brick to line/pertends plumb/Chases and indents/anchoring techniques/offsets/corbel/setting frames/striking joints/setting joints/sills/coping/lintels/cleaning masonry/clean work habits taught.

T02-M003 MASONRY BONDS, THEORY
American, Common, English 1/4 and 3/4 bat; Flemish 1/4 and 3/4 bat; Dutch; Flemish Cross; Monk; Garden Wall; All Rowlock.

T02-M005 DEFINITIONS, THEORY
Trade terms; Arris; Accelerators; Acoustic; Adobe; Abrasives; Aggregate; Anchor; Angle iron; D.P.C. Asphalt; Attic; Basement; Back filling etc., (over 300 in all).

T02-M007 WALLS, THEORY
Wall types, layout out procedures, blueprint reading, anchoring methods, control joints, joint finishing.

T02-M009 ESTIMATING, THEORY
Estimating the number of metric and imperial size bricks and concrete blocks in a given area. Also the number of bricks in chimneys of various sizes. Glazed tiles and many other masonry units. Also the amount of concrete and mortar needed to do projects.

T03-R019 BLUE PRINT READING & SKETCHING FOR MASONRY PE
Drawing interpretation as applied to the masonry trade.

T13-M502 MASONRY MATH
Math concepts: whole numbers, fractions, decimals, equations, percent, ratio and proportion, square roots, Pythagorian Theorem, arc lengths, parabolic arch, geometric designs, volumes. Practical exercises: masonry exercises #1, #2, perimeter, area, volume. ME #3, 4 percent calculations and estimating masonry unit quantities, arc lengths of semental arches, estimating costs. Three multiple choice tests.
MEATCUTTING

PURPOSE
To develop basic meatcutting skills and related requirements through classroom instruction, practical lab training and off-campus work experience.

COURSE
Meatcutting is a five-month certificate course with two entry dates: September and February. The student will learn to cut and merchandise meat and poultry; set up counter displays; tie, wrap and sell various types of meat; make cutting tests to determine profit or loss; and learn basic sausage-making.

ENTRANCE REQUIREMENTS
A - 7 high school credits (Manitoba Grade 10 or equivalent secondary school preparation) with English 100 or 101, Mathematics 100 or 101, and Science 100 or 101; or
- Adult Basic Education 7-10 program completion; and
B - submission of recent chest X-ray, medical, and dental certificates attesting to good health (required after an applicant receives notice of acceptance).

Mature Student Admission. Mature student applicants may submit other educational equivalents, including G.E.D. standing (scores on each of the five tests must be 41 or higher), in lieu of 7 credits; however, they must have successfully completed one of Mathematics 100, 101, 190, or Practical Mathematics - Elementary/Junior High Level and one of Science 100, 101 or 190. Mature students must also meet entrance requirement (B) above and be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

EMPLOYMENT POTENTIAL
Graduates have found employment in meat stores or large food-chain stores. After gaining experience, some graduates have worked as meat graders and government inspectors, and some have opened small businesses in rural areas.

COURSE OUTLINE
B33-M105 Introduction & Orientation
B33-M107 Quality of Meats
B33-M108 Hinds of Beef, Practicum
B33-M109 Hinds of Beef, Theory
B33-M110 Front Quarters of Beef, Practicum
B33-M111 Front Quarters of Beef, Theory
B33-M112 Sides of Pork, Practicum
B33-M113 Sides of Pork, Theory
B33-M114 Sides of Veal, Practicum
B33-M115 Sides of Veal, Theory
B33-M116 Carcasses of Lamb, Theory
B33-M117 Carcasses of Lamb, Practicum
B33-M118 In-Store-Training
T13-M120 Meat Cutting Math
T14-C502 Communication

SUBJECT DESCRIPTIONS
B33-M105 INTRODUCTION & ORIENTATION
This subject provides the necessary instruction pertaining to the use and proper handling of tools and equipment; the rules pertaining to safety and sanitation; and the information about course content and general procedures.

B33-M107 QUALITY OF MEATS
This subject consists of information pertaining to the structure and composition of meats, storing, aging and the regulations which govern the quality of meats.

B33-M108 HINDS OF BEEF, PRACTICUM
This subject provides for the study and practical experience in breaking down hind quarters into wholesale, primal and retail cuts.

B33-M109 HINDS OF BEEF, THEORY
This subject provides for the relevant theory pertaining to hind quarters of beef.

B33-M110 FRONT QUARTERS OF BEEF, PRACTICUM
This subject provides for the student to obtain the practical experience in breaking down front quarters of beef into the various cuts using a variety of methods.

B33-M111 FRONT QUARTERS OF BEEF, THEORY
This subject concerns itself with providing the theory necessary to identify cuts, bone structure and the terminology involved.

B33-M112 SIDES OF PORK, PRACTICUM
This subject provides the student with the practical experience necessary to efficiently break down sides of pork into the various wholesale and retail cuts.

B33-M113 SIDES OF PORK, THEORY
This subject pertains to the theory associated with the grading, terminology and specific regulations pertaining to pork.

B33-M114 SIDES OF VEAL, PRACTICUM
This subject will cover the practical experience for the student to efficiently break down sides of veal into the various wholesale primal and retail cuts.

B33-M115 SIDES OF VEAL, THEORY
This subject concerns itself with the relevant theory pertaining to sides of veal.

B33-M116 CARCASSES OF LAMB, THEORY
This subject pertains to the grading structure and terminology associated with lamb.

B33-M117 CARCASSES OF LAMB, PRACTICUM
This subject provides the practical experience necessary to allow students to break down lamb carcasses into acceptable wholesale and retail cuts.

B33-M118 IN-STORE-TRAINING
This subject consists of a four-week in-store-training session.
T13-M120 MEAT CUTTING MATH
The SI metric system is used exclusively. Four basic operations with whole numbers, fractions, decimals, simple equations, percent (mark-up, discount) meat shrinkage ratio and proportion, denominate numbers. (Introduction to Metric work shop given where necessary.)

T14-C502 COMMUNICATION
A program similar to T14-C504 but only 20 hours duration. T14-C504 is described as: "A self-paced practical course that develops communications skills from four viewpoints - job seeker, employee, junior supervisor, small business owner. The course is tailored to fit the needs of individual students and the requirements of course Advisory Boards."
MECHANICAL ENGINEERING TECHNOLOGY

PURPOSE
To develop knowledge and skills in mechanical design, the production side of manufacturing, and technical supervision.

COURSE
Mechanical Engineering Technology is a two-year diploma course with a September entry date. The objective of the course is to prepare the student to work in design, manufacturing, quality assurance, equipment selection and computer-aided engineering. The emphasis is on mechanical analysis and design, manufacturing methods, building systems design and control, supervision and management, and computer applications.

ENTRANCE REQUIREMENTS
- 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation) with Mathematics 300, English 300 or 301, and Physics 300* or Physical Science 301;

or

- Adult Basic Education Pre-Technology (Adult 12) program completion

Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits; however, they must have specific credits in mathematics, English, and science* as outlined above. Mature students must also be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

* Physics 300 is strongly recommended as a more appropriate background for technology.

EMPLOYMENT POTENTIAL
Graduates have found employment in design, technical sales, manufacturing, research, instruction and management with companies involved in the areas of agriculture, mining, aerospace, air conditioning, refrigeration, transportation, foundries, fluid power, consulting engineering and government services.

For further information on possible transfer of credit, see the Mechanical Engineering Technology course brochure.

COURSE OUTLINE

Term 1
MET-1001 Mathematics
MET-1003 Communications
MET-1004 Manufacturing Processes I
MET-1005 Industrial Materials
MET-1006 Drafting
MET-1013 Electronics (Passive Circuits)

Term 2
MET-1008 Mechanics (Statics)
MET-1010 Engineering Economics
MET-1011 Project Management
MET-1012 Manufacturing Processes II
MET-1017 Calculus
MET-1018 Electronics (Linear & Digital Circuits)
MET-1023 Computer Assisted Design

Term 3
MET-1007 Applied Statistics
MET-1009 Report Writing
MET-1014 Canadian Business Fundamentals
MET-1015 Mechanics (Dynamics)
MET-1016 Computer Programming
MET-1019 Fluid Mechanics

Term 4
MET-1020 Numerical Methods
MET-1021 Stress Analysis I
MET-1022 Quality Control
MET-1024 Fluid Power (Hydraulics)
MET-1025 Commercial Mechanical Components
MET-1051 Advanced CAD
Optional subjects:
MET-1030 Metallurgy
MET-1040 Thermodynamics

Term 5
MET-1027 Stress Analysis II
MET-1028 Fluid Power (Pneumatics)
MET-1050 Supervisory Management
MET-1052 Technical Report Planning
Optional subjects:
MET-1031 Advanced Manufacturing I
MET-1032 Industrial Engineering I
MET-1033 Tooling Technology & Design
MET-1041 Instrumentation I
MET-1042 Air Conditioning
MET-1043 Electrical Systems

Term 6
MET-1029 Fundamentals of Component Design
MET-1034 Technical Report
Optional subjects:
MET-1035 Automation
MET-1037 Industrial Engineering II
MET-1038 Advanced Manufacturing II
MET-1039 Production Planning And Control
MET-1045 Instrumentation II
MET-1046 Air Conditioning Systems
MET-1047 Energy Management
MET-1048 Noise, Vibration & Balancing
MET-1049 Engineering Design

SUBJECT DESCRIPTIONS

MET-1001 MATHEMATICS
The material covered in this subject is mostly a review of the Grade 12 mathematics program along with some additional topics required for other subjects in the Mechanical Engineering Technology program. Emphasis is placed on applying the various mathematical concepts to problems from related subjects.

MET-1003 COMMUNICATIONS
The overall goal of this subject is to help you develop written communication skills, particularly those required of technologists, who will be employed in a scientific, engineering, or industrial environment.
MET-1004 MANUFACTURING PROCESSES I
This subject serves as a general introduction to manufacturing principles, methods, and costs. Emphasis is concentrated on the theory of basic machine tool operations and associated calculations.

MET-1005 INDUSTRIAL MATERIALS
This subject introduces the student to the materials used in mechanical design practice - their characteristics, capabilities, and applications. The knowledge of metals, organics, and composites forms a base for later subjects such as Stress Analysis, Metallurgy, and Advanced Manufacturing.

MET-1006 DRAFTING
This subject introduces the first year student to one of the most important methods of transmitting technical information - the drawing. Successful completion of this subject will require each student to conform to the conventions of mechanical drawing so his or her work will be clear to all who must use it.

MET-1007 APPLIED STATISTICS
This subject provides an introduction to the basic concepts of statistical methods. Some of the topics covered will be: frequency distributions, measures of central tendency and dispersion, probability, normal distribution, sampling, analysis of variance, correlation analysis, and regression analysis.

MET-1008 MECHANICS (STATICS)
This subject will present basic theory in force and vector analysis of objects in static equilibrium. Emphasis will be placed upon thinking logically toward a solution and presenting it at a professional level standard of technical documentation. This theory will be used in later subjects such as Dynamics, Stress Analysis, and Fluid Mechanics.

MET-1009 REPORT WRITING
This subject helps the student polish the communication skills gained in Trimester I. Emphasis is on producing the written reports and giving the oral briefings common in a scientific, engineering, or industrial environment.

MET-1010 ENGINEERING ECONOMICS
This subject introduces the student to general management philosophy and principles, Canadian business structure, and engineering economics. The principal intent of this subject is to prepare the student to make management decisions based on the engineering and economic objectives. It will also provide the student with some insight to the difficulties and problems faced by managers today.

MET-1011 PROJECT MANAGEMENT
Technologists are often called upon to manage a project, a coordinated effort with a definite end. Many of the techniques used to run a one-off project are different from those used to run ongoing efforts in routine company management. This subject will prepare Mechanical Engineering Technology graduates to organize and run the types of projects they may encounter early in their career.

MET-1012 MANUFACTURING PROCESSES II
This subject serves to reinforce the concepts presented in theory in Manufacturing Processes I. Practical skills will be developed through applied assignment to be prepared on the available basic machine tools.

MET-1013 ELECTRONICS (PASSIVE CIRCUITS)
This subject introduces direct current electricity and magnetism by analyzing electrical and magnetic circuits. The student will be introduced to the practical side of electricity and safety requirements by setting up circuits in the lab to verify work covered in the classroom.

MET-1014 CANADIAN BUSINESS FUNDAMENTALS
This subject will have the students operating as companies, competing with each other using the BSIM (Business Simulation program). The fundamental principles relating to law, industrial property rights, and business administration in Canada will be presented as essential background for successful operation of a business in Canada.

MET-1015 MECHANICS (DYNAMICS)
This subject will build upon the force analysis of statics. The pure kinematics of rectilinear and angular motion will lead into consideration of the forces of dynamic equilibrium with respect to plane motion.

MET-1016 COMPUTER PROGRAMMING
This subject will consist largely of lab time used for writing programs which incorporate knowledge of constants and variables, arrays, expressions and operators, subroutines, functions, files, graphics, event trapping, and assembly language interface.

MET-1017 CALCULUS
This subject introduces the student to differential and integral calculus. Applications from Mechanical Engineering Technology, for example: kinematics, areas, volumes of revolution, and centroids are stressed throughout the subject.

MET-1018 ELECTRONICS (LINEAR & DIGITAL CIRCUITS)
Linear electronics (solid state) deals with semiconductor devices and their use in rectification, voltage, regulation, amplification, and optoelectronics circuits. Digital electronics introduces the student to number systems, binary codes, gating, and logic circuits. An introduction to microprocessors, automation, and robotics concludes the subject.

MET-1019 FLUID MECHANICS
This subject provides the basic principles of fluid statics and dynamics as applies to mechanical engineering situations, especially pipe flow. It also lays the foundation for future subjects in Fluid Power, Automation, and Thermodynamics.

MET-1020 NUMERICAL METHODS
Mathematical problems are formulated and solved with arithmetic operations. Analytical solutions of ordinary and partial differential equations are introduced and then solved using a numerical computation approach. Applications involving numerical integration are included. Emphasis on solutions of applied problems that relate to the mechanical discipline.

MET-1021 STRESS ANALYSIS I
This subject covers the basics of normal stress and strain, shear stress, beams, combined stress, pressure vessels, columns, and
energy methods. Finite element analysis will be used as a concluding portion.

MET-1022 QUALITY CONTROL
An introductory subject to the concepts and techniques used by management to achieve an effective quality assurance/control organization within a manufacturing setting. Through "hands-on" surface table work, emphasis will be placed upon how and why inspections are done. The different areas of inspection in control of manufacturing are explored, with emphasis on statistical process control.

MET-1023 COMPUTER ASSISTED DESIGN
This basic introduction to Computer Assisted Design provides the fundamental concepts and basic skills necessary to produce a mechanical design on a CAD system. Two dimensional and three dimensional models with associated details will be produced.

MET-1024 FLUID POWER (HYDRAULICS)
This subject provides the student with the fundamental concepts and basic skills necessary to understand and design a variety of fluid power (hydraulic) circuits. The student will apply these concepts through problem solving, schematic development and component specification in order to develop a greater understanding of the practical applications of fluid power.

MET-1025 COMMERCIAL MECHANICAL COMPONENTS
This subject introduces the student to standard mechanical components that are commonly used in industry. This is not a design subject but is intended to make the student aware of standard catalog components, how they are selected, local sources for these components, and the application information available to them.

MET-1026 JOB SEARCH
This subject covers communication with prospective employers by covering letters of application, resumes, interviews, and job offer acceptance or rejection.

MET-1027 STRESS ANALYSIS II
This subject will be a continuation of basic stress analysis related to weldments, impact loading, bolted connections, fatigue, and fracture mechanics.

MET-1028 FLUID POWER (PNEUMATICS)
This provides the fundamental concepts and basic skills necessary to understand and design a variety of fluid power (pneumatic) circuits. The student will apply these concepts through problem solving, schematic development, and component specification in order to develop a greater understanding of the practical applications of fluid power (pneumatics).

MET-1029 FUNDAMENTALS OF COMPONENT DESIGN
This subject will introduce some of the basic concepts involved in machine design. Since a machine is a combination of machine elements or parts, which (when dismantled) is a collection of simple parts such as bolts, gears, cams, springs, and shafts, the building blocks of all machines, one must have an understanding of these basic components. This subject will examine these basic building blocks of machine design to give the student the necessary foundation for machine design.

MET-1030 METALLURGY
This subject will cover metallurgical equipment overview, sample preparation, constituent identification, and theoretical physical metallurgy.

MET-1031 ADVANCED MANUFACTURING I
Analysis of mathematical and practical considerations in manufacturing processes. The related tool and die requirements for a variety of processes will also be covered (i.e. gages, cutting tools, fixtures, press dies, injection moulding dies and foundry patterns).

MET-1032 INDUSTRIAL ENGINEERING I
The course presents the basic principals for the successful application of motion and time study. It is designed to instruct the student in the systematic approach for improving and standardizing the work method, and the techniques for measuring or estimating the standard work content or standard time.

MET-1033 TOOLING TECHNOLOGY AND DESIGN
This subject will cover theory and practical design considerations encountered in a variety of "special tooling" areas. Theory includes recognition and confinement of "degrees of freedom", fixture requirements and design, blanking and piercing, and multistage tooling. Labs will concentrate on the design elements of tooling.

MET-1034 TECHNICAL REPORT
The Technical Report written for this course is the culmination of the Mechanical Engineering Technology education program: its purpose is to demonstrate the student's ability to apply the skills and knowledge acquired in it. Class time is for research, analysis, report writing and instructor consultation.

MET-1035 AUTOMATION
This course advances the principles of fluid power into the continually expanding field of low cost automation. The major area examined is the use of hydraulics and pneumatics as the prime motive force in an automated device with special emphasis placed on the control aspects of fluid power systems.

MET-1037 INDUSTRIAL ENGINEERING II
This course builds on the Industrial Engineering I course specifically in the areas of systematic planning and managing of industrial facilities, also including systematic material handling analysis.

MET-1038 ADVANCED MANUFACTURING II
A continuation of AMP I, where concentration will be placed on plastics processes, including mold design and production. The lab environment will be mainly tutorial in nature, and "small group" projects will encourage the involvement in a variety of processes. CNC machine programming and part production will predominate the labs.

MET-1039 PRODUCTION PLANNING AND CONTROL
After an introduction, covering the intent and function of production planning and control, topics including types of production, production control procedures, make or buy, scheduling and loading, capacity planning will be covered. Current areas such as "MRP", "CIM", and "JIT" will be presented in theory and applied
Computer programming will be used in the lab environment to reinforce the theory concepts.

**MET-1040 THERMODYNAMICS**
This subject covers the theory of properties of thermodynamics, types of energy, steam and gas tables, laws of thermodynamics, the ideal gas, engine cycles, and solar radiation.

**MET-1041 INSTRUMENTATION I**
This course introduces the student to the concepts of automatic control and the elements/components used to implement these systems. Emphasis is placed upon the methods and devices used for data/signal gathering and control of the various mechanical parameters.

**MET-1042 AIR CONDITIONING**
This subject will present the basic theory of air psychrometry and heat flow which are necessary to assure the various properties and quantities of air for human comfort. It will provide the groundwork for future work in areas such as selection and control of air conditioning systems, and energy management.

**MET-1043 ELECTRICAL SYSTEMS**
The material presented introduces the concepts involved in the characterization, design, testing and troubleshooting of electrical systems used in heating, ventilating, air conditioning, hydraulic and pneumatic systems. This discussion would include electrical/electronic actuators, controllers in conjunction with appropriate sensors and I/O devices.

**MET-1044 INSTRUMENTATION II**
Logic circuitry is introduced to explain how process controllers and programmable logic controllers facilitate the control of entire processes. There is an introduction to the theory of measurements including such topics as measurement goals and concepts, range, span, frequency response and standards, and calibration methods. The methods by which analog signals are converted to digital form, processed and then converted back to the analog control signal leads to a final discussion of operator interface, data gathering methods and process control digital computers.

**MET-1045 AIR CONDITIONING SYSTEMS**
This course will present the basic thermodynamics of the refrigeration cycle and describe various refrigeration systems and components. It will build upon previous psychometric chart analysis, cover the calculations of air distribution and conclude by studying the attributes of various air conditioning systems.

**MET-1046 ENERGY MANAGEMENT**
The need for energy conservation and energy management concepts are introduced. Identifications of the methods used to conduct energy management programs are presented along with definitions of energy efficiency and the engineering aspects of energy management such as basic thermodynamics, heat transfer and fluid mechanics. The course concludes with the programming and monitoring of a supervisory system employed to implement an energy management and monitoring system.

**MET-1047 NOISE, VIBRATION & BALANCING**
The basic theory of sound and vibration will be introduced so as to show the effects of this form of energy on people and the environment. Problems will be solved using general principles of sound and vibration control. The balancing of rotating parts will be covered with emphasis on problem solving.

**MET-1048 SUPERVISORY MANAGEMENT**
Students will learn how to: organize and delegate work; make sound decisions; improve communication skills; hire and motivate employees; appraise employee performance; handle conflicts, discipline problems and grievances; counsel employees; provide leadership to the work group; and deal with organizational ethics and politics.

**MET-1049 ADVANCED CAD**
Students will extend their solids-modelling skills from the earlier CAD course to include constructing complex multi-part assemblies and bills of materials. Solids models will be used for other engineering purposes such as finite element analysis (stress, vibration and thermal analyses) and CNC tool path generation. Instruction will be on intergraph and mazak systems.

**MET-1050 TECHNICAL REPORT PLANNING**
Students will determine the purpose, scope and detailed schedule for their individual Trimester VI technical report project. Final output will be a written and an oral project definition.
PURPOSE
To develop the knowledge and skills required to examine and analyze body fluid specimens using various chemical, microscopic and bacteriological tests.

COURSE
Medical Laboratory Technology, a 22-month course with a September entry date, is designed to train students to work in medical laboratories or clinics. The program comprises 10 months at the college where both academic and practical subjects are emphasized, followed by 12 months in an affiliated hospital to supplement theory and develop practical skills.

ENTRANCE REQUIREMENTS
A - 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation) with English 300 or 301, Mathematics 300, Chemistry 300, and one of Biology 300 or 301 or Physics 300.* Effective 1993, Biology 300 will be a requirement. The college recommends that prospective students also obtain a standing in Physics 300;

*Preparation at the 300 level in all subject areas is preferred. Biology 300 is strongly recommended.

or

- Adult Basic Education Pre-Technology (Adult 12) program completion*;

and

B - completion of hospital training preference and applicant information sheets. The necessary forms will be sent to applicants once an application and supporting education documents are received;

and

C - attendance at an orientation and interview conducted by the hospital training centre;

and

D - submission of immunization records after notification of acceptance is received.

Mature Student Admission.* Mature students may submit the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. 12 in lieu of 20 credits; however, they must have specific credits in mathematics, English, chemistry and one other science, as outlined in (A) above. Mature students must also meet entrance requirements (B) through (D) and be 20 years of age on or before September 30 in the year of registration. This is a special selection course. The Selection Committee(s) will interview applicants who have completed the preliminary requirements and will select students on the basis of academic preparation, maturity, motivation, and potential to work as part of a health care team.

* Applicants are advised that Selection Committees may give preference to candidates possessing 20 high school credits (with standing in 300 level subjects) or post-high-school science preparation.

EMPLOYMENT POTENTIAL
Upon successful completion of the course, and with the hospital's recommendation, the graduate is eligible to write the Canadian Society of Laboratory Technologists (C.S.L.T.) national examinations which lead to a certificate as a Registered Medical Laboratory Technologist (R.T.), a nationally-recognized certification. Successful completion of these exams will qualify the graduate for membership in the C.S.L.T. Graduates have found employment in hospital laboratories, medical clinics, research agencies and in veterinary and pharmaceutical laboratories aiding the medical practitioner in the diagnosis and subsequent treatment of the patient.

COURSE OUTLINE
Term 1
H03-L101 Anatomical Structure & Function
H03-L107 Introductory Chemistry
H03-L109 Microscopy
H03-L115 Applied Laboratory Mathematics
H03-L116 General Knowledge
H03-L117 Spectrophotometry

Term 2
H03-L201 Anatomical Structure & Function
H03-L202 Clinical Microbiology
H03-L203 Clinical Chemistry
H03-L204 Hematology
H03-L205 Histotechnology
H03-L206 Immunohematology
H03-L222 Clinical Microbiology Laboratory 202
H03-L223 Clinical Chemistry Laboratory 203
H03-L224 Hematology Laboratory 204
H03-L225 Histotechnology Laboratory 205
H03-L226 Immunohematology Laboratory 206
H03-L230 Immunology

Term 3
H03-L302 Clinical Microbiology
H03-L303 Clinical Chemistry
H03-L304 Hematology
H03-L305 Histotechnology
H03-L306 Immunohematology
H03-L320 Computers
H03-L322 Clinical Microbiology Laboratory 302
H03-L323 Clinical Chemistry Laboratory 303
H03-L324 Hematology Laboratory 304
H03-L325 Histotechnology Laboratory 305
H03-L326 Immunohematology Laboratory 306

SUBJECT DESCRIPTIONS
H03-L101 ANATOMICAL STRUCTURE & FUNCTION
The subject entails the basic knowledge of human anatomy and physiology; beginning with the cell, its structure, function and division. The primary tissues are examined as to structure and location leading to an indepth study of the body systems. In the study of systems, gross and micro anatomical structures and the basic physiology and pathology are examined. The following systems are included—skeletal, muscle, cardiovascular, digestive, excretory, endocrine, respiratory, and reproductive.
control and automation. The theoretical section outlines metabolism and catabolism, identifies the blood and urine components under test, and correlates abnormal values with various disease conditions.

H03-L204 HEMATOLOGY
Hematology is a branch of medicine that deals with the study of blood. This subject deals with origin, development, and nomenclature of blood and marrow cells, and the manner in which these cells are affected by disease, such as in anemias and leukemias. Prevention of spontaneous bleeding and control of traumatic hemorrhage are studies under hemostasis.

H03-L205 HISTOTECHNOLOGY
An introduction to microanatomy and methods of preparation of tissue for histological examination, protein structure, tissue fixation, dehydration, clearing, impregnation, and tissue blocking are covered. An in-depth examination of the theory of staining with particular reference to fourteen histological stains.

H03-L206 IMMUNOHematology
A subject in transfusion science in terms of basic immunology, inheritance, and synthesis of blood group systems and the activity of the associated antibodies, principles, practices, and quality assurance measures utilized in the safe preparation of blood and blood products. Applicable national standards and regulations will be cited.

H03-L222 CLINICAL MICROBIOLOGY LABORATORY 202
This subject is the laboratory training for H03-L202 Clinical Microbiology.

H03-L223 CLINICAL CHEMISTRY LABORATORY 203
This subject is the laboratory training for H03-L203 Clinical Chemistry.

H03-L224 HEMATOLOGY LABORATORY 204
This subject is the laboratory training for H03-L204 Hematology.

H03-L225 HISTOTECHNOLOGY LABORATORY 205
This subject is the laboratory training for H03-L205 Histotechnology. Credit is reflected in Term 3.

H03-L226 IMMUNOHematology LABORATORY 206
This subject is the laboratory training for H03-L206 Immunohematology.

H03-L230 IMMUNOLOGY
A basic subject in Immunology which is a prerequisite for Immunohematology. Mechanism of the immune response, physiology, and function of the T&B lymphocytes and the interaction for an immune response are described. The structure and function of the immunoglobulins and the principles of antigen-antibody detection are covered. Reference is also made to the mechanisms of tissue damage as a result of an immune response, immune deficiencies, and hypersensitivity reactions.

H03-L302 CLINICAL MICROBIOLOGY
This is a continuation of H03-L202.
H03-L303 CLINICAL CHEMISTRY
This is a continuation of H03-L303.

H03-L304 HEMATOLOGY
This is a continuation of H03-L204.

H03-L305 HISTOTECHNOLOGY
This is a continuation of H03-L205.

H03-L306 IMMUNOHEMATOLOGY
This is a continuation of H03-L206.

H03-L320 COMPUTERS
This subject is designed to provide the student with an introduction to computer awareness. Each student shall have her or his own IBM PC on which to learn basic word processing, database, and the use of spreadsheets.

H03-L322 CLINICAL MICROBIOLOGY LABORATORY 302
This subject is laboratory training for H03-L302 Clinical Microbiology.

H03-L323 CLINICAL CHEMISTRY LABORATORY 303
This subject is laboratory training for H03-L303 Clinical Chemistry.

H03-L324 HEMATOLOGY LABORATORY 304
This subject is laboratory training for H03-L304 Hematology.

H03-L325 HISTOTECHNOLOGY LABORATORY 305
This subject is laboratory training for H03-L305 Histotechnology.

H03-L326 IMMUNOHEMATOLOGY LABORATORY 306
This subject is laboratory training for H03-L306 Immunohematology.
MEDICAL RADIOLOGICAL DIAGNOSTIC TECHNOLOGY

PURPOSE
To develop proficiency in the management of patients and the safe operation and manipulation of x-ray equipment.

COURSE
Medical Radiological Diagnostic Technology is a two-year diploma course with a September entry date. The course is designed to provide the academic foundation and supervised practical experience to develop the required skills for taking x-rays of diseased or injured areas of the human body. Training takes place at both Red River Community College and the training hospital that has accepted the student.

ENTRANCE REQUIREMENTS
A - 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation) with English 300, Mathematics 300 and two of Physics 300, Chemistry 300, and Biology 300. (It is strongly recommended that Physics 300 be one of the two sciences.)

Please note that the training hospitals will expect applicants to have the above credits effective for the September 1991 intake.

or

- Adult Basic Education Pre-Technology (Adult 12) program completion;

B - satisfactory reading proficiency, as measured by a reading test administered by the college;

and

C - completion of a hospital application form, training preference sheet, and short autobiography. Details on this requirement will be sent to the applicant once an application form and supporting education documents are received;

and

D - attendance at an orientation and interview conducted by the hospital training centre;

and

E - submission of Immunization records after notice of acceptance is received.

Mature Student Admission. Mature students may submit the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits; however, they must have specific credits in mathematics, English, and science(s) at the 300 level, as outlined in (A) above. Mature students must also meet entrance requirements (B), (C), (D) and (E) be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

This is a special selection course. When the applicant has met entrance requirements (A) and (B) above, the application will be forwarded to the hospital training centre for consideration. The Selection Committee will interview applicants who have completed the preliminary requirements and will select students on the basis of academic preparation, maturity, motivation, and potential to work as part of a health care team.

Because this special selection course has a cut-off date, applications should be submitted as early as possible. Please contact the Admissions Office at 632 2327 to confirm the exact cut-off date.

EMPLOYMENT POTENTIAL
After successful completion of training, and with the hospital's recommendation, the graduate will be eligible to write examinations that lead to a diploma as a Registered Radiological Technologist R.T. (R). and qualification for membership in the Canadian Association of Medical Radiation Technologists.

Graduates are employed in hospitals and clinical x-ray departments, in laboratories, and in commercial chemical companies. Some graduates are working in related areas of teaching and research, and others are employed as technical advisors or representatives for x-ray equipment and supply manufacturers.

As this course is nationally accredited, Canadian certification as a R.T. (R) is recognized across Canada and in Australia, Great Britain, Holland and Switzerland.

COURSE OUTLINE
Term 1
H04-X102 Radiographic Positioning
H04-X103 Physics of Radiographic Imaging
H04-X104 Radiation Protection
H04-X105 Apparatus & Accessory Equipment
H04-X106 Principles of Radiographic Exposure & Imaging
H04-X107 Patient Care & Interpersonal Skills
H11-N120 Human Anatomy & Physiology

Term 2
H04-X202 Radiographic Positioning
H04-X205 Apparatus & Accessory Equipment
H04-X206 Principles of Radiographic Exposure & Imaging
H04-X207 Patient Care & Interpersonal Skills
H04-X208 Radiobiology
H04-X210 Physics and Protection
H11-N220 Human Anatomy & Physiology

SUBJECT DESCRIPTIONS
H04-X102 RADIOGRAPHIC POSITIONING
Term 1 - Radiographic positioning will involve review of anatomical structures and topographical landmarks. This introduction phase will incorporate interrelationship with staff and patients of all ages, importance of ethical code, patient's history, handling of septic cases and fractures and organization of material necessary for radiographic procedures. Detailed description of radiographic procedure will be given to upper and lower extremities and thorax. Practicum will be performed as 1) laboratory exercise, and 2) mastery testing. Basic pathyology will also be included.

H04-X103 PHYSICS OF RADIOGRAPHIC IMAGING
This subject will deal with basic physics and radiation physics as they apply to diagnostic x-ray and radiotherapy. Topics will include structure of matter, electrostatics, electric current, magnetism, electromagnetism, AC, motors generators, electronics, optics, electromagnetic radiation, X-ray production, attenuation, processes and instruments of radiation detection, ultrasound, physics of computer tomography.

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H04-X104 RADIATION PROTECTION
This subject will introduce the student to the basic concepts of radiation protection. The student will gain an appreciation of the philosophy underlying protection practices and regulations.

H04-X105 APPARATUS AND ACCESSORY EQUIPMENT
This subject will familiarize the student with some of the basic equipment required and used in radiography. The student will learn through theory and practice how to operate such equipment safely and competently.

H04-X106 PRINCIPLES OF RADIOGRAPHIC EXPOSURE & IMAGING

H04-X107 PATIENT CARE & INTERPERSONAL SKILLS

H04-X202 RADIOGRAPHIC POSITIONING
Term II. Review of anatomical structures and topographical landmarks of the skull. Detailed description of radiographic positioning of skull a) cranial, and b) facial. This is the most complicated section of this subject and requires intensive detailing. Special procedures will be outlined and described. As in Term I, practicum will be performed as 1) laboratory exercise-skeletal radiography, and 2) mastery testing by student role-play and peer analysis. Basic pathology will also be included.

H04-X205 APPARATUS AND ACCESSORY EQUIPMENT
This subject will be a follow up to Term I. It will include specialized equipment and accessories used. Topics covered will be fluoroscopy, special X-ray tubes, computed tomography, automatic film changers, injector, ultrasound, digital radiography, and nuclear magnetic resonance. Also covered will be quality assurance of equipment.

H04-X206 PRINCIPLES OF RADIOGRAPHIC EXPOSURE & IMAGING

H04-X207 PATIENT CARE & INTERPERSONAL SKILLS
Patient environment. Ethical responsibility. Legal documents. Litigation. Types of communication and conditions affecting communication. Awareness of development levels: vital signs, sterilization, isolation technique, enema. Assisting with I.V. therapy, oxygen therapy, suction, trauma patients, critically ill and terminal patients, anesthetized and unconscious patients. Laxatives, sedatives, anesthetics, analgesics, narcotics, anticoagulants, contrast media, emergency and resuscitation drugs, gastric stimulants and depressants. Drug administration, patient assessment and handling specific types of patients.

H04-X208 RADIOPHYSICS
This subject will develop an understanding of the biological effects of radiation so that minimum exposure to patients and personnel is realized. Topics covered will include somatic, genetic effects, acute and delayed effects, and an awareness of risks to patients and personnel.

H04-X210 PHYSICS AND PROTECTION
This subject will build on the Term 1 subjects: Physics of Radiographic Imaging and Radiation Protection. The subject will allow the student to apply the principles of physics to radiology. Also, the student will understand advanced principles of radiation practices and regulations.

H11-N120 HUMAN ANATOMY AND PHYSIOLOGY
This subject is designed to provide an introductory study of the structure and pertinent aspects of function of the principal organ systems. The importance of learning and using correct terminology is stressed. A unit on basic nutrition provides information which emphasizes nutritional principles students can apply to their lives. Laboratory exercises are provided to support and enrich the theoretical content. Active learning is required to perform dissections and complete the lab reports. This subject is taken by students enrolled in several health-related disciplines.

H11-N220 HUMAN ANATOMY AND PHYSIOLOGY
This subject is designed as a sequel to Human Anatomy and Physiology (H11-N120). A working knowledge of introductory anatomy and physiology is assumed. The details of anatomy and physiology are organized around unifying concepts such as interrelationships of body organ systems and homeostasis. Presentation of the material reflects hierarchical levels of complexity that contribute to the students' understanding of the body as a whole. Laboratory exercises are essential in aiding the student to apply theoretical concepts of anatomy and physiology. Clinical application is stressed throughout the subject. This subject is taken by students enrolled in several health-related disciplines. Pre-requisite: H11-N120 Human Anatomy and Physiology.
MOTOR VEHICLE BODY REPAIR

PURPOSE
To develop the skills and knowledge required to repair damaged vehicles, including all phases of autobody repair and painting.

COURSE
Motor Vehicle Body Repair is a ten-month certificate course with entry dates in September and February. The course is designed to provide a basic working knowledge of all areas of metal working and spray painting.

ENTRANCE REQUIREMENTS
- 7 high school credits (Manitoba Grade 10 or equivalent secondary school preparation) with Mathematics 100 or 101 and Science 100 or 101. English 100 or 101 is strongly recommended; or
- Adult Basic Education 7-10 program completion.

Mature Student Admission. Mature student applicants may submit other educational equivalents, including G.E.D. standing (scores on each of the five tests must be 41 or higher), In lieu of 7 credits; however, they must have successfully completed one of Mathematics 100, 101, 190, or Practical Mathematics - Elementary/Junior High Level and one of Science 100, 101 or 190. Mature students must also be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

EMPLOYMENT POTENTIAL
Many graduates have found employment as body mechanics, metal finishers, painters and body-frame specialists. Others are employed as claims adjusters, collision estimators or shop foremen.

For further information on apprenticeship and possible transfer of credit, please see the Motor Vehicle Body Repair course brochure.

COURSE OUTLINE
T01-B011 Oxy-acetylene Welding & Cutting-Theory
T01-B012 Oxy-acetylene Welding & Cutting-Practical
T01-B013 Hand Tools, Power Grinders, Vibrators-Theory
T01-B014 Hand Tools, Power Grinders, Vibrators-Practical
T01-B015 Basic Metal Working & Soldering-Theory
T01-B016 Basic Metal Working & Soldering-Practical
T01-B017 Hydraulic Power Equipment & Autobody Alignment-Theory
T01-B018 Hydraulic Power Equipment & Autobody Alignment-Practical
T01-B051 Hardware, Trim & Glass-Theory
T01-B052 Hardware, Trim & Glass-Practical
T01-B053 Alignment of Frames & Bodies-Theory
T01-B054 Alignment of Frames & Bodies-Practical
T01-B056 Repairing Damaged Vehicles
T01-B057 Spray Painting Equipment-Theory
T01-B058 Spray Painting Equipment-Practical
T01-B059 Paint Products & Application-Theory
T01-B060 Paint Products & Application-Practical
T01-B062 Refinishing Vehicles
T01-B063 Collision Damage Estimating
T04-M510 Related Machine Shop
T13-M509 Motor Vehicle Body Repairer P/E Math
T13-S509 Motor Vehicle Body Repairer P/E Science
T14-C504 Communication

SUBJECT DESCRIPTIONS
T01-B011 OXY-ACETYLENE WELDING & CUTTING-THEORY
Equipment, fusion welding, brazing, cutting, practical, safety.

T01-B012 OXY-ACETYLENE WELDING & CUTTING-PRAC'TICAL
Equipment, fusion welding, brazing, cutting, practical, safety.

T01-B013 HAND TOOLS, POWER GRINDERS, VIBRATORS-THEORY
Glossary of terms, tools and their uses.

T01-B014 HAND TOOLS, POWER GRINDERS, VIBRATORS-PRAC'TICAL
Practical use of hand tools, power grinders, vibrators, sanding discs, care and maintenance of tools; methods of using types of discs, production paper, wet and dry sandpaper.

T01-B015 BASIC METAL WORKING & SOLDERING-THEORY
Methods of: roughing out, hammering on and off dolly, forging, shrinking, picking and filing, patching, shaping of flanges, crowns, flat metal panels and body construction, tinning and torch soldering.

T01-B016 BASIC METAL WORKING & SOLDERING-PRAC'TICAL
Practical application of: roughing out, hammering on and off dolly, forging and shrinking, picking and filing, patching, shaping of flanges, crowns, flat metal panels, body construction, tinning and torch soldering.

T01-B017 HYDRAULIC POWER EQUIPMENT & AUTOBODY ALIGNMENT-THEORY
Method of using hydraulic equipment and attachments. Method of alignment of bodies, doors, fenders and component parts.

T01-B018 HYDRAULIC POWER EQUIPMENT & AUTOBODY ALIGNMENT-PRAC'TICAL
Using hydraulic equipment and attachments for alignment of bodies, doors, fenders and component parts.

T01-B051 HARDWARE, TRIM & GLASS-THEORY
Methods of removal and installation of door assemblies, windows, headlinings, upholstery, mouldings, seats, etc.

T01-B052 HARDWARE TRIM & GLASS-PRAC'TICAL
Removing and replacing door assemblies, windows, headlinings, upholstery, mouldings, seats, etc.

T01-B053 ALIGNMENT OF FRAMES AND BODIES-THEORY
Methods of aligning frames, doors, trunk lids, hoods, bumpers, moulding, etc.

T01-B054 ALIGNMENT OF FRAMES AND BODIES-PRAC'TICAL
Use of special equipment to align frames, doors, trunk lids, hoods,
bumpers and mouldings, etc.

**T01-B056 REPAIRING DAMAGED VEHICLES**
Actual repair of body damage on customers' cars.

**T01-B057 SPRAY PAINTING EQUIPMENT-THEORY**
Painting equipment, guns, transformers, hoses, compressors, booths, and infra-red. Methods of using equipment and adjustment.

**T01-B058 SPRAY PAINTING EQUIPMENT-PRACTICAL**
Painting equipment guns, transformers, hoses, compressors, booths, and infra-red. Use of equipment and adjustments.

**T01-B059 PAINT PRODUCTS & APPLICATION-THEORY**
Primers, lacquers, enamels, acrylic lacquers, thinners, reducers, etc. Methods of using these products.

**T01-B060 PAINT PRODUCTS & APPLICATION-PRACTICAL**
Application and use of primers, lacquers, enamels, acrylic lacquers, thinners, reducers, etc.

**T01-B062 REFINISHING VEHICLES**
Cleaning, sanding, masking, priming, glazing and actual refinishing of customers' cars. Pre-delivery cleaning of cars after painting.

**T01-B063 COLLISION DAMAGE ESTIMATING**
Flat rate, time allowance, forms and methods for filling, percentages and sublets.

**T04-M510 RELATED MACHINE SHOP**
Basic metals, metal layout and measuring tools, metal working equipment and safety. One week (25 hours).

**T13-M509 MOTOR VEHICLE BODY REPAIRER P/E MATH**
Whole numbers, fractions, decimals, equations, percent and ratio and proportion.

**T13-S509 MOTOR VEHICLE BODY REPAIRER P/E SCIENCE**
Heat and its effect on metals, corrosion, abrasive materials, bands, grinding wheels, color and the spectrum, pigments and pigment mixing, paint and lacquer, basic DC electricity and electrical wiring, cleaning fluids.

**T14-CS04 COMMUNICATION**
A self-paced practical course that develops communications skills from four viewpoints: job-seeker, employee, junior supervisor, small business owner. The course is tailored to fit the needs of individual students and the requirements of course Advisory Boards.
PURPOSE
To develop the knowledge and skills required to disassemble, inspect, machine, calibrate and reassemble motor vehicle units and components.

 COURSE
Motor Vehicle Mechanic is a ten-month certificate course with two entry dates: September and February. The course is designed to develop an understanding of the basic purpose, construction, operation and service of component parts and assemblies of an automobile.

ENTRANCE REQUIREMENTS
- 7 high school credits (Manitoba Grade 10 or equivalent secondary school preparation) with Mathematics 100 or 101 and Science 100 or 101. English 100 or 101 is strongly recommended; or
- Adult Basic Education 7-10 Program completion.

Mature Student Admission. Mature student applicants may submit other educational equivalents, including G.E.D. standing (score on each of the five tests must be 41 or higher), in lieu of 7 credits; however, they must have successfully completed one of Mathematics 100, 101, 190, or Practical Mathematics - Elementary/Junior High Level and one of Science 100, 101 or 190. Mature students must also be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

Please note that reference books are essential components of the work procedures for this course and require above-average reading vocabulary and comprehension. Applicants are strongly encouraged to take Reading Comprehension and Study Skills through the college's Extension Division prior to entering skill training.

EMPLOYMENT POTENTIAL
Graduates of this course have found employment in service stations, dealerships, large corporations, farming communities and allied industries where they work in service/repair, sales or parts distribution. Graduates who have entered apprenticeship programs, and reached journeyman level, work as journeyman mechanics, shop foremen, service managers, parts managers, machine operators and service station operators.

For further information on apprenticeship and possible transfer of credit, please see the Motor Vehicle Mechanic course brochure.

SUBJECT DESCRIPTIONS
T01-T011 SHOP PRACTICE & HAND TOOLS, THEORY
Theory of: use of hand tools measuring instruments, use of special equipment hoist, jacks and stands, safety chassis, lubrication, and servicing. Use of special lubrication, light servicing, tire repair.

T01-T012 SHOP PRACTICE & HAND TOOLS, PRACTICAL
Use of hand tools, measuring instruments, use of special equipment hoists, jacks and stands, safety, chassis lubrication, and servicing, using special lubricants, light servicing, tire repair.

T01-T013 ENGINE I, THEORY
Fundamental operating, construction and design features and characteristics of two stroke and four stroke cycle internal combustion engines. Fundamental services, maintenance and overhaul methods and procedures, precision measuring, diagnosis and correction of automotive engine problems.

T01-T014 ENGINE II, PRACTICAL
Disassembly, cleaning, precision measuring, inspection, machining, fitting and reassembly of internal combustion engines to manufacturer's specifications.

T01-T015 ELECTRICAL SYSTEMS, THEORY
Wiring diagrams and circuits, generators, regulators, cranking motors, solenoids, and switches, gauges, ignition systems, etc.

T01-T016 ELECTRICAL SYSTEMS, PRACTICAL
Disassembly, testing, repairing, and reassembly of electrical components, attaching and use of testing meters and electrical diagnostic equipment.

T01-T017 FUEL SYSTEMS, THEORY
Carburetors, fuel pumps, filters, gas lines, fuel tank ventilation, fuel injection systems, exhaust emission controls and air cleaners.
TO1-T018 FUEL SYSTEMS, PRACTICAL
Disassembly, cleaning, assembly and calibration of component units. Use of diagnostic test equipment and meters.

TO1-T019 TUNE UP, THEORY
Tune-up machines, compression and vacuum gauges, ignition circuits, carburetor adjustments, gas analysis, engine performance, testing and operation.

TO1-T020 TUNE UP, PRACTICAL
Use of tune-up test equipment for diagnosing and calibrating running engines.

TO1-T021 STD TRANSMISSIONS, THEORY
Clutch and pressure plate assemblies, three and four speed synchronesh transmissions, simple planetary gears and overdrive, construction, operating and service fundamentals.

TO1-T022 STD TRANSMISSIONS, PRACTICAL
Disassembly, inspection of parts and reassembly of components to manufacturer’s specifications.

TO1-T023 REAR AXLES & DRIVELINES, THEORY
Gears and bearings, tooth patterns, universal joints, positrack and limited slip differentials, transaxles, axle shafts, etc.

TO1-T024 REAR AXLES & DRIVELINES, PRACTICAL
Disassembly, inspection, testing and reassembly of components to manufacturer’s specifications.

TO1-T025 BRAKES-HYDRAULICS, THEORY
Hydraulic principles, singles and dual master cylinders, brake lines and couplings, wheel cylinders, drum brakes and machining drums, disc brakes and machining rotors, power units, controls and switches, bearings, seals and brake fluid.

TO1-T026 BRAKES-HYDRAULICS, PRACTICAL
Disassembly, inspection, honing and machining, assembly and bleeding of hydraulic system. Testing and repair of lower units and adjustment of cable brake systems.

TO1-T027 STEERING & SUSPENSION, THEORY
Springs, shocks, wheel balance, steering geometry, steering gears, steering alignment.

TO1-T028 STEERING & SUSPENSION, PRACTICAL
Removal and installation procedures on suspension components, steering gears, power assist units and pumps. Calibrating by use of special machines so suspension and wheels are in proper relation to frame of vehicle.

TO1-T029 AUTOMATIC TRANSMISSIONS, THEORY
Fluid couplings and torque converters, compound planetary gears, clutches, bands, servos and hydraulic system, construction, operating and service fundamentals.

TO1-T030 AUTOMATIC TRANSMISSIONS, PRACTICAL
Disassembly, inspection, reassembly and adjusting assemblies, subassemblies and component units. Pressure testing with air and hydraulic fluid.

TO1-T054 ENGINES-LIVE SHOP
This includes engine removal, disassembly, inspection, cleaning, and measuring of all components to determine their serviceability. Precision fitting of pistons, pins, rings, bearings, and shafts is also covered as well as reconditioning of cylinder heads and valve mechanisms. Complete engine reassembly, installation, adjustment and braking is also included. All work is performed on vehicles in daily use.

TO1-T056 ELECTRICAL-REPAIRS & ADJUSTING-LIVE SHOP
Diagnosing wiring circuit problems, repairing and calibrating electrical components, such as instruments, starter motors, solenoids, relays, A/C generators and regulators, etc.

TO1-T058 FUEL SYSTEMS-REPAIRS & ADJUSTING-LIVE SHOP
Repairs to fuel system components such as tank, filters, pumps and air cleaners. Diagnosis of carburetor circuits, analysis of air fuel ratios, repairs and calibration of carburetors and fuel injection systems.

TO1-T060 TUNE-UP-LIVE SHOP
Diagnosing and testing of all engine, fuel, ignition and electrical systems. Calibrating to specifications necessary to produce maximum engine efficiency.

TO1-T062 TRANSMISSION OVERHAUL STANDARD-LIVE SHOP
Proper procedures will be emphasized for the removal, disassembly, cleaning, inspection and repair of clutches and three-speed and four-speed synchro-mesh transmissions. Problem diagnosis and adjustment of these units will also be included. All work will be performed on units in daily use.

TO1-T064 REAR AXLES & DRIVELINES-LIVE SHOP
This unit deals with the construction, operation and service procedures for the various types of rear axle assemblies and their related parts. This housing, (integral, removable carrier, and independent), crown, and pinion sets, (spur level, spiral level, hypoid, hunting, non-hunting, partial non-hunting, straddle and over hung mounted) differential units (2 & 4 pinion design conventional and spec 1 traction posil-traction, equal-lock, limited slip non-spin, powerlock, and sure-grip design) bearings (friction and antifriction loads), axle mountings (dead and live-full floating, 3/4 floating and semi floating), seals (dynamic and static), drive liner (torque tube, hatch-kln) universal joints (ball and trunnion, cross and roller, constant velocity).

TO1-T066 BRAKES-HYDRAULIC & DISC POWER-LIVE SHOP
The concerns are the construction, operation and service features of the braking systems presently in use today (drum & disc). This includes the effects of weight, speed, heat, friction, and hydraulic principles. The student also receives instruction and practice in matching, drums and rotors, cam grinding, shoes, servicing the hydraulic units (master cylinder, wheel cylinder lines and testing metering and proportioning valves), disassembly and assembly and adjustment of the various wheel brake units, parking brake...
service (drive line and rear wheel), and the wheel bearing service.

T01-T068 STEERING REPAIRS-LIVE SHOP
This course is intended to give the student an insight into the construction, operation, and service features of present suspension systems (mono-beam, twin beam, long and short arm types). The student receives instruction on inspection and replacement, height adjustments, alignment machine calibration and use. Practical projects are provided for the student to apply his knowledge of suspension service, alignment of the front wheels and use of a wheel balance.

T01-T070 AUTOMATIC TRANS REPAIRS-LIVE SHOP
This will cover the removal, disassembly, cleaning, inspection and measuring of all transmission/transaxles parts to determine their serviceability. Also included is the correct procedure for reassembly, adjusting, installation, and testing of automatic transmission as well as problem diagnosis and trouble shooting.

T04-G510 RELATED GAS WELDING
Safety in setting up and using oxy-acetylene equipment. Identifying and setting torch for carburizing, neutralizing, and oxidizing flame. Introduction to fusion welding, puddling and bead-running on sheet metal. Identification selecting weld rods and fusing filler rod to base metal. Welding butt joints, lap joints, fillet welds and corner welds on sheet steel in the flat horizontal, vertical and overhead. Performing the same joints on sheet steel using bronze brazing rod. Safely operating flame-cutting equipment cutting various thickness of steel plate.

T04-M510 RELATED MACHINE SHOP
Basic metals, metal layout and measuring tools, metal working equipment and safety. One week (25 hours).

T13-M508 MOTOR VEHICLE MECHANIC TECHNICIAN P/E MATH
Individual progress math. Program utilizing Diagnostic Test material to identify remedial requirements for each student. Students are required to complete basic assignments on each of following topics: four operations with whole numbers, fractions, decimals, elementary algebra using one unknown, percent, ratio and proportion, denominate numbers, metric measures and calculations, exponents, scientific notation/significant digits, square/ square roots, Pythagoras theorem, perimeter/circumferences, areas, various figures, volume/capacity of commonly-used shapes of containers.

T13-S508 POWER MECHANICS SCIENCE
Electricity and magnetism, atomic theory, static electricity, condensers, circuits, batteries, transformers, DM motors, DC and AC generators, hydraulics, pressure Pascal's principle, brakes and brake fluids, kinetic energy, centripetal force, matter, properties of solids, liquids, and gases. Heat — temperature scales, expansion due to heat, heat transfer; machines — simple machines, work power, gear trains, gear ratios.

T14-C504 COMMUNICATION
A self-paced practical course that develops communications skills from four viewpoints: job-seeker, employee, junior supervisor, small business owner. The course is tailored to fit the needs of individual students and the requirements of course Advisory Boards.
PURPOSE
To develop the knowledge and skills required to disassemble, inspect, machine, calibrate and reassemble motor vehicle units and components.

COURSE
Motor Vehicle Mechanic Co-op is a ten-month certificate course with two entry dates: September and October. The course is designed to develop an understanding of the basic purpose, construction, operation and service of component parts and assemblies of an automobile.

The course is a cooperative education program that aims at an effective blend of classroom study, practical lab training and off-campus work experience in course-related Industry. It goes beyond the traditional supplementary on-the-job training in that the student spends alternate four-week terms in the work force.

ENTRANCE REQUIREMENTS
- 7 high school credits (Manitoba Grade 10 or equivalent secondary school preparation) with Mathematics 100 or 101 and Science 100 or 101. English 100 or 101 is strongly recommended; or
- Adult Basic Education 7-10 Program completion.

Mature Student Admission. Mature student applicants may submit other educational equivalents, including G.E.D. standing (scores on each of the five tests must be 41 or higher), in lieu of 7 credits; however, they must have successfully completed one of Mathematics 100, 101, 190, or Practical Mathematics-Elementary/Junior High Level and one of Science 100, 101 or 190. Mature students must also be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

Please note that reference books are essential components of the work procedures for this course and require above-average reading vocabulary and comprehension. Applicants are strongly encouraged to take Reading Comprehension and Study Skills through the college's Extension Division prior to entering skill training.

EMPLOYMENT POTENTIAL
Graduates of this course have found employment in service stations, dealerships, large corporations, farming communities and allied industries where they work in service/repair, sales or parts distribution. Graduates who have entered apprenticeship programs, and reached journeyman level, work as journeyman mechanics, shop foremen, service managers, parts managers, machine operators and service station operators.

For further information on apprenticeship and possible transfer of credit, please see the Motor Vehicle Mechanic Co-op course brochure.

COURSE OUTLINE
T01-C011 Shop Routine, Theory in college
T01-C012 Shop Routine, Practice in college
T01-C013 Shop Routine, Practice in industry
T01-C014 Brakes, Suspension, Steering, & Alignment, Theory in college
T01-C015 Brakes, Suspension, Steering, & Alignment, Practice in college
T01-C016 Brakes, Suspension, Steering & Alignment, Practice in industry
T01-C017 Electrical & Induction Systems, Theory in college
T01-C018 Electrical & Induction Systems, Practice in college
T01-C019 Electrical & Induction Systems, Practice in industry
T01-C020 Transmissions & Drives, Theory in college
T01-C021 Transmissions & Drives, Practice in college
T01-C022 Transmissions & Drives, Practice in industry
T01-C023 Engines, Theory in college
T01-C024 Engines, Practice in college
T01-C025 Engines, Practice in Industry
T04-C510 Related Gas Welding
T13-M508 Motor Vehicle Mechanic Technician P/E Math
T13-S608 Automotive Co-Op Science
T14-C504 Communication

SUBJECT DESCRIPTIONS
T01-C011 SHOP ROUTINE, THEORY IN COLLEGE
Demonstrate the ability to select and use the proper tool for each specific job. Develop skill in locating and extracting information from service manuals, drawings, schematics, and service bulletins.

T01-C012 SHOP ROUTINE, PRACTICE IN COLLEGE
Demonstrate the ability to select and use the proper tool for each specific job. Develop skill in locating and extracting information from service manuals, drawings, schematics, and service bulletins.

T01-C013 SHOP ROUTINE, PRACTICE IN INDUSTRY
Understand importance of developing safe working habits to avoid injury to self and fellow workers, and to prevent damage to equipment and customers' vehicles.

T01-C014 BRAKES, SUSPENSION, STEERING & ALIGNMENT, THEORY IN COLLEGE
Understand the design and operation of hydraulic service brakes and gain knowledge to carry out quality repair of various systems. Understand the design, operation, and repair of suspension and steering gear to provide safe, comfortable handling of a vehicle.

T01-C015 BRAKES, SUSPENSION, STEERING AND ALIGNMENT, PRACTICE IN COLLEGE
Understand the design and operation of hydraulic service brakes and gain knowledge to carry out quality repair of various systems. Understand the design, operation, and repair of suspension and steering gear to provide safe, comfortable handling of a vehicle.

T01-C016 BRAKES, SUSPENSION, STEERING AND ALIGNMENT, PRACTICE IN INDUSTRY
Demonstrate the ability to carry out repairs to brakes, steering, and suspension systems in industry.

T01-C017 ELECTRICAL AND INDUCTION SYSTEMS, THEORY IN COLLEGE
Establish a basic understanding of electricity regarding generat-
ing, regulating, usage, storage, and measuring.

T01-C018 ELECTRICAL AND INDUCTION SYSTEMS, PRACTICE IN COLLEGE
Understand electricity relating to charging, starting, and ignition circuits.

T01-C019 ELECTRICAL AND INDUCTION SYSTEMS, PRACTICE IN INDUSTRY
Demonstrate ability to effect electrical repair to customers’ cars in industry.

T01-C020 TRANSMISSIONS AND DRIVES, THEORY IN COLLEGE
Understand the construction, operation, service, repair, and diagnostic procedures relating to standard and automatic transmissions.

T01-C021 TRANSMISSIONS AND DRIVES, PRACTICE IN COLLEGE
Demonstrate ability to disassemble, inspect, adjust, and repair standard and automatic transmissions following procedures outlined in the service manual.

T01-C022 TRANSMISSIONS & DRIVES, PRACTICE IN INDUSTRY
Demonstrate ability to diagnose and repair transmissions in industry.

T01-C023 ENGINES, THEORY IN COLLEGE
Understand the principles of operation and the function and relation of component parts of the internal combustion engine. Includes classification of engines, engine terminology, components, engine lubrication and cooling.

T01-C024 ENGINES, PRACTICE IN COLLEGE
Demonstrate ability to disassemble, inspect, adjust, measure, and repair an engine.

T01-C025 ENGINES, PRACTICE IN INDUSTRY
Demonstrate ability to diagnose and repair a customer’s engine in industry.

T04-G510 RELATED GAS WELDING
Safety in setting up and using oxy-acetylene equipment. Identifying and setting torch for carburizing, neutralizing, and oxidizing flame. Introduction to fusion welding, puddling and bead-running on sheet metal. Identification selecting weld rods and fusing filler rod to base metal. Welding butt joints, lap joints, fillet welds and corner welds on sheet steel in the flat horizontal, vertical and overhead. Performing the same joints on sheet steel using bronze brazing rod. Safely operating flame-cutting equipment cutting various thickness of steel plate.

T13-M508 MOTOR VEHICLE MECHANIC TECHNICIAN P/E MATH
Individual progress math. Program utilizing Diagnostic Test material to identify remedial requirements for each student. Students are required to complete basic assignments on each of the following topics: four operations with whole numbers, fractions, decimals, elementary algebra using one unknown, percent, ratio and proportion, denominate numbers, metric measures and calculations, exponents, scientific notation/significant digits, square/square roots, Pythagoras theorem, perimeter/circumferences, areas, various figures, volume/capacity of commonly-used shapes of containers.

T13-S608 AUTOMOTIVE CO-OP SCIENCE
Basic Precision Measurement, DC Electrical Circuits, Hydraulics, Gears & Pulleys, Air Conditioning & Heat.

T14-C504 COMMUNICATION
A self-paced practical course that develops communications skills from four viewpoints: job-seeker, employee, junior supervisor, small business owner. The course is tailored to fit the needs of individual students and the requirements of the Advisory Boards.
NURSING

PURPOSE
To develop the knowledge and skills required to use the nursing process in the provision of direct nursing care to persons of all ages with commonly-occurring health interferences.

COURSE
Nursing is a two-year diploma course with a September entry date. The course is designed to prepare graduates for eligibility to write examinations for registration in the Manitoba Association of Registered Nurses (M.A.R.N.). To provide the opportunity for vertical career mobility in nursing and enable individuals to re-shape initial vocational goals, the course was designed in conjunction with the Practical Nursing course. Nursing has both theoretical and practical components and college instructors directly supervise the weekly practical experiences planned for the student.

ENTRANCE REQUIREMENTS
A - 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation) including English 300; Mathematics 300, 301, or 200; and one science at the 300 level (Chemistry 300 is strongly recommended); 
or
- successful completion of College Preparation for Nursing
The college Extension Division (evening programs) offers foundation courses in mathematics, science and writing skills. These courses are designed to provide an applicant with the academic background in the required subjects. These courses also will serve as an excellent refresher for anyone who has been out of school for several years and who is planning to attend the college. Applicants who lack several of the required subjects should consider the College Preparation for Nursing course, described in a separate brochure.

and

B - successful completion of the prescribed reading skills test at the required competency level;
and

C - good health. *Immunizations are required of all students and must commence as indicated upon notification of acceptance into the course.

Mature Student Admission. Mature student applicants may submit the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits; however, you must have specific credits in English, mathematics and science as noted in (A) above. As well, mature students must meet entrance requirements (B) and (C), and be 20 years of age or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

EMPLOYMENT POTENTIAL
Graduates enter the workforce as beginning practitioners and have found employment in hospitals, personal care homes and with other health agencies.

Students who have standing in English 300, and Chemistry 300 or Mathematics 300, and who graduate with a diploma in nursing and are registered nurses, meet the minimum entrance requirements for the Baccalaureate Program for Registered Nurses at the University of Manitoba.

COURSE OUTLINE

Year 1
B13-S106 Interpersonal Relations
F01-C003 Activity For Life
H11-N102 Introduction to Nursing
H11-N103 Nursing Practice
H11-N120 Human Anatomy & Physiology
H11-N202 Nursing
H11-N203 Nursing Practice
H11-N220 Human Anatomy & Physiology
H11-S101 Social Science
H11-S201 Social Science
H11-S301 Social Science

Year 2
B13-S201 Introduction to Sociology
B13-S302 Social & Health Problems
H11-N302 Nursing
H11-N303 Nursing Practice
H11-N311 Nursing Microbiology
H11-N402 Nursing
H11-N403 Nursing Practice
H11-N405 Trends In Health Care
H11-N406 Community Health

SUBJECT DESCRIPTIONS

B13-S106 INTERPERSONAL RELATIONS
This subject focuses upon human behavior in general, and upon human behavior as experienced in the helping professions in particular. Emphasis is placed upon individual personal growth and self-knowledge, and upon behavior of the individual in groups. Methods of learning include lectures, discussions, planned experiences and role-playing, with the major focus on experiential learning. The student is expected to take a major responsibility for his or her own learning, with the instructor acting as a facilitator.

B13-S201 INTRODUCTION TO SOCIOLOGY
This subject is concerned with the presentation of an historical, theoretical and cross-cultural perspective of society in a time of rapid social change. Special emphasis is placed upon the study of the Canadian scene, whenever possible. The student is encouraged to maintain this emphasis in the assigned term paper or project.

B13-S302 SOCIAL AND HEALTH PROBLEMS
This course is designed to broaden the student's knowledge and awareness of current trends and problems in society. Emphasis is placed upon social and health problems in Canada and the world, and upon current events and trends which are not labelled as problems, but which have some significance for society.

F01-C003 ACTIVITY FOR LIFE
The course is designed to acquaint the nurse-in-training with fitness and activity as they apply to the nurse and the patient. Students will develop a personal fitness program. They will also participate in one or two chosen activities during the term. Written and practical tests will be used in evaluating the students' understanding and ability.
H11-N102 INTRODUCTION TO NURSING
This subject is designed to introduce concepts of health as they relate to the fulfillment of human need and thereby maintain physiologic, psychic and social integrity. It illustrates the way in which some of these needs are met by the client and his significant others. The concept of adaptation is used as a basis for determining a client's position on the continuum. The subject focuses on clients of any development phase whose integrity is not disrupted and who are adapting to stimuli. The knowledge and skills presented provide a basis for nursing interventions based on the nursing process.

H11-N103 NURSING PRACTICE
This subject provides the student with the opportunity to apply the knowledge gained and to practice skills attained in INTRODUCTION TO NURSING, H11-N102.

H11-N120 HUMAN ANATOMY AND PHYSIOLOGY
This subject is designed to provide an introductory study of the structure and pertinent aspects of function of the principal organ systems. The importance of learning and using correct terminology is stressed. A unit on basic nutrition provides information which emphasizes nutritional principles students can apply to their lives. Laboratory exercises are provided to support and enrich the theoretical content. Active learning is required to perform dissections and complete the lab reports. This subject is taken by students enrolled in several health-related disciplines.

H11-N202 NURSING
This subject focuses on an understanding of the adaptation problems that affect clients of any age, whose problems or potential problems minimally disrupt his or her integrity. Provision is made for the student to enhance his or her ability to utilize the nursing process in assisting clients and their significant others to cope with adaptation problems that occur in all phases of the life cycle. It will also provide an introduction to the role and functions of the graduate practical nurse. Prerequisites: H11-N102, H11-N103.

H11-N203 NURSING PRACTICE
This subject provides the student with the opportunity to apply the knowledge gained and to practice skills attained in Nursing H11-N202. Prerequisites: H11-N102 and H11-N103.

H11-N220 HUMAN ANATOMY AND PHYSIOLOGY
This subject is designed as a sequel to Human Anatomy and Physiology (H11-N120). A working knowledge of introductory anatomy and physiology is assumed. The details of anatomy and physiology are organized around unifying concepts such as interrelationships of body organ systems and homeostasis. Presentation of the material reflects hierarchical levels of complexity that contribute to the students' understanding of the body as a whole. Laboratory exercises are essential in aiding the student to apply conceptual anatomy and physiology. Clinical application is stressed throughout the subject. This subject is taken by students enrolled in several health-related disciplines. Pre-requisite: H11-N120 Human Anatomy and Physiology.

H11-N302 NURSING
This subject focuses on the promotion of adaptation of clients of any phase of development who are experiencing commonly-occurring disruptions of integrity. The nursing process is used as a systemic method of organizing and providing care to clients and their significant others in order to facilitate adaptation. The rights and concerns of clients are emphasized as being central to the care for which the nurse is responsible.

H11-N303 NURSING PRACTICE
This subject provides the students with the opportunity to apply and become skillful in implementing the knowledge and skills obtained in Nursing H11-N302.

H11-N311 NURSING MICROBIOLOGY
The course deals with the infectious disease process and its relationship to patient care. Basic concepts in immunity, immunology, and epidemiology are considered initially. Micro-organisms are studied in terms of general classification, taxonomy, isolation, growth requirements & identification. Infectious disease is studied through a systems approach with emphasis placed on normal flora, route of entry, potential pathogens and specimen collection. The control of infectious disease is discussed in regard to disinfection, sterilization, antimicrobial drugs, immunization and hospital control programs. The aim of the course is to enhance performance of patient care, increase communication with medical professionals and provide a significant contribution to the prevention of infectious disease.

H11-N402 NURSING
This subject focuses on assessment and interpretation of adaptive and maladaptive responses that occur when clients in any development phase are confronted with crisis situations and/or medical emergencies. Ways to assist clients and their significant others to adapt in crisis situations and/or medical emergencies are discussed. The nursing process is the method used to facilitate adaptation. The moral, ethical and legal responsibilities of the graduate nurse are given further emphasis. Prerequisite: H11-N302.

H11-N403 NURSING PRACTICE
This subject provides the student with the opportunity to apply and become skillful in implementing the knowledge and skills obtained in Nursing H11-N402. Prerequisites: H11-N302 and H11-N303.

H11-N405 TRENDS IN HEALTH CARE
This subject is designed to facilitate the role transition from student to graduate nurse. It will consider systems of health care delivery in the context of current practices and future trends. It will serve as an introduction to the role and function of the organized nursing professional. The historical development of nursing will be considered in relation to current issues and trends in the delivery of health care. Prerequisites: H11-N302 and H11-N303.

H11-N406 COMMUNITY HEALTH
This subject is designed to assist the student in understanding the organization and delivery of health care in the community. It will emphasize the importance of continuity of care. The student will assess the needs of clients in their homes and communities, and may initiate activities to facilitate an optimum level of adaptation.
H11-S101 SOCIAL SCIENCE
This subject is an introductory study of general developmental psychology. It is designed for students in health care programs and, as such, is aimed at practical application of social science knowledge in the helping relationships. During the first part of the course, emphasis will be placed on fundamental principles of growth and development, development tasks, key concepts of personality, motivation, relevant aspects of emotions and methods of coping or adapting.

H11-S201 SOCIAL SCIENCE
This second part of the subject traces the development of the individual from birth to death in an ages-and-stages manner. This section begins with an examination of some key aspects of sociology which are then integrated with the development material which follows. Psycho-sociological considerations of personality development will be emphasized in an attempt to portray an accurate picture of normal human development throughout the life cycle. Each unit of instruction highlights the physical, social and psychological tasks of a particular stage of the life cycle and directs these to the health care relationship. Prerequisite: H11-S101

H11-S301 SOCIAL SCIENCE
This is a continuation of the format utilized in Part II but the section of the life span to be explored is shifted to adolescence and beyond. Adolescence, early adulthood, middle age and old age are considered in developmental terms from both physical and psychosocial perspectives.
PURPOSE
To update knowledge and skills in nursing fundamentals, needs and care of adults in health and illness, and to review current trends and issues in nursing.

COURSE
The nursing refresher courses are full-time day courses that include some evening clinical practice. Each course is organized in units and modules to facilitate individualized study and learning. Each module includes specific objectives, readings, learning activities and related clinical practice. Students progress at their own pace. The L.P.N. Refresher course is seven weeks in length and is available for practical nurses holding current licenses who wish to update their knowledge and skills and for formerly-licensed practical nurses who require updating to renew their license. The R.N. Refresher course runs for eight weeks and is suitable for formerly-registered nurses who require updating to renew their registration and for currently-registered nurses who want to update their knowledge and skills. The R.P.N. Refresher course also is eight weeks long and is available for formerly-registered psychiatric nurses who require updating to renew their registration.

ENTRANCE REQUIREMENTS
A - completion of a supplementary application form; and
B - completion of the prescribed reading skills test at the required level; and
C - C.P.R. certification at the Basic Rescuer level or higher (before the course start date); and
D - verification of nursing status, as specified below* to be submitted with the admissions application.

*LPN. Refresher: acceptable proof is a letter from the Registrar for Licensed Practical Nurses or the last license held or photostatic copy.

*R.N. Refresher: acceptable proof is a letter from the M.A.R.N. (Manitoba Association of Registered Nurses) or other Canadian licensing jurisdiction confirming eligibility for registration or status regarding registration; or last M.A.R.N. (or other Canadian licensing jurisdiction) registration card or photostatic copy.

*R.P.N. Refresher: acceptable proof is a letter from the Registered Psychiatric Nurses Association of Manitoba or the last R.P.N.A.M. card or photostatic copy.

*Manitoba residents who have never been licensed in Manitoba must contact the appropriate association listed below:

The Registrar,
Manitoba Association of Licensed Practical Nurses
615 Kemaghan Avenue
P.O. Box 249
Transcona, Manitoba, R2C 2Z9

or

The Registrar
Manitoba Association of Registered Nurses
647 Broadway Avenue

Winnipeg, Manitoba, R3C 0X2

or

The Registrar
Registered Psychiatric Nurses Association of Manitoba
1854 Portage Avenue
Winnipeg, Manitoba, R3J 0G9

COURSE OUTLINES
Licensed Practical Nursing (L.P.N.) Refresher
H08-L101 Licensed Practical Nursing Refresher - Theory
H08-L102 Licensed Practical Nursing Refresher - Clinical

Registered Nursing (R.N.) Refresher
H08-R101 Registered Nursing Refresher - Theory
H08-R102 Registered Nursing Refresher - Clinical

Registered Psychiatric Nurse (R.P.N.) Refresher
H08-S101 Registered Psychiatric Nurse Refresher - Theory
H08-S102 Registered Psychiatric Nurse Refresher - Clinical

SUBJECT DESCRIPTIONS
H08-L101 LICENSED PRACTICAL NURSING REFRESHER - THEORY
The practical nurse is provided with the updated knowledge required to enter the practice of nursing today.

H08-L102 LICENSED PRACTICAL NURSING REFRESHER - CLINICAL
Renewal of nursing skills and application of theory is provided through clinical experiences with patients in long term/extended and acute care hospitals and institutions.

H08-R101 REGISTERED NURSING REFRESHER - THEORY
This subject provides the graduate nurse with the updated knowledge required to enter the practice of nursing today.

H08-R102 REGISTERED NURSING REFRESHER - CLINICAL
Renewal of nursing skills and the application of theory is provided through clinical experiences with patients in long term/extended and acute care hospitals and institutions.

H08-S101 REGISTERED PSYCHIATRIC NURSE REFRESHER - THEORY
The psychiatric nurse is provided with the updated knowledge to render the practice of nursing today.

H08-S102 REGISTERED PSYCHIATRIC NURSE REFRESHER - CLINICAL
Renewal of nursing skills and application of theory is provided through clinical experiences with patients in the psychiatric unit.
PAINTING & DECORATING

PURPOSE
To develop knowledge and skill in application of paints, lacquers and varnishes. The graduate will be familiar with paperhanging, wood finishing and spray-painting techniques, in addition to regular interior and exterior painting methods.

COURSE
Painting and Decorating is a five-month course with a September entry date and is designed to provide a good grounding in basic skills. While the course is intended primarily to impart fundamental knowledge and skills, it also emphasizes standards of skill and craftmanship, and the tradition of integrity and pride of craft.

ENTRANCE REQUIREMENTS
- * 7 high school credits (Manitoba Grade 10 or equivalent secondary school preparation) with 100 or 101 subjects inclusive. Mathematics, English and science are preferred;
- Adult Basic Education 7-10 program completion.

Mature Student Admission.* Mature students may submit other academic equivalents, including G.E.D. standing (scores on each of the five tests must be 41 or higher) or successful completion of one of Mathematics 100, 101, 190, or Practical Mathematics - Elementary/Junior High Level and one of Science 100, 101 or 190. Mature students must also be 20 years of age or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

* Applicants must be able to do basic operations in mathematics with whole numbers, fractions, and decimals and should be able to read with good comprehension at a Grade 9 level.

EMPLOYMENT POTENTIAL
Many graduates are employed by painting or home improvement contractors, the civil service, public utilities and manufacturing companies. Some have found employment refreshing furniture or working as paint and wallpaper sales people. Other graduates are self-employed or have become apprentice painters.

For further information on apprenticeship and possible transfer of credit, please see the Painting and Decorating course brochure.

COURSE OUTLINE
T02-P001 Introduction, Safety, History, Tools & Equipment
T02-P002 Tools And Equipment, Practical
T02-P003 Basic Components of Paint, Theory
T02-P004 Basic Components of Paint, Practical
T02-P005 Preparation & Application of Coating Interior/Exterior
T02-P006 Preparation & Application of Coating Interior/Exterior
T02-P007 Repainted Surfaces, Theory
T02-P008 Repainted Surfaces, Practical
T02-P009 Paint Failures, Causes & Remedies, Theory
T02-P010 Paint Failures, Causes & Remedies, Practical
T02-P011 Wood Finishes, Theory
T02-P012 Wood Finishes, Practical
T02-P013 Basic Colour Theory & Mixing, Theory
T02-P014 Basic Colour Theory & Mixing, Practical
T02-P015 Paper Hanging & Wall Coverings, Theory
T02-P016 Paper Hanging & Wall Coverings, Practical
T02-P017 Spray Painting, Theory
T02-P018 Spray Painting, Practical
T03-R015 Blue Print Reading for Painting & Decorating PE
T13-M507 Painting & Decorating Math
T13-S507 Painting & Decorating Science
T14-C504 Communication

SUBJECT DESCRIPTIONS
T02-P001 INTRODUCTION, SAFETY, HISTORY, TOOLS & EQUIPMENT
The objective is to familiarize the student with requirements of in-school training, conduct on the job, and a short history of trade.

T02-P002 TOOLS AND EQUIPMENT, PRACTICAL
Care of brushes, rollers, spray equipment, ladders, trestles and scaffolds.

T02-P003 BASIC COMPONENTS OF PAINT, THEORY
Pigments, extenders, vehicles, binders, thinners, driers, formulas.

T02-P004 BASIC COMPONENTS OF PAINT, PRACTICAL
Students will be able to recognize opaque coatings, and be able to select the proper paint for all types of surfaces. The use of solvents for each type of paint.

T02-P005 PREPARATION & APPLICATION OF COATING INTERIOR/EXTERIOR
Prepare surfaces and apply primers, undercoats, and finish coats, oil-base paints, latex paints, and clear coatings.

T02-P006 PREPARATION & APPLICATION OF COATING INTERIOR/EXTERIOR
Prepare surfaces and apply primers, undercoats, and finish coats, oil-base paints, latex paints, and clear coatings.

T02-P007 REPAINTED SURFACES, THEORY
Plaster, wood, concrete, brick.

T02-P008 REPAINTED SURFACES, PRACTICAL
Prepare old surfaces for repainting, sand and fill damaged areas, prime, apply finish coats of paint.

T02-P009 PAINT FAILURES, CAUSES & REMEDIES, THEORY
Plaster surfaces, stone board, concrete and brick projects.

T02-P010 PAINT FAILURES, CAUSES & REMEDIES, PRACTICAL
Define the cause of the paint failure, treat the damaged area, prime, apply finish coats.

T02-P011 WOOD FINISHES, THEORY
Hardwood, open grain, hardwood close grain, soft woods, oil stains, water stains, chemical stains.

T02-P012 WOOD FINISHES, PRACTICAL
Prepare surfaces of the different types of woods, recognize the type of wood as to "hard open grain or closed grain". Select the proper filler or stain, mix stains and apply to wood, apply sealer, number of coats required, apply finish coats, by brush or spray.
T02-P013 BASIC COLOUR THEORY & MIXING, THEORY
Systems of color study, color pigments, classification of color pigments, color preparation, color retention, psychological effects and color styling.

T02-P014 BASIC COLOUR THEORY & MIXING, PRACTICAL
Tint all types of paints, latex oil base, enamels, mix oil base stains, mix paints to samples. Design color arrangements with psychological effects and color styling, apply to different areas.

T02-P015 PAPER HANGING & WALL COVERINGS, THEORY
Preparing surfaces, sizes, cutting and pasting, hanging, stair wells.

T02-P016 PAPER HANGING & WALL COVERINGS, PRACTICAL
Students will prepare surfaces to receive fabrics, remove old wallpaper and fabrics. Hang vinyl, folks, flocks, high price fabrics, apply adhesives, sizes, estimate rolls required. Students will hang all types of fabrics under supervision.

T02-P017 SPRAY PAINTING, THEORY
The student will learn the principles of the basic spray guns, the maintenance and safety precautions. Application of varnishes, lacquer and stains is discussed and the necessary adjustments of the gun, if faulty spray patterns occur.

T02-P018 SPRAY PAINTING, PRACTICAL
The student will have the opportunity to dismantle and reassemble a spray-gun followed by a limited amount of spray work.

T03-R015 BLUE PRINT READING FOR PAINTING & DECORATING PE
Drawing interpretation as applied to the painting and decorating trade.

T13-M507 PAINTING & DECORATING MATH
Addition, subtraction, multiplication and division of: whole number, fractions, decimals, linear measurements, perimeters, circumferences. Surface area measurements, squares, rectangles, triangles, trapezoid, irregular shape.

T13-S507 PAINT & DECORATING SCIENCE
Structure of physical change, solutions and emulsions, paint components, pigments, properties of pigments, manufacture and uses of pigments, comparison of important pigments, comparison and uses of various vehicles, driers, solvents, thinners, lacquer solvents and thinners, reinforcing agents, color — nature of, spectrum color systems, color harmony, types of abrasives, coated abrasives, selecting abrasive products, structure of wood, seasoning, veneers and plywood, staining defects, wood preservatives.

T14-C504 COMMUNICATION
A self-paced practical course that develops communication skills from four viewpoints: job-seeker, employee, junior supervisor, small business owner. The course is tailored to fit the needs of individual students and the requirements of course Advisory Boards.
PIPING TRADES

PURPOSE
To develop the knowledge and skills required to install and repair plumbing, heating, fire-protection and other piping systems.

COURSE
Piping Trades is a ten-month course with two entry dates: September and February. The course is designed to develop skills in installing and repairing piping systems, and in the safe use of tools and materials in accordance with piping, safety and building codes and regulations.

ENTRANCE REQUIREMENTS
- 7 high school credits (Manitoba Grade 10 or equivalent secondary school preparation) with Mathematics 100 or 101 and Science 100 or 101. English 100 or 101 is strongly recommended; or
- Adult Basic Education 7-10 program completion.

Mature Student Admission. Mature student applicants may submit other educational equivalents, including G.E.D. standing (scores on each of the five tests must be 41 or higher), in lieu of 7 credits; however, they must have successfully completed one of Mathematics 100, 101, 190, or Practical Mathematics - Elementary/Junior High Level and one of Science 100, 101 or 190. Mature students must also be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

Please note that reference books are essential components of the work procedures for this course and require above-average reading vocabulary and comprehension. Applicants are strongly encouraged to take Reading Comprehension and Study Skills, through the college's Extension Division, prior to entering skill training.

EMPLOYMENT POTENTIAL
Many graduates have found employment with plumbing, heating or fire-protection contractors, or in industrial plants as maintenance people. Some graduates have found employment with plumbing and heating wholesale or retail outlets. Job opportunities at the journeyman level are as plumbers, steamfitters or sprinkler and fire-protection installers. After gaining work experience, some graduates have moved into positions as foremen, estimators, plumbing contractors and building inspectors. Others are self-employed.

For further information on apprenticeship and possible transfer of credit, please see the Piping Trades course brochure.

SUBJECT DESCRIPTIONS
- T03-R013 Blue Print Reading & Sketching for Plumbing PE
- T04-G520 Related Gas Welding
- T13-M513 Plumbing PE Math
- T13-S513 Plumbing Science
- T14-C502 Communication
- T15-P005 Regulations & Project Installations, Theory
- T15-P006 Project Installations, Practical
- T15-P007 Hot Water Heating, Theory
- T15-P008 Hot Water Heating, Practical
- T15-P009 Basic Sprinkler/Fire Protection, Theory
- T15-P010 Basic Sprinkler/Fire Protection, Practical
- T15-P011 In-Industry Work Experience

OUTLINE
- Blueprint Reading & Sketching for Plumbing PE
- Related Gas Welding
- Plumbing PE Math
- Plumbing Science
- Communication
- Introduction to the Piping Trades & General Information
- General Shop Work, Practical
- Piping & Materials, Theory
- Piping & Materials, Practical

T03-R013 BLUE PRINT READING & SKETCHING FOR PLUMBING PE
Drawing interpretation and preparation as applied to the plumbing trade.

T04-G520 RELATED GAS WELDING
The student is taught the basics of oxyacetylene welding by means of lectures in the classroom and practical demonstrations in the welding shop. He or she then works with the torch to acquire the ability to handle the outfit in the proper manner. A theory and practical test is given for evaluation purposes. One week - oxyacetylene cutting and welding, brazing and silver brazing in flat position. One week - arc welding in flat position.

T13-M513 PLUMBING PE MATH
Mathematics which is directly related to the trade. It covers fractions, decimals, square root, area, volume (both rectilinear and cyclical) and offset calculations.

T13-S513 PLUMBING SCIENCE
Fractions, decimals, measurements, percent, square root, area (rectilinear circular sphere), volume, pressure head, ratio and proportion 45 degree and 60 degree offsets, rolling offsets, properties of water, matter, compounds, states of matter, heat and temperature, sensible and latent heat, temperature conversion, specific heat relative density, pH, hardness, water treatment, mechanics — simple machines, M.A. efficiency calculation. Corrosion — Chemical and electrochemical, galvanic series, galvanic cell, methods of protecting against corrosion. Metals and Alloys — reasons for alloying, conductivity expansion, physical and mechanical properties. Hydraulics — pneumatics, adhesion-cohesion, forces of pressure and weight atmospheric pressure, absolute pressure, Boyle's Law, siphons.

T14-C502 COMMUNICATION
A program similar to T14-C504 but only 20 hours duration. T14-C504 is described as: "A self-paced practical course that develops communications skills from four viewpoints - job-seeker, employee, junior supervisor, small business owner. The course is tailored to fit the needs of individual students and the requirements of course Advisory Boards".

T15-P001 INTRODUCTION TO THE PIPING TRADES & GENERAL INFORMATION
Type of work, tools, materials, equipment, safety.

T15-P002 GENERAL SHOP WORK, PRACTICAL
Identification and use of tools, fittings, and materials; material handling, safety and rigging; use of torches and lead work.

T15-P003 PIPING AND MATERIALS, THEORY
Cast iron, galvanized iron, copper, lead, plastic, glass, uses of
each, methods of assembling, supporting, handling, storing, and
types of tools used with each.

T15-P004 PIPING AND MATERIALS - PRACTICAL
The joining of cast iron, galvanized black iron, copper, plastic and
asbestos cement pipe by methods such as screwed, soldered,
caulked, mechanical joints, glued, victanic, flanged and compression fitting. The assembly of valves and some basic pump
installations.

T15-P005 REGULATIONS AND PROJECT INSTALLATIONS, THEORY
Interpretation of plumbing code, sizing of sewers, drains, stacks,
vents, etc. drawing layouts and constructing actual installations
from layouts and blueprints.

T15-P006 PROJECT INSTALLATIONS, PRACTICAL
With the knowledge of materials and code previously covered,
rough in a common bungalow, rough in a rural home, rough in a
commercial project, install fixtures for residential and commercial,
do water piping and test all projects.

T15-P007 HOT WATER HEATING, THEORY
An introduction to space heating, types of heat, transfer equip-
ment, hot water boilers, circulation pump and controls, a study of
hot water systems.

T15-P008 HOT WATER HEATING, PRACTICAL
Hanging and grading mains, installing radiation, connecting to the
boiler testing and operating the system.

T15-P009 BASIC SPRINKLER/FIRE PROTECTION, THEORY
The piping trades student will be given an introduction to identifi-
cation, assembly, operation of the common sprinkler and stand
pipe system used today.

T15-P010 BASIC SPRINKLER/FIRE PROTECTION, PRACTICAL
The piping trades students will do roll and cut groove assembly of
steel pipe and will demonstrate their ability to install some of the
devices used in fire protection systems.

T15-P011 IN-INDUSTRY WORK EXPERIENCE
1) to provide Piping Trades pre-employment students with practical
on the job experience, 2) to expose students to actual job condi-
tions and industry requirements, 3) to help instill good work habits
and a positive attitude in students, 4) to introduce plumbing-heating & sprinkler contractors to possible candidates and 5)
make plumbing-heating & sprinkler contractors aware of college
programs and students, with a view to providing input.
POWER ENGINEERING

PURPOSE
To develop the knowledge and skills required for the safe operation of the major equipment in commercial, industrial and public buildings.

COURSE
Power Engineering 4th Class is a five-month course with a September entry date; 3rd Class is a five-month course with a February entry date; and 2nd Class is a 10-month course with a September entry date.

The operation of major equipment in commercial, industrial and public buildings is closely regulated by Manitoba Labour. The physical size of the plant determines licensing requirements at the 1st, 2nd, 3rd or 4th Class level with the smaller plant requiring a 4th Class Power Engineer. The Power Engineering courses are designed to prepare the student for the applicable Manitoba Labour examination and the related type of plant in which the graduate would work.

ENTRANCE REQUIREMENTS
4th Class
- 14 high school credits (Manitoba Grade 11 or equivalent secondary school preparation) with English 200 or 201, Mathematics 200, and one of Physics 200 or Chemistry 200; or
- Adult Basic Education 11A with supplemental mathematics and chemistry topics.

Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. 12 standing; however, they must have specific credits in Mathematics 200 or 290 academic and either Physics 200 or 290 or Chemistry 200 or 290. Mature students must be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

3rd Class
A - 4th Class Certificate from a provincial Department of Labour; and
B - specific credits in Mathematics 200 or 290 (academic) and one of Physics 200 or 290 or Chemistry 200 or 290; or
- Adult Basic Education 11A with supplemental mathematics and chemistry topics.

Mature Student Admission. All applicants must meet entrance requirements A or B above.

2nd Class
A - successful completion of the Red River Community College 3rd Class program or an equivalent day program* within the past five years; or
B - if graduation took place prior to five years ago:
- 3rd Class License and specific credits in Mathematics 300 and Physics 300 or
- 3rd Class License and a passing grade in a pre-admission test at the 3rd Class Level in Mathematics, Mechanics and Thermal Studies (to be administered by Red River Community College).

Mature Student Admission. All applicants must meet entrance requirement A or B or C above.

* Please contact the Admissions Office for information on equivalent programs.

EMPLOYMENT POTENTIAL
Graduates have found employment in industrial plants, food-processing plants, cold-storage plants and in other commercial, industrial or public buildings.

COURSE OUTLINES
4th Class
- Blueprint Reading
- Mechanical Drafting
- Mechanics
- Electrical Fundamentals
- Mathematics

3rd Class
- Mechanical Drafting
- Instrumentation & Controls
- Fuels & Combustion
- Refrigeration
- Mathematics

2nd Class
- Control Instrumentation
- Electro Technology
- Codes, Safety, Fire Prevention etc.
- Thermal Studies
- Fuels & Water Treatment
- Turbines & Engines
- Mathematics

SUBJECT DESCRIPTIONS
- Blueprint Reading
  Lettering; description of lines and weights; orthographic and isometric views; tolerances; sectional views; interpretation; free-hand sketching.
T06-S121 THERMAL STUDIES
This is a basic course which covers temperature scales, heat
transfer, steam generation, and laws for perfect gases.

T06-S123 INSTRUMENTATION & CONTROLS
A fundamental course given to assist the student to understand
the principles involved for measuring and controlling variables
found in power plants.

T06-S125 FUELS & COMBUSTION
This is a basic course designed to introduce feedwater chemical
technology, the breakdown and impurities in water boiler scale,
etc.

T06-S131 ENGINES
This course provides an introduction to steam engines, steam
turbines, internal combustion engines, lubrication, etc.

T06-S133 ELECTRICAL FUNDAMENTALS
This course involves the basic topics of magnetism, electricity, AC
& DC current, AC & DC generators and motors.

T06-S134 BOILERS
A basic course on types of boilers, construction, regulations,
fitting, operation, etc.

T06-S135 REFRIGERATION
A basic course dealing with refrigeration equipment used in
commercial and industrial processes. Refrigerants, components,
controls, construction, etc. are the main topics.

T06-S202 MECHANICAL DRAFTING
Drawing orthographic, isometric, and oblique views. Sketching of
driving plant systems. Types of screw threads, couplings, and
drive keys.

T06-S221 THERMAL STUDIES
This is an intermediate type course which should have T06-S121
as a prerequisite. It increases the depth of knowledge from that
course and approaches the subject from a more mathematical
concept.

T06-S223 INSTRUMENTATION
This course follows the theory presented in T06-S123. It intro-
duces transmission, control theory, and expands on information
presented in T06-S123.

T06-S224 FUELS & WATER TREATMENT
This course follows T06-S124 and introduces calculations from
chemical formulas, investigation of liquid solution, ionization,
acids, bases, water testing, etc.

T06-S225 TURBINES & ENGINES
This course follows T06-S125 with the larger and more complex
systems being highlighted. This also introduces the various types
and arrangements of industrial plants.
T06-S325 TURBINES & ENGINES
This course continues the topics introduced in 3rd Class T06-S225, but deals in more depth with the principles and operating procedures of steam turbines, gas turbines, and internal combustion engines. Lecture time will be three hours per week.

T06-S331 MECHANICS (APPLIED)
This course explores the relationships between physical quantities such as mass, force, statics, kinematics, strength of materials and hydraulics, and systems under the Power Engineer's responsibility. The tenor of the course will be primarily quantitative, and to that end there will be considerable interplay between it and the concurrent mathematics course.

T06-S334 BOILERS
This course continues the topics introduced in T06-S204 but deals in more depth with construction, design, maintenance, and operation of power boilers, pumps, piping and fuel handling equipment.

T06-S335 REFRIGERATION & INDUSTRIAL PLANTS
This course continues the development of topics introduced in T06-S235 such as air compression and associated equipment, refrigeration cycle and equipment and calculations relating to air conditioning and refrigeration.

T10-M161 MATHEMATICS
This is a skill-development course in arithmetic, applied geometry and lower level algebra. Emphasis is also placed upon hand-held calculator skills, and realistic applications.

T10-M261 MATHEMATICS
This course extends the M161 course from algebra into logarithms, trigonometry and the practical mensuration of areas and volumes. Rather than simply involve skill development, this course begins to introduce the student to field applications.

T10-M361 MATHEMATICS
The main sections covered are Arithmetic, Algebra, Trigonometry, and Geometry. Calculus will not be dealt with for 2nd Class work. Triangles, Angle Measurement, Measurement of Area, Measurement of Volume, Surface Areas, Spherical Shapes, etc.

T14-C124 COMMUNICATIONS I
A technical writing course designed to prepare students for the writing done on the job. It covers the basic format for letters, memorandums and informal reports. It also covers the entire job-search process, from finding where the jobs are to the handling of interviews.

T14-C224 COMMUNICATIONS II
A continuation of T14-C124, designed to improve the student's letter and memorandum writing style. It covers the informal investigation report, oral presentations and discusses the techniques for getting along on the job and cultivating a supervisory style.
PURPOSE
To develop the knowledge and skills required to use the nursing process in the provision of direct nursing care for selected individuals of any age, whose physical and psychological equilibrium is relatively stable but who need assistance primarily with activities of daily living.

COURSE
Practical Nursing is a ten-month certificate course with a September entry date. The course is designed to prepare graduates for eligibility to write examinations for registration in the Manitoba Association of Licensed Practical Nurses (M.A.L.P.N.). To provide the opportunity for career mobility in nursing and enable individuals to re-shape initial vocational goals, the course was designed in conjunction with the two-year Nursing course.

ENTRANCE REQUIREMENTS
A - Grade 12, including English 300; Mathematics 300, 301 or 200; and one science at the 300 level (Chemistry 300 is strongly recommended); or
- successful completion of College Preparation for Nursing

The college Extension Division (evening programs) offers foundation courses in mathematics, science and writing skills. These courses are designed to provide an applicant with the academic background in the required subjects. These courses also will serve as an excellent refresher for anyone who has been out of school for several years and who is planning to attend the college. Applicants who lack several of the required subjects should consider the College Preparation for Nursing course, described in a separate brochure.

and

B - successful completion of the prescribed reading skills test at the required competency level; and

C - good health. *Immunizations are required of all students and must commence as indicated upon notification of acceptance into the course.

Mature Student Admission. Mature student applicants may submit the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits; however, you must have specific credits in English, mathematics and science as noted in (A) above. As well, mature students must meet entrance requirements (B) and (C), and be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

EMPLOYMENT POTENTIAL
Graduates enter the work force as beginning practitioners and have found employment in hospitals, personal care homes and with other health care agencies.

COURSE OUTLINE
B13-S106 Interpersonal Relations
F01-C003 Activity for Life
H11-N102 Introduction to Nursing
H11-N103 Nursing Practice
H11-N120 Human Anatomy & Physiology
H11-N202 Nursing
H11-N203 Nursing Practice
H11-S101 Social Science
H11-S201 Social Science
H11-S301 Social Science

SUBJECT DESCRIPTIONS
B13-S106 INTERPERSONAL RELATIONS
This subject focuses upon human behavior in general, and upon human behavior as experienced in the helping professions in particular. Emphasis is placed upon individual personal growth and self-knowledge, and upon behavior of the individual in groups. Methods of learning include lectures, discussions, planned experiences and role-playing, with the major focus on experiential learning. The student is expected to take a major responsibility for his or her own learning, with the instructor acting as a facilitator.

F01-C003 ACTIVITY FOR LIFE
The course is designed to acquaint the nurse-in-training with fitness and activity as they apply to the nurse and the patient. Students will develop a personal fitness program. They will also participate in one or two chosen activities during the term. Written and practical tests will be used in evaluating the student's understanding and ability.

H11-N102 INTRODUCTION TO NURSING
This subject is designed to introduce concepts of health as they relate to the fulfillment of human need and thereby maintain physiologic, psychic and social integrity. It illustrates the way in which some of these needs are met by the client and his significant others. The concept of adaptation is used as a basis for determining a client's position on the continuum. The subject focuses on clients of any development phase whose integrity is not disrupted and who are adapting to stimuli. The knowledge and skills presented provide a basis for nursing interventions based on the nursing process.

H11-N103 NURSING PRACTICE
This subject provides the student with the opportunity to apply the knowledge gained and to practice skills attained in Introduction to Nursing, H11-N102.

H11-N120 HUMAN ANATOMY AND PHYSIOLOGY
This subject is designed to provide an introductory study of the structure and pertinent aspects of function of the principal organ systems. The importance of learning and using correct terminology is stressed. A unit on basic nutrition provides information which emphasizes nutritional principles students can apply to their lives. Laboratory exercises are provided to support and enrich the theoretical content. Active learning is required to perform dissections and complete the lab reports. This subject is taken by students enrolled in several health-related disciplines.

H11-N202 NURSING
This subject focuses on an understanding of the adaptation problems that affect clients of any age, whose problems or potential problems minimally disrupt his or her integrity. Provision is made for the student to enhance his or her ability to utilize the nursing process in assisting clients and their significant others to
cope with adaptation problems that occur in all phases of the life cycle. It will also provide an introduction to the role and functions of the graduate practical nurse. Prerequisite: H11-N102 and H11-N103.

**H11-N203 NURSING PRACTICE**
This subject provides the student with the opportunity to apply the knowledge gained and to practice skills attained in Nursing H11-N202. Prerequisite: H11-N102 and H11-N103

**H11-S101 SOCIAL SCIENCE**
This subject is an introductory study of general developmental psychology. It is designed for students in health-care programs and, as such, is aimed at practical application of social science knowledge in the helping relationships. During the first part of the course, emphasis will be placed on fundamental principles of growth and development, development tasks, key concepts of personality, motivation, relevant aspects of emotions and methods of coping or adapting.

**H11-S201 SOCIAL SCIENCE**
This second part of the subject traces the development of the individual from birth to death in an ages-and-stages manner. This section begins with an examination of some key aspects of sociology which are then integrated with the development material which follows. Psycho-sociological considerations of personality development will be emphasized in an attempt to portray an accurate picture of normal human development throughout the life cycle. Each unit of instruction highlights the physical, social and psychological tasks of a particular stage of the life cycle and directs these to the health-care relationship. Prerequisite: H11-S101

**H11-S301 SOCIAL SCIENCE**
This is a continuation of the format utilized in Part II but the section of the life span to be explored is shifted to adolescence and beyond. Adolescence, early adulthood, middle age and old age are considered in developmental terms from both physical and psychosocial perspectives.
PRE-TECHNOLOGY FOR WOMEN

PURPOSE
To develop the knowledge, skills and self-confidence required for college technology programs or related employment.

COURSE
Pre-Technology for Women is a 16-week course with a September entry date. The course, designed to be an exploratory program, should not be seen as an end in itself, but rather as a bridge to specialized training or employment in a technology area. It will assist the student in discovering the skills and knowledge required for technology courses or in related employment.

ENTRANCE REQUIREMENTS
A - 14 high school credits (Manitoba Grade 11 or equivalent secondary school preparation) at the 200 or 201 level;
  or
- Adult Basic Education 11A, 11B, or 11C;
  or
- G.E.D. standing (scores in each of the five tests must be 43 or higher);

and

B - attendance at an orientation session.

EMPLOYMENT POTENTIAL
Graduates of this course have found themselves more self-confident and better prepared for entry into specific technology programs or related employment.

Please note that this program is designed primarily to familiarize women with training and employment in technical and science-based fields. Those students who successfully complete Pre-Technology for Women must still meet the stipulated entrance requirements for technology courses.

COURSE OUTLINE
B25-J201 Pre-Technology for Women-Classroom
B25-J202 Pre-Technology for Women-Workplace

SUBJECT DESCRIPTIONS
B25-J201 PRE-TECHNOLOGY FOR WOMEN-CLASSROOM
Reading and study skills, confidence building in mathematics and sciences, fundamentals of computer programming and exposure to technology programs and related laboratory activities. Included are self-awareness exercises, confidence building, the study and practice of communications and assertiveness skills. Students will learn to realistically appraise their skills and abilities to plan a training route for a technology of their choice.

B25-J202 PRE-TECHNOLOGY FOR WOMEN-WORKPLACE
The work placement component is an opportunity to observe and interact with skilled technologists in a community industrial setting. This will enable the student to practice job readiness, job-search skills, discover barriers and assess suitability for that type of work. Future employment contacts in the technology fields will be established.
RADIOThERAPY TECHNOLOGY

PURPOSE
To develop the knowledge and skills required to work with the treatment of disease, primarily malignant, by use of ionizing radiation.

COURSE
Radiotherapy Technology is a 24-month course followed by an optional five-week internship program. The course has an entry date of the first Monday in May and is designed to develop an understanding of the many aspects of a radiotherapy technologist’s daily work. It includes lectures and demonstrations in professional ethics, patient care, anatomy and physiology, elementary pathology, radiation therapy techniques, radiobiology and radiation protection. Teaching is shared by staff from various departments. Affiliation is also provided at the Health Sciences Centre, Department of Nuclear Medicine and Department of Radiology. Please note that the 24 months are consecutive and that the academic terms are separated by clinical blocks. The entire second year of training is delivered at the Manitoba Cancer Treatment and Research Foundation.

ENTRANCE REQUIREMENTS
A - 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation) with English 300 or 301, Mathematics 300, and Physics 200 or 300 (if Physics is at the 200 level, then another 300-level Science is required);

- Adult Basic Education Pre-Technology (Adult 12) program completion;

and

B - satisfactory reading proficiency, as measured by a reading test administered by the college;

and

C - completion of a hospital application form and short autobiography. Details on this requirement will be sent to the applicant once an application form and supporting education documents are received;

and

D - attendance at an orientation and interview conducted by the Selection Committee of the Manitoba Cancer Treatment and Research Foundation;

and

E - submission of immunization records after notice of acceptance is received.

Mature Student Admission. Mature students may submit the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits; however, they must have specific credits in mathematics, English, and science at the 300 or 301 level, as outlined in (A) above. Mature students must also meet entrance requirements (B) and (C) and be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

Because the course starts in early May, applicants must have the academic prerequisites completed at the time of application or be able to provide documentation of completion by the date listed below.

Please note this important date: February 15 - final date for submission of applications, high school transcripts and/or other proof of completion of entrance requirements.

EMPLOYMENT POTENTIAL
Graduates are eligible to write the qualification examinations set by the Canadian Association of Medical Radiation Technologists. Successful candidates are awarded R.T.T. Registered Technologist Therapy certificates. Graduates of the Radiotherapy Technology program are employed in cancer treatment centres in Manitoba and across Canada.

COURSE OUTLINE
Year 1
Term I
Manitoba Cancer Treatment and Research Foundation
May - June (6 weeks)

- Radiation Protection for Therapy
- Patient Care and Interpersonal Skills for Therapy
- Radiation Therapy Techniques
- Physics for Radiotherapy
- Apparatus and Imaging for Radiotherapy
- Human Anatomy and Physiology

Term II
Red River Community College and the Manitoba Cancer Treatment and Research Foundation
September - December (16 weeks)

H04-T114 Radiation Protection for Therapy
H04-T115 Patient Care and Interpersonal Skills for Therapy
H04-T116 Radiation Therapy
H04-T117 Treatment Planning
H04-T118 Physics for Radiotherapy
H04-T119 Apparatus and Imaging for Radiotherapy
H11-N120 Human Anatomy and Physiology
H11-N220 Human Anatomy and Physiology

Term III
Manitoba Cancer Treatment and Research Foundation
March - April (7 weeks)

- The entire second year of training is delivered at the Manitoba Cancer Treatment and Research Foundation.

SUBJECT DESCRIPTIONS
H04-T114 RADIATION PROTECTION FOR THERAPY
This subject will introduce the student to the basic concepts of radiation protection. The student will gain an appreciation of the philosophy underlying protection practices and regulations.

H04-T115 PATIENT CARE AND INTERPERSONAL SKILLS FOR THERAPY
This subject will deal with the techniques of patient care in the radiotherapy department. Students will develop interpersonal skills to help them deal with the patients in radiotherapy.

This is a special selection course. The Manitoba Cancer Treatment and Research Foundation Selection Committee will interview applicants who have completed the preliminary requirements and will select students on the basis of academic preparation, personal suitability, and potential to work as part of a health care team.
H04-T116 RADIATION THERAPY
Introduction to malignant disease: pathology, diagnosis, modalities of treatment (with particular emphasis on treatment with ionizing radiation), the role of Radiation Oncology in the health care field.

H04-T117 TREATMENT PLANNING
An introduction to: 1) the various methods by which radiation treatment can be given; 2) beam directional devices and insurance of their accuracy; 3) the use of standard data/information to plan treatments most beneficial to the patient.

H04-T118 PHYSICS FOR RADIOTHERAPY
To extend the knowledge of concepts in radiation, physics as they relate to radiotherapy (oncology). To understand the characteristics and utilization of equipment used in the treatment of the patient.

H04-T119 APPARATUS FOR IMAGING FOR RADIOTHERAPY
The apparatus section will deal with some of the basic equipment used in radiotherapy while the imaging section will deal with the film and processing methods used to produce an image.

H11-N120 HUMAN ANATOMY AND PHYSIOLOGY
This subject is designed to provide an introductory study of the structure and pertinent aspects of function of the principal organ systems. The importance of learning and using correct terminology is stressed. A unit on basic nutrition provides information which emphasizes nutritional principles students can apply to their lives. Laboratory exercises are provided to support and enrich the theoretical content. Active learning is required to perform dissections and complete the lab reports. This subject is taken by students enrolled in several health-related disciplines.

H11-N220 HUMAN ANATOMY AND PHYSIOLOGY
This subject is designed as a sequel to Human Anatomy and Physiology (H11-N120). A working knowledge of introductory anatomy and physiology is assumed. The details of anatomy and physiology are organized around unifying concepts such as interrelationships of body organ systems, homeostasis. Presentation of the material reflects hierarchical levels of complexity that contribute to the students' understanding of the body as a whole. Laboratory exercises are essential in aiding the student to apply theoretical concepts of anatomy and physiology. Clinical application is stressed throughout the subject. This subject is taken by students enrolled in several health-related disciplines. Prerequisite: H11-N120 Human Anatomy and Physiology.
PURPOSE
To develop the skills required to install, service, and repair commercial and industrial refrigeration and air conditioning equipment.

COURSE
Refrigeration and Air Conditioning is a ten-month certificate course with a March entry date. The course is designed to provide both theoretical and practical knowledge of refrigeration systems, air conditioning, piping, welding and electrical wiring.

ENTRANCE REQUIREMENTS
- 14 high school credits (Manitoba Grade 11 or equivalent secondary school preparation) with Mathematics 200 or 301 and Physics 200 or Physical Science 201. English 200 or 201 is strongly recommended; or
- Adult Basic Education 11A

Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. standing (scores on each of the five tests must be 43 or higher) in lieu of 14 credits; however, they must have successfully completed one of Mathematics 200, 301, 290 academic, or 911 and one of Physics 200 or Physical Science 201. As well, mature students must be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director, Admissions/Registration for review.

Please note that reference books are essential components of the work procedures for this course and require above-average reading vocabulary and comprehension. Applicants are strongly encouraged to take Reading Comprehension and Study Skills through the college’s Extension Division prior to entering skill training.

EMPLOYMENT POTENTIAL
Many graduates have entered the apprenticeship program and become journeymen. Others have found employment as refrigeration and air conditioning mechanics on maintenance crews of large buildings, with transport truck companies or with contractors who are involved with the installation and repair of equipment.

For further information on apprenticeship and possible transfer of credit, please see the Refrigeration and Air Conditioning course brochure.

COURSE OUTLINE
T03-R051 Blueprint Reading & Sketching for Refrigeration PE
T04-G520 Related Gas Welding
T04-M510 Related Machine Shop
T11-R001 Safety & Fundamentals, Theory
T11-R003 Safety & Fundamentals, Practical
T11-R005 Refrigeration Systems, Theory
T11-R007 Refrigeration Systems, Practical
T11-R009 Commercial Systems, Theory
T11-R011 Commercial Systems, Practical
T11-R013 Calculation of Heat Transfer, Theory
T11-R015 Refrigeration Piping
T11-R017 Air Conditioning Systems, Theory
T11-R019 Air Conditioning Systems, Practical
T11-R021 Refrigeration Electrical, Theory
T11-R023 Refrigeration Electrical, Practical
T11-R049 In-Industry
T13-M516 Refrigeration Math
T13-S516 Refrigeration PE Science
T14-C504 Communication

SUBJECT DESCRIPTIONS
T03-R051 BLUEPRINT READING & SKETCHING FOR REFRIGERATION PE
Drawing interpretation as applied to the refrigeration trade.

T04-G520 RELATED GAS WELDING
The student is taught the basics of oxyacetylene welding by means of lectures in the classroom and practical demonstrations in the welding shop. He or she then works with the torch to acquire the ability to handle the outfit in the proper manner. A theory and practical test is given for evaluation purposes. One week - oxyacetylene cutting and welding, brazing and silver brazing in flat position. One week - arc welding in flat position.

T04-M510 RELATED MACHINE SHOP
One week (25 hours). Basic metals, metal layout and measuring tools, metal working equipment and safety.

T11-R001 SAFETY & FUNDAMENTALS, THEORY
Types of injuries from mechanical causes, electrical and refrigerant burns, explosions, toxic gases, etc. Trade terms, types of heat, heat transfer methods, volumes, pressure, density. Formulas used in calculations. Tools of the trade, fittings and other materials.

T11-R003 SAFETY & FUNDAMENTALS, PRACTICAL
Types of injuries from mechanical causes, electrical and refrigerant burns, explosions, toxic gases, etc. Trade terms, types of heat, heat transfer methods, volumes, pressures, density. Formulas used in calculations. Tools of the trade, fittings and other materials.

T11-R005 REFRIGERATION SYSTEMS, THEORY
The refrigeration cycle. Compressors, condensers, refrigerator metering devices, evaporators, refrigerants, oils, temperature controls, charging and testing systems.

T11-R007 REFRIGERATION SYSTEMS, PRACTICAL
The refrigeration cycle. Compressors, condensers, refrigerator metering devices, evaporators, refrigerants, oils, temperature controls, charging and testing systems.

T11-R009 COMMERCIAL SYSTEMS, THEORY
Types of systems: Low-temperature, medium temperature; remote; multiple; open types; semi-sealed and sealed units. Defrosting systems, reverse cycle systems; heat pumps. Types of installations. Application and selection of equipment and accessories, installation of and servicing of equipment adjusting of controls.

T11-R011 COMMERCIAL SYSTEMS, PRACTICAL
Types of systems - Low-temperature, medium temperature; remote; multiple; open types; semi-sealed and sealed units. Defrosting systems - Reverse cycle systems; heat pumps. Types of installa-
tions. Application and selection of equipment and accessories, installation of and servicing of equipment adjusting of controls.

T11-R013 CALCULATION OF HEAT TRANSFER, THEORY
Compressor capacities, speed ratios, evaporator capacity, pipe sizing and component selection.

T11-R015 REFRIGERATION PIPING
Compressor capacities, speed ratios, evaporator capacity, piping sizing and component selection.

T11-R017 AIR CONDITIONING SYSTEMS, THEORY
Direct expansion, water chiller, single multiple, air and its properties. Types of compressors used. Fans, filter, and air distribution systems.

T11-R019 AIR CONDITIONING SYSTEMS, PRACTICAL
Direct expansion, water chiller, single, multiple, air and its properties. Types of compressors used. Fans, filters, and air distribution systems.

T11-R021 REFRIGERATION ELECTRICAL, THEORY
Electrical circuits, magnetism, motors, relays, controls, and control systems. Electrical code as pertaining to refrigeration equipment.

T11-R023 REFRIGERATION ELECTRICAL, PRACTICAL
Electrical circuits, magnetism, motors, relays, controls and control systems. Electrical code as pertaining to refrigeration equipment.

T11-R049 IN-INDUSTRY
1. To provide refrigeration and air-conditioning pre-employment students with practical on the job experience.
2. To expose students to actual job conditions and industry requirements.
3. To help instill good work habits and a positive attitude in students.
4. To introduce refrigeration and air-conditioning contractors to possible apprentice candidates.
5. To make refrigeration and air-conditioning contractors aware of college programs and students, with a view of providing input.

T13-M516 REFRIGERATION MATH

T13-S516 REFRIGERATION PE SCIENCE
Heat energy, heat transfer formulas, heat conductances, pressure, enthalpy diagram relationship, principles of psychrometrics, psychrometric processes, fan-laws, pressures, in duct systems, refrigerant oils, small load calculations.

T14-C504 COMMUNICATION
A self-paced practical course that develops communications skills from four viewpoints: job-seeker, employee, junior supervisor, small business owner. The course is tailored to fit the needs of individual students and the requirements of course Advisory Boards.
PURPOSE
To develop proficient typing, transcription and word-processing skills.

COURSE
Secretary is a ten-month course with two entry dates: September and January. The course is designed to develop the knowledge and skills required to provide a broad secretarial background so that the graduate is equipped to work in a variety of job settings.

The course is a competency-based-learning (CBL) program, a modularized approach to learning which allows a moderate degree of self-pacing. The applicant should be prepared to complete requirements in a reasonable time, and to manage time wisely and effectively to meet deadlines.

ENTRANCE REQUIREMENTS
A - 14 high school credits (Manitoba Grade 11 or equivalent secondary school preparation) with one of English 200 or 201 and one of Mathematics 200 or 201. Completion of a computer awareness course is strongly recommended; or
- Adult Basic Education 11B;
and
B - satisfactory reading ability, as measured by a written test administered through the college.

Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma (with one of Mathematics 200 or 201 or 300 or 301 and one of English 200 or 201 or 300 or 301) or G.E.D. standing (scores on each of the five tests must be 45 or higher) in lieu of 14 credits. Those persons applying on the basis of G.E.D. standing must also have successfully completed one of English 200, 290, or 911. Additional preparation by way of a computer awareness course is strongly recommended. Mature student applicants must also complete entrance requirement (B) and be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

COURSE COMPETENCIES
B18-0A00 Maintain Life Skills
B18-0A01 Identify Employability Skills
B18-0A02 Recognize Factors for Building Self-Esteem
B18-0A03 Use Library Materials & Services
B18-0A04 Prepare a Job Search
B18-0B00 Communicate in Writing
B18-0B01 Apply Word Division Rules
B18-0B02 Apply Spelling Rules
B18-0B04 Use Appropriate Vocabulary
B18-0B10 Compose Inter-Office Memorandums
B18-0B11 Compose Business Letters
B18-0B13 Compose Unified, Complete and Coherent Paragraphs
B18-0B14 Demonstrate an Effective Style
B18-0C02 Communicate Verbally and Non-Verbally
B18-0C01 Discuss Process of Interpersonal Communication
B18-0C02 Discuss Listening Skills
B18-0C03 Project Professional Image
B18-0C04 Demonstrate Professional Attitude
B18-0C05 Respond to Office Callers
B18-0C06 Use Telephone
B18-0D00 Develop Interpersonal Skills
B18-0D01 Discuss Principles of Interpersonal Relationships
B18-0D02 Identify Problem-Solving Techniques
B18-0D03 Discuss Guidelines for Being a Group Member
B18-0D04 Apply Decision Making Skills in Groups
B18-0D05 Identify Guidelines for Managing Conflict
B18-0D06 Identify Means of Managing Stress
B18-0E00 Produce Typed Material
B18-0E02 Demonstrate Correction Techniques & Proofreading
B18-0E03 Type Centered/Display Documents
B18-0E04 Type Inter-Office Mames
B18-0E05 Type Basic Business Forms
B18-0E06 Type Open Tables
B18-0E07 Type Ruled Tables
B18-0E08 Type Financial Statements
B18-0E09 Type Business Letters & Envelopes in Various Styles
B18-0E10 Type Business Letters with Special Features
B18-0E11 Type Personal Letters & Envelopes
B18-0E12 Type Business Reports
B18-0E14 Complete Office Style Projects
B18-0E25 Keyboard At 50 Wpm
B18-0F00 Transcribe
B18-0F01 Operate Transcribing Machine
B18-0F02 Transcribe Correspondence from Machine Dictation
B18-0F03 Transcribe Reports from Machine Dictation
B18-0F05 Write Shorthand Symbols (optional)
B18-0F12 Transcribe Shorthand Taken at 80 Wpm (optional)
B18-0G00 Use Calculator to Compute Mathematical Solutions
B18-0G01 Add, Subtract, Multiply & Divide Whole Numbers
B18-0G02 Add, Subtract, Multiply & Divide Decimals
B18-0G03 Compute Percentage, Rate, & Base
B18-0G04 Complete a Payroll Register
B18-0G05 Perform Accounting Tasks
B18-0G01 Perform Selected Business Banking Functions
B18-0G02 Maintain Petty Cash Fund & Petty Cash Book
B18-0G03 Maintain Records Using a One-Write System
B18-0G04 Maintain Records to Trial Balance for Service Firm
B18-0G00 Perform Word Processing Functions on PC
B18-0E12 Transcribe Ruled Tables
B18-0G05 Perform Basic Business Forms
B18-0G06 Complete Office Style Projects
B18-0G07 Perform Word Processing Functions on PC
B18-0G08 Complete Business Letters & Envelopes
B18-0G09 Complete Business Letters & Envelopes
B18-0G10 Complete Business Letters & Envelopes
B18-0G11 Perform Sort and Select
B18-0G12 Utilize Advanced Formatting Functions
B18-0G13 Perform Math Functions in Tabular Documents
B18-0G14 Create, Edit, Re-Format, Print Non-Statistical Documents
B18-0G03 Create, Edit, Print Statistical Documents
B18-0G04 Utilize Special Formatting Functions
B18-0G05 Make Print Decisions for One-Page Documents
B18-0G06 Retrieve, Edit & Print Multi-Page Documents
B18-0G07 Perform Mail Merge Function
B18-0G08 Generate Documents Using Reference Tools
B18-0G09 Perform Advanced Merge to Produce Documents
B18-0G10 Create, Utilize & Store Keystroke Sequences (Macros)
B18-0G11 Perform Sort and Select
B18-0G12 Utilize Advanced Formatting Functions
B18-0G13 Utilize Advanced Formatting Functions
B18-0G14 Create, Edit Parallel/Newspaper Columns
B18-0G15 Create, Retrieve Documents Containing Graphics
B18-0G16 Perform Advanced File Management
B18-0L00 Use Personal Computers
B18-0L06 Use Spreadsheet Program
B18-0M00 Perform Office Duties
B18-0M01 Identify Organizational Structures
B18-OM02 Manage Work Stations
B18-OM03 Manage Time
B18-OM04 Process Mail
B18-OM05 Use Photocopier
B18-OM06 Maintain Appointment Calendar
B18-OM07 Use Reference Sources
B18-OM08 Identify Safety Procedures
B18-OM09 Co-Ordinate Travel Arrangements
B18-OM10 Arrange Meetings
B18-OM11 Prepare Minutes of Meetings
B18-OM12 Apply Skills in Office Simulation
B18-OM13 Describe Information Processing Technology
B18-ON00 Manage Records
B18-ON01 Compare Filing Systems
B18-ON02 File & Retrieve Material

The student who wishes to enter the Administrative Secretary program will require successful completion of the following accounting competencies in addition to the above required competencies.

B18-OJ05 Complete Service Firm Records to Adjusted Balance
B18-OJ06 Close Accounts after Worksheet & Financial Statements
B18-OJ07 Journalize Petty Cash Transactions
B18-OJ08 Journalize Bank Reconciliation Related Entries

Please note that because the competencies listed above are self-explanatory, subject descriptions are not included for this course.
STRUCTURAL ENGINEERING TECHNOLOGY

PURPOSE
To develop the knowledge and skills required for the design, detailing, drafting and inspection of structured systems for buildings.

COURSE
Structural Engineering Technology is a two-year diploma course with a September entry date. The course is designed to develop the skills needed to work with structural engineers in the formulation and calculations of engineering design. Students will receive comprehensive training in the field of structural design for commercial buildings, including soil investigation, foundation design, and concrete and steel design.

ENTRANCE REQUIREMENTS
- 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation) with Mathematics 300, English 300 or 301, and Physics 300* or Physical Science 301; or
- Adult Basic Education Pre-Technology (Adult 12) program completion

Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits; however, they must have specific credits in mathematics, English, and science* as outlined above. Mature students must also be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

* Physics 300 is strongly recommended as a more appropriate background for technology.

EMPLOYMENT POTENTIAL
Structural Engineering Technology graduates have found job opportunities in structural design and inspection with consulting engineering firms, architectural firms, contractors or various government departments. Some graduates have found interesting careers in technical sales or as managers in the building materials or construction equipment fields.

COURSE OUTLINE

Term 1
CIV-C162 Engineering Graphics
CIV-C165 Mechanics
CIV-C166 Surveying
CIV-M163 Introduction to Application Software
CIV-M169 Mathematics

Term 2
CIV-M261 Introductory Calculus
CIV-R268 Specifications & Reports
CIV-T262 Engineering Graphics II
CIV-T263 Computer Assisted Drafting I
CIV-T264 Structural Analysis I
CIV-T265 Strength of Materials I

Term 3
CIV-M361 Calculus
CIV-M364 Statistics
CIV-T362 Structural Drawing Practices
CIV-T363 Computer Assisted Drafting II
CIV-T364 Structural Analysis II
CIV-T365 Strength of Materials II
CIV-T369 Properties of Materials

Term 4
CIV-R467 Industrial Psychology
CIV-T461 Soil Mechanics I
CIV-T463 Computer Assisted Drafting III
CIV-T464 Structural Analysis III
CIV-T465 Job Control & Economics
CIV-T467 Reinforced Concrete Design I

Term 5
CIV-T561 Soil Mechanics II
CIV-T563 Steel Design
CIV-T564 Structural Analysis IV
CIV-T565 Costing & Contract Administration
CIV-T568 Reinforced Concrete Design II
CIV-T569 Masonry Design

Term 6
CIV-T661 Foundation Design
CIV-T663 Timber Design
CIV-T664 Structural Analysis V
CIV-T665 Design Thesis
CIV-T668 Reinforced Concrete Design III
CIV-T669 Testing Materials

SUBJECT DESCRIPTIONS
CIV-C162 ENGINEERING GRAPHICS
Students will receive a basic understanding of the requirements for technical drawing standards. They will be required to develop basic engineering drafting skills through practice in the use of drawing instruments, the interpretation of simple drawings and sketches and the production and reproduction of simple components and mechanisms. Upon successful completion of this course, students will have obtained a thorough foundation in the fundamentals of engineering graphics, a basis upon which they may further develop their drafting skill and knowledge in their technology specialties. This course has one hour lecture and five hours lab per week.

CIV-C165 MECHANICS
Subject includes the following topics: 1) Basic Principles; 2) Resultant of Force Systems; 3) Equilibrium of Force Systems; 4) Centroid of Areas; and 5) Moment of Inertia.

CIV-C166 SURVEYING
This subject consists of the theory and use of survey measuring instruments, the steel tape, engineer's level and transit and the basic techniques in the use of these instruments.

CIV-M163 INTRODUCTION TO APPLICATION SOFTWARE
Through hands-on experience, this course provides an introduction to MS-DOS commands, WordPerfect word processing, SuperCalc3 spreadsheet work, AND DBASE III Plus data base manipulation. The course setting is in a net-worked IBM-PC lab.
CIV-M169 MATHEMATICS
The course is basically a review of high school mathematics with emphasis being on trigonometry, solution of algebraic equations, exponents, and logarithms.

CIV-M261 INTRODUCTORY CALCULUS
The course provides an introduction to differential calculus of functions of a single variable with emphasis placed on applications related to the field of Civil Engineering Technology.

CIV-M361 CALCULUS
The course is an introduction to the process of integration of functions of one variable. Includes techniques of integration as well as applications of integration in elementary problems relating to the field of Civil Engineering Technology.

CIV-M364 STATISTICS
The course is an introduction to general elementary statistical principles involving data handling, measures of central tendency, and dispersion, fundamentals of probability, distributions, and least squares correlation and regression.

CIV-R268 SPECIFICATIONS & REPORTS
The subject covers the writing of technical instructions, proposals, and long investigation reports, the presentation of oral briefings, and the preparation of job-search documentation. The student will also learn the basic format of the National Master Specification and the fundamental structure of construction specifications.

CIV-R457 INDUSTRIAL PSYCHOLOGY
The subject covers industrial supervision and the psychology of management, particularly in a technical domain.

CIV-T262 ENGINEERING GRAPHICS II
This subject is planned to continue the development of the students' technical drawing and drawing interpretation skills. Through the preparation of a set of construction drawings for a single family residence, students will be introduced to residential construction practices, standards and terminology applicable to their technology specialty.

CIV-T263 COMPUTER ASSISTED DRAFTING I
Introduction to graphic computers and computer-aided-drafting, involving Geometric entities, input modes, coordinate types, drawing creation and manipulation, dimensioning, cell libraries (creation and usage), layers, bookkeeping functions, and output (plotting). Production of drawings using Calcomp (Terak) hardware, a software package, named “MINN-DRAFT”.

CIV-T264 STRUCTURAL ANALYSIS I
1. Shear and Moment in Beams
2. Stresses in Beams

CIV-T265 STRENGTH OF MATERIALS I
The first part of the course deals with problems relating to support and pin reactions in frames and trusses. The second part deals with stress and deformation of materials.

CIV-T362 STRUCTURAL DRAWING PRACTICES
Students will continue to develop technical drawing and interpretation skills. Through the preparation of a set of structural design drawings and subsequent related “shop” drawings for a single story, office/warehouse building project, students will be introduced to structural detailing practices, drawing standards and terminology applicable to their technology specialty.

CIV-T363 COMPUTER ASSISTED DRAFTING II
The first half of this trimester will be a continuation of the previous one, and will involve a more complex project. This will be followed by the introduction to more sophisticated Software, named “Design Pro”. This will include use of menu options, directories, drafting mode, user work area, digitizers, function codes, grid and scale, keyboard coordinate entries, graphics commands, layers and pens, measures and drafting aids, introduction to 3-D, text editor, editing drawings, figures (ceils), text, dimensioning & plotting. Production of drawings related to engineering disciplines using Calcomp (Terak) hardware.

CIV-T364 STRUCTURAL ANALYSIS II
1. Combined Stresses
2. Mohr’s Circle
3. Structural Loads and Procedures

CIV-T365 STRENGTH OF MATERIALS II
This course deals with fluid statics, the stability of gravity and retaining walls, and graphical static solutions to simple frames.

CIV-T369 PROPERTIES OF MATERIALS
The course is intended to introduce the student to concrete (material) theory and practical concerns. The course commences with the study of cement manufacturing and types and leads directly into concrete practice and methods. Formwork systems are introduced as they apply to the more common concrete components of buildings. The final segment deals with a number of major reinforced concrete systems used for larger reinforced concrete building types, in functional concept only.

CIV-T461 SOIL MECHANICS I
Subject includes the following topics: introduction to soil mechanics, methods of soil formation (grain size analysis), soil grain characteristics, soil-water relationships (volumetric and gravimetric), soil-water relationships (plasticity), and soil classification systems.

CIV-T463 COMPUTER ASSISTED DRAFTING III
This topic, during this third trimester of this subject, will involve the student in using Computer Assisted Design and Drafting methods in the production of a variety of engineering drawings.

CIV-T464 STRUCTURAL ANALYSIS III
1. Determinacy
2. Shear and Moment Diagrams
3. Moment Distribution
4. Approximate Methods

CIV-T465 JOB CONTROL AND ECONOMICS
This subject consists of the theory of project scheduling using the Critical Path Method. It will include the logistics of the method including terminology, arrow diagrams, expediting, resource allocation, float and calendar dating. One third of the classroom time is allotted to train the student to think systematically about Economic issues related to Banking, Business & Government, Engineering and Personal Financial Management.
CIV-T467 REINFORCED CONCRETE DESIGN I
The course consists of: designing simple reinforced concrete beams for flexure, shear, deflection; designing simple columns for axial load and eccentricity, designing one way slabs, designing reinforced concrete walls.

CIV-T561 SOIL MECHANICS II
Subject includes the following topics: continuation of soil mechanics, settlement of fine grained soil, shear strength, frost action in soils, density of soils and compaction procedures, and permeability.

CIV-T563 STEEL DESIGN
The design of individual steel building components such as tension members, columns, beams, base plates, bolted and welded connections based on CAN-3-S16, 1-M84, using CISC, Handbook of Steel Construction, latest edition.

CIV-T564 STRUCTURAL ANALYSIS IV
1. Deflection Methods
2. Influence Line Diagrams

CIV-T565 COSTING AND CONTRACT ADMINISTRATION
This subject consists of construction estimating and its related costs, with practical exercises in the methods used to estimate Residential, Commercial & Industrial Buildings. The student will also develop an understanding of the construction process and competence with the application of management principles to construction projects.

CIV-T568 REINFORCED CONCRETE DESIGN II
1. Beams - Flexure (continued)
2. Beams - Miscellaneous
3. Columns - Compression and Bending (continued)

CIV-T569 MASONRY DESIGN
This subject consists of reviewing the fundamental structural principles involved in the design of concrete and brick masonry components, and briefly, examining the related hardware and construction practices and problems.

CIV-T661 FOUNDATION DESIGN
Subject is a continuation from Soil Mechanics II and includes the following topics: vertical soil press calculations; footing types and design; r.c. footing design; pile types and design; and horizontal earth pressures.

CIV-T663 TIMBER DESIGN
This course consists of the design of the various components that make up a timber and/or plywood structure. It also deals with the design of wood-framed buildings in accordance with CAN-3-086, 1-M84.

CIV-T664 STRUCTURAL ANALYSIS V
1. Moment Distribution
2. Shear Wall Structures
3. Analysis Applications

CIV-T665 DESIGN THESIS
This course consists of: producing complete design calculation notes and structural drawings for a construction project; calculating the project's structural cost; producing progress reports and design diary.

CIV-T668 REINFORCED CONCRETE DESIGN III
1. Two Way Systems
2. Concrete Walls (continued)

CIV-T669 TESTING MATERIALS
This subject consists of demonstrating procedures used in calibrating and verifying lab testing equipment, testing commercially available and lab fabricated structural products in accordance with the appropriate standards; introducing the concept of quality control, particularly with respect to concrete and masonry, and comparing the results of theoretical assessments of structural components to their actual demonstrated results.
SURVEY ENGINEERING TECHNOLOGY

PURPOSE
To develop knowledge and skills in the legal and engineering survey field.

COURSE
Survey Engineering Technology is a two-year diploma course with a September entry date. The course is designed to provide a broad scope of employment opportunities in the construction and resource industries and in government. The various fields include land, topographic, construction, mining, hydrographic and geodetic surveying.

ENTRANCE REQUIREMENTS
- 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation) with Mathematics 300, English 300 or 301, and Physics 300 or Physical Science 301;
- Adult Basic Education Pre-Technology (Adult 12) program completion

Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits; however, they must have specific credits in mathematics, English, and science* as outlined above. Mature students must also be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

* Physics 300 is strongly recommended as a more appropriate background for technology.

EMPLOYMENT POTENTIAL
Graduates have found employment opportunities in a broad range of construction and resource industries, and in government services. They have been hired for jobs in land surveys, construction and topographic surveys, mining surveys, hydrographic and geodetic surveys.

COURSE OUTLINE
Year 1
Term 1
CIV-C162 Engineering Graphics
CIV-C165 Mechanics
CIV-C166 Surveying
CIV-M163 Introduction to Application Software
CIV-M169 Mathematics
CIV-R167 Communications

Term 2
CIV-M269 Mathematics II
CIV-R267 Specifications & Reports
CIV-S262 Plan Preparation I
CIV-S263 Computer Applications I
CIV-S264 Theory & Use of Instruments I
CIV-S266 Surveying II

Term 3
CIV-M369 Calculus
CIV-S362 Plan Preparation II
CIV-S363 Computer Applications II
CIV-S364 Theory & Use of Instruments II
CIV-S365 Photogrammetry I
CIV-S366 Surveying III
CIV-S367 Survey Camp I

Year 2
Term 4
CIV-M469 Calculus II
CIV-S463 Route Surveys
CIV-S464 Theory & Use of Instruments III
CIV-S465 Photogrammetry II
CIV-S466 Advanced Surveying Computations

Term 5
CIV-S561 Control Surveys I
CIV-S562 Plan Preparation III
CIV-S563 Legal Survey I
CIV-S565 Terrain Interpretation
CIV-S566 Advanced Surveying Computations II
CIV-S567 Cartography

Term 6
CIV-R668 Report Writing & Industrial Psychology
CIV-S661 Control Surveys II
CIV-S662 Town Planning
CIV-S663 Legal Survey II
CIV-S664 Astronomy
CIV-S666 Hydraulics
CIV-S667 Survey Camp II

SUBJECT DESCRIPTIONS
CIV-C162 ENGINEERING GRAPHICS
Students will receive a basic understanding in the requirements for technical drawing standards. They will be required to develop basic engineering drafting skills through practice in the use of drawing instruments, the interpretation of simple drawings and sketches and the production and reproduction of simple components and mechanisms. Upon successful completion of this course, students will have obtained a thorough foundation in the fundamentals of engineering graphics, a basis upon which they may further develop their drafting skill and knowledge in their technology specialties. This course has one hour lecture and five hours lab per week.

CIV-C165 MECHANICS
This subject includes the following topics: 1) Basic Principles, 2) Resultant of Force Systems, 3) Equilibrium of Force Systems, 4) Centroid of Areas, and 5) Moment of Inertia.

CIV-C166 SURVEYING
This subject consists of the theory and use of survey measuring instruments, the steel tape, engineers level and transit and the basic techniques in the use of these instruments.

CIV-M163 INTRODUCTION TO APPLICATION SOFTWARE
Through hands-on experience, this course provides an introduction to MS-DOS commands, WordPerfect word-processing, SuperCalc spreadsheet work, and DBASE III Plus data base manipulation. The course setting is in a networked IBM-PC lab.

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CIV-M169 MATHEMATICS
The course is basically a review of high school mathematics with emphasis being on trigonometry, solution of algebraic equations, exponents, and logarithms.

CIV-M269 MATHEMATICS II
The course consists of the review of the plane triangle and associated trigonometry, plane geometry, co-ordinate geometry, basic statistics, and Introduction to differential calculus of algebraic functions of a single variable.

CIV-M369 CALCULUS
Continuation of differentiation of transcendental functions; integration methods and techniques, numerical integration; applications of definite integral i.e. area, volume of revolution, arc length, and surface of revolution.

CIV-M469 CALCULUS II
The course is an introduction to the concept of MATRICA ALGEBRA, and its application in the adjustment of observations in the field of surveying technology.

CIV-R167 COMMUNICATIONS
The subject covers the organizing and writing of letters, memorandums, and reports on technical subjects.

CIV-R267 SPECIFICATIONS & REPORTS
The subject covers the writing of technical instructions, proposals, and long investigation reports, the presentation of oral briefings, and the preparation of job-search documentation.

CIV-R566 REPORT WRITING & INDUSTRIAL PSYCHOLOGY
The subject covers the preparation of long investigation reports, the presentation of oral briefings, the preparation of job search documentation and industrial supervision and the psychology of management.

CIV-S262 PLAN PREPARATION I
This course is designed to give the student the knowledge and ability to precisely plot survey plans to scale, with the protractor and by the use of grid coordinates, to plot cross-sections and profiles, and site plans with topographic detail.

CIV-S263 COMPUTER APPLICATIONS I
This subject consists of an introduction to the use and programming of hand-held calculators and an introduction to COGO on a personal computer.

CIV-S264 THEORY & USE OF INSTRUMENTS I
This course consists of an investigation of the principles and operations of conventional and electronic survey equipment for the determination of linear, angular and vertical measurements including azimuth and position. Standards of procedures and equipment as well as calibration procedures and evaluation of data are also considered.

CIV-S266 SURVEYING II
This subject consists of traverses and calculations pertaining thereto; systems of township layout and monumentation; the determination of areas and volumes of earthwork and field procedures.

CIV-S362 PLAN PREPARATION II
This course is a continuation of CIV-S262, Plan Preparation I. The student will obtain further practice in survey drafting by: 1. plotting hard copies from field notes; 2. preparing hand drawn, with Leroy lettering and sketches for: (a) building location and staking certificates, and (b) sketches of proposed plans of subdivision; 3. plotting/tracing township diagrams, plans required for LTO registration by statute and regulation, such as special surveys, special plots, expropriation of right-of-ways for drains, roads, etc. and condominium plans; and 4. calculating and plotting mass haul diagrams.

CIV-S363 COMPUTER APPLICATIONS II
This subject consists of the continuing use of hand-held calculators and use of various PC survey software.

CIV-S364 THEORY & USE OF INSTRUMENTS II
This course consists of further investigation of the principles and operations of conventional and electronic survey equipment for the determination of linear, angular and vertical measurements including azimuth and position. Standards of procedures and equipment as well as calibration procedures and evaluation of data are also considered.

CIV-S365 PHOTOGRAMMETRY I
This course consists of theory relating to and practical work in the relationship of areas and angles and distances on aerial photographs to areas and angles and distances on the ground, calculations for flight planning for aerial photography and an introduction of photogrammetric triangulation through the use of a slotted template laydown.

CIV-S366 SURVEYING III
This subject consists of the field methods of laying out simple, vertical and compound curves and calculations pertaining thereto; special problems in surveys; introduction to mensuration; methods of stadia; construction survey procedure.

CIV-S367 SURVEY CAMP I
The purpose of this field camp is to acquire field data to be used in a route design project in CIV-5463, Route Surveys; to acquaint the student with basic survey techniques and Party-Chief responsibilities. Emphasis is on clear, neat, accurate and concise field notes.

CIV-5463 ROUTE SURVEYS
Subject includes the following topics: survey school - preliminary surveys, special curve problems, vertical curves, horizontal and vertical alignment, using RTAC design criteria, earthwork calc, including mass diagram, and runoff calculations and culvert design.

CIV-5464 THEORY & USE OF INSTRUMENTS III
This course consists of an investigation of the principles and operations of conventional and electronic survey equipment for
the determination of linear, angular and vertical measurements including azimuth and position. Standards of procedures and equipment as well as calibration procedures and evaluation of data are also considered.

CIV-S465 PHOTOGRAMMETRY II
This course is a continuation of CIV-S365 and consists of the following: a review of basic photogrammetric theory; area determination on aerial photographs; consideration of the theory of parallax as applied to stereo viewing of photographs and the use of the parallax bar to determine heights and elevations; construction of parallax correction graphs; consideration of the effects of tilt on an aerial photograph; and consideration of the function and general operating principles of photogrammetric plotters.

CIV-S466 ADVANCED SURVEYING COMPUTATIONS
This subject will examine advanced techniques in the areas of retracement surveys, curves and right-of-way surveys. Emphasis on the compiling and use of clear, neat and concise field notes.

CIV-S561 CONTROL SURVEYS I
Basic concepts of geometric geodesy with the relationship to the geoid. Georeferencing systems with emphasis on cartesian and geodetic ellipsoidal coordinate systems and their transformation. Terrestrial Positioning: The direct and inverse geodetic problems in three dimensions, horizontal positioning on the ellipsoid. Vertical positions. Basic concepts with respect to Map Projections with particular attention to the Transverse Mercator projection. The concepts and basics of the Dominion Lands System of Survey.

CIV-S562 PLAN PREPARATION III
The student will be further introduced to the topic of coordinate systems in use in the National Topographic system in Canada and will investigate the operation and effects of various map projections.

CIV-S563 LEGAL SURVEY I
This course will introduce the student to: The Canadian Legal System, Real Property Law, Boundary Concepts, Land Registration Systems, The Multipurpose Cadastre, The Dominion Land System, The Statutes of Manitoba relating to surveys, case law relating to surveys, and will offer the opportunity to solve practical survey problems.

CIV-S565 TERRAIN INTERPRETATION
This course involves the student in a review of elementary geology and geomorphology on the formation of landforms identifiable on aerial photographs and a study of photographs (stereo pairs) containing these landforms. From the theory, the student will be required to identify the various landforms, the method of deposition or formation of the landforms, and to deduce or infer the type of soil or granular material present in the landform; surface moisture conditions and possible sub-surface moisture conditions; soil permeability and permafrost conditions.

CIV-S566 ADVANCED SURVEYING COMPUTATIONS II
This subject will examine calculations on subdivision surveys and advanced work in computations. Emphasis on the compiling and use of clear, neat and concise field notes.

CIV-S567 CARTOGRAPHY
This course consists of practical work in (1) the production of a multi-coloured map of a given area (2) the setting up of a model in the Kelsh stereoplottor for a designated topographic area and scale, and (3) a consideration of basic cartographic principles governing map projects of the earth.

CIV-S661 CONTROL SURVEYS II

CIV-S662 TOWN PLANNING
To introduce students to the general theories of subdivision design and in particular to their application in Manitoba. This involves the examination of the function and hierarchy of the system of roads - Arterial, Major & Minor Collector and Residential, street intersections and associated potential traffic hazards, the investigation of various elements of subdivision design including P-loops, cul-de-sacs, pedestrian access and emergency access provisions, and their relationship to residential neighbourhoods, an examination of zoning regulations and their application, the requirement and provision of lands for PR and Schools and their inter-relationship, and the relationship of topography to subdivision design.

CIV-S663 LEGAL SURVEY II
This course continues the study, begun in the previous term, into the Canadian Legal System, Real Property Law, Boundary Concepts, Land Registration Systems, The Multipurpose Cadastre, The Dominion Land System, The Statutes of Manitoba relating to surveys, case law relating to surveys, and will again require the student to solve practical survey problems.

CIV-S664 ASTRONOMY
This subject consists of an introduction to spherical trigonometry; the celestial sphere and systems of coordinates, apparent, mean and sidereal times; the use of the Star Almanac For Land Surveyors; methods of observing the Sun and Polaris for azimuth and/or time; Time Stars; corrections to observations.

CIV-S666 HYDRAULICS
This course consists of a study of fluid statics, open channel flow and the theory, collection and application of data pertinent to the design of irrigation, drainage and flood control structures.

CIV-S667 SURVEY CAMP II
The purpose of this camp is to give the student an opportunity to apply principles and practices of advanced survey methods in a work atmosphere. The student will encounter problems of application of survey techniques and be required to solve them. The students will work individually or in groups to complete specific work assignments. The production of clear, concise field notes and reports including calculations and plots are a very real requirement of any work situation and are to be produced in all cases by each student.
PURPOSE
To develop the electronic knowledge and skills required to function in an entry-level job in the telecommunications industry.

COURSE
Telecommunications is a ten-month certificate course with entry dates in September, January and April. It is a competency-based learning (CBL) course that is structured to allow mastery of each skill area. CBL requires initiative in planning a study schedule, completing requirements in a reasonable time, and in managing time wisely and effectively to meet deadlines. Training is designed to allow hands-on experience in all skill areas and there is close coordination of theory and application.

ENTRANCE REQUIREMENTS
- 14 high school credits (Manitoba Grade 11 or equivalent secondary school preparation) with one of Mathematics 200 or 301 and one of Physics 200 or Physical Science 201. English 200 or 201 is strongly recommended;
- Adult Basic Education 11A

Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. standing (scores on each of the five tests must be 40 or higher) in lieu of 14 credits; however, they must have successfully completed one of Mathematics 200*, 301, 290 academic, or 911 and one of Physics 200 or 290 or Physical Science 201. Mature students must also be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

* Mathematics 200, or its academic equivalent, is strongly recommended as minimum preparation. A strong background in mathematics is essential to the field of electronics.

EMPLOYMENT POTENTIAL
Graduates have found employment with telephone and telecommunication companies as installers and maintenance technicians, with banks and copy-machine companies as service technicians, and with radio communication companies as radio and equipment technicians. Some graduates have chosen to work for a manufacturer of telecommunication equipment as a field-service technician, quality-control checker, or equipment technician.

SUBJECT DESCRIPTIONS
B18-T651 TELECOMMUNICATIONS TYPING
An intensive course in touch typewriting skills. Desired speed is 40 wpm. The student will learn to produce business letters, memos and a letter of application.

T12-T002 ELECTRICAL FUNDAMENTALS

T12-T004 SEMICONDUCTOR DEVICES
Conductors, semiconductors and insulators. P and N type semiconductors. Two terminal devices, rectifiers, varactors, zeners, tunnel diodes, photo cells, thermistors, and varistors. Bipolar transistors, circuit configurations, characteristics, and applications. SCRs, DIACS, TRIACS, VJTS, testing diodes, transistors and thyristors.

T12-T006 COMMUNICATIONS TRANSMITTERS AND RECEIVERS
Amplifiers A.F. IF and RF oscillators, mixers, detectors and heterodyne principles. CW, AM, SSB, DSB, FM and PM transmission and reception. Alignment, maintenance and trouble shooting VHF and mobile transceivers.

T12-T008 TRANSMISSION LINES, ANTENNAS INTRO MICROWAVES
Characteristics of transmission lines, standing waves, SWR impedance matching, dipole antennas, marconi antennas, directive arrays, propagation of radio waves, microwaves, polarization, waveguide modes, microwave oscillators, cavities and amplifiers, directional couplers, circulators and isolators.

T12-T009 MULTIPLEXING TECHNIQUES
Carrier fundamentals, analysis of Lenkurt 46A3 FDM carrier, fundamentals of frequency Division Multiplex, T1 PCM system parameters, introduction to data communications, machine codes and protocols.

T12-T010 TELEPHONE & TELEPHONE SWITCHING PRINCIPLES
Telephone exchanges, incoming signalling, signal processing, switching, outgoing signalling, clearing. Circuit reading, symbols for attached and detached drawings, schematic and wiring diagrams, cross referencing and interpretation of notes and circuit options. Practical application using A.E.I. rotary, Ericsson code bar and Mitel electronic common control PBXs.

T12-T014 DIGITAL TECHNIQUES
Components used in digital circuits, operation of logic gates, use of Boolean algebra to minimize logic circuit design. Design of both combinational and sequential logic circuits for a given application. Concepts for the selection of integrated circuits and practical applications.
T12-T016 MICROPROCESSORS
Microcomputer basics, introduction to programming the 6800 microprocessor. Interfacing. Experimental application using the 6800 microprocessor.

T13-M523 MATHEMATICS I
Algebra, powers of tens, exponents, ratio, trigonometry vectors, problem solving (AC and DC circuits).

T13-M523 MATHEMATICS II
Number systems, boolean algebra, digital logic.

T14-C504 COMMUNICATION
A self-paced practical course that develops communication skills from four viewpoints: job-seeker, employee, junior supervisor and small business owner. The course is tailored to fit the needs of individual students and the requirements of course Advisory Boards.
PURPOSE
To prepare students to estimate covering material and to cut, sew and apply it to fine furniture. The graduate will be proficient in the use of a sewing machine and air staple.

COURSE
Upholstery is a ten-month certificate course with a September entry date. The course combines lectures and practical work, including a considerable amount of time spent on constructing actual pieces of furniture. All aspects of the upholstery trade are covered, including spring construction, foam rubber construction, cutting, sewing, woodworking, and wood-surface refinishing.

ENTRANCE REQUIREMENTS
- 7 high school credits (Manitoba Grade 10 or equivalent secondary school preparation) with 100 or 101 subjects inclusive.
  Mathematics, English and Science are preferred; or
- Adult Basic Education 7-10 program completion.

Mature Student Admission. Mature students may submit other academic equivalents, including G.E.D. standing (scores on each of the five tests must be 41 or higher) or successful completion of one of Mathematics 100, 101, 190, or Practical Mathematics. Elementary/Secondary High Level and one of Science 100, 101 or 190. Mature students must also be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

* Applicants must be able to do basic operations in mathematics with whole numbers, fractions, and decimals and should be able to read with good comprehension at a Grade 9 level.

EMPLOYMENT POTENTIAL
Graduates have found employment in production and custom shops as springers, trimmers or cutters, and in custom shops as estimators, furniture salespeople and inspectors. Some graduates are self-employed.

COURSE OUTLINE
T02-U001 Basic Tools & Equipment, Theory
T02-U002 Basic Tools & Equipment, Practical
T02-U003 Spring Construction, Theory
T02-U004 Spring Construction, Practical
T02-U005 Burlap & Stuffing Up, Theory
T02-U006 Burlap & Stuffing Up, Practical
T02-U007 Trimmings, Theory
T02-U008 Trimmings, Practical
T02-U010 General Upholstery, Practical
T02-U011 Coverings, Theory
T02-U012 Coverings, Practical
T02-U013 Foam Rubber Applications, Theory
T02-U014 Foam Rubber Applications, Practical
T02-U016 Advanced General Upholstery, Practical
T02-U017 Woodworking, Theory
T02-U018 Woodworking, Practical
T02-U020 On-the-Job-Training
T02-U021 Wood Finishing, Theory
T02-U022 Wood Finishing, Practical
T13-M501 Upholstery Mathematics
T14-C544 Communication & Basic Accounting

SUBJECT DESCRIPTIONS
T02-U001 BASIC TOOLS AND EQUIPMENT, THEORY
Use of various hand tools, cushion machine, picking machine, sewing machines, electric shears, foam cutting machine.

T02-U002 BASIC TOOLS AND EQUIPMENT, PRACTICAL
Practical use of all tools in projects such as cutting foam rubber, stapling fabric, stapling spring clip, sewing and attaching coil springs.

T02-U003 SPRING CONSTRUCTION, THEORY
Webbing, slatted seats, fastening springs, no-sag springs, unit springs, spring edges, typing springs.

T02-U004 SPRING CONSTRUCTION, PRACTICAL
Measuring, cutting and installing various types of springs on furniture. This includes coil springs on a wooden slot seat on webbing, no-sag springs with a hard edge or soft edge.

T02-U005 BURLAP AND STUFFING UP, THEORY
Attaching burlap, sewing burlap, lining on open frame, edge rolls, single stuffing, double stuffing, stitching up, shaping.

T02-U006 BURLAP AND STUFFING UP, PRACTICAL
Attaching burlap over coil springs, no-sag springs with a hard edge or soft edge. Stitching burlap to springs and applying various types of stuffing.

T02-U007 TRIMMINGS, THEORY
Making and fitting panels, attaching outside covers, blind tacking, hand sewing, applying leather and mercerized gimp, spacing furniture nails, attaching skirts.

T02-U008 TRIMMINGS, PRACTICAL
Making and fitting panels, attaching outside covers, blind tacking, hand sewing, applying leather and mercerized gimp, spacing furniture nails, attaching skirts.

T02-U010 GENERAL UPHOLSTERY, PRACTICAL
The actual upholstering and reupholstering of chesterfield suites, foot stools, occasional chairs, etc.

T02-U011 COVERINGS, THEORY
Measuring projects, laying out plans, material layout, cutting material to size. Fitting covers, cutting and pleating, putting on covers, making cushions, sewing material together.

T02-U012 COVERINGS, PRACTICAL
Measuring projects, laying out plans, material layout, cutting material to size. Fitting covers, cutting and pleating, pulling on covers, making cushions, sewing material together.
T02-U013 FOAM RUBBER APPLICATIONS, THEORY
Cutting and shaping of foam rubber, fabricating and cementing. 
Applying tack strips.

T02-U014 FOAM RUBBER APPLICATIONS, PRACTICAL
Types of foam rubber and the best use of each. Cutting and 
shaping rubber for seat and back cushions and attaching foam to 
furniture frames.

T02-U016 ADVANCED GENERAL UPHOLSTERY, 
PRACTICAL
Advanced upholstering, including tufting and channeling on 
chesterfields and chairs, etc.

T02-U017 WOODWORKING, THEORY
Simple woodworking principles: operation of basic woodworking 
machines, hand tools, practical projects.

T02-U018 WOODWORKING, PRACTICAL
Projects requiring the use of hand and machine tools of the 
woodworking trade used in the upholstery trade.

T02-U020 ON-THE-JOB-TRAINING
Gives the student an opportunity to experience working in a 
custom and production shop.

T02-U021 WOOD FINISHING, THEORY
Hardwood, open grain, hardwood close grain, softwoods, oil 
stains, spirit stains, water stains, chemical stains.

T02-U022 WOOD FINISHING, PRACTICAL
Stripping, repairing and refinishing furniture.

T13-M501 UPHOLSTERY MATHEMATICS
Individual progress program. Diagnostic tests to identify remedial 
requirements for each student. Each student is required to 
complete basic assignments on each of these topics: whole 
numbers, fractions, decimals, elementary algebra (one unknown), 
percent, ratio and proportion, metric measure/calculation, de-
nominate numbers, square, square roots, Pythagoras theorem, 
measure distances, perimeters, circumferences, measure area of 
various geometric figures, calculate volume/capacity for various 
shapes of containers.

T14-C544 COMMUNICATION AND BASIC ACCOUNTING
Communication: introduction to workers' legislation, to small 
business management, and to job search techniques. Basic 
Accounting: introduction to simple bookkeeping for the owner of 
a small business
VISUAL LANGUAGE INTERPRETER TRAINING PROGRAM

PURPOSE
To develop the skills required to function as a visual language interpreter in facilitating communication between hearing and hearing-impaired individuals in a wide variety of settings and for diverse populations.

COURSE
The Visual Language Interpreter Training Program is a two-year diploma course with a September entry date in alternate years (1992 and 1994). The course is designed to increase the interpreter trainee’s fluency in ASL and English; to develop the skills necessary for both consecutive and simultaneous interpretation; and to provide cognitive tools to interact with both deaf and hearing communities as a facilitator of communication.

ENTRANCE REQUIREMENTS
A - 20 high school credits (Manitoba Grade 12 or equivalent secondary school preparation) with one of English 300 or 301; or
- Adult Basic Education 11B;
and
B - an interview with the Visual Language Interpreter Training Program Selection Committee; and
C - an intermediate level of sign language proficiency, as determined through an individual evaluation by the Selection Committee.

This is a Special Selection course. The Selection Committee chooses candidates on the basis of educational preparation, signing skills, maturity, and aptitude for a career as an interpreter for the deaf. Applicants are encouraged to do some background research on this profession before attending the interview.

Because this Special Selection course has an early cut-off date, applications should be submitted as early as possible. Please contact the Admissions Office at 632 2327 to confirm the exact date.

EMPLOYMENT POTENTIAL
As the demand for visual language interpreters grows across the nation, employers from across Canada have hired course graduates to meet their needs. Graduates are working in numerous mainstream programs in public schools, in interpreter referral centres across Canada and in post-secondary institutions. Some graduates work on a free-lance basis. Others have found employment in specialized services for deaf-blind persons and in administrative positions, such as coordinators of referral services. Graduates interpret in educational, medical, religious, recreation, community-agency, legal, employment and the performing-arts areas.

COURSE OUTLINE

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<tr>
<th>Term 1</th>
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<tbody>
<tr>
<td>B13-S161 Psychology</td>
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<tr>
<td>S01-B101 American Sign Language (optional)</td>
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<td>S01-B102 Culture &amp; Ethnology I</td>
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<td>S01-B103 Group Dynamics</td>
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<td>S01-B104 Interpretation: An Overview</td>
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<td>S01-B105 Skill Building: Analyzing English</td>
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<th>Term 2</th>
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<tr>
<td>S01-B101 American Sign Language (optional)</td>
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<td>S01-B106 Culture &amp; Ethnology II</td>
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<td>S01-B107 Consecutive Interpretation (optional)</td>
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<td>S01-B108 Deaf Culture</td>
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<td>S01-B109 The Medical Perspective</td>
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<td>S01-B111 Sociology of Deafness</td>
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<th>Term 3</th>
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<tr>
<td>S01-B101 American Sign Language (optional)</td>
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<td>S01-B107 Consecutive Interpretation (optional)</td>
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<tr>
<td>S01-B110 Skill Building: Analyzing ASL</td>
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<td>S01-B112 Basic Translation Skills</td>
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<td>S01-B113 Cross Cultural Interaction</td>
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<tr>
<td>S01-B114 Language: Syntax, Semantics, Pragmatics</td>
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SUBJECT DESCRIPTIONS

B13-S161 PSYCHOLOGY
This is an introductory course in psychology which introduces the student to the various major western psychology theories and theorists. Application is made to the study of personality and its development throughout a person’s lifespan.

S01-B101 AMERICAN SIGN LANGUAGE
This course is designed to introduce the student to the basic grammatical principles and rules of American Sign Language. Attention is also given to differences between American Sign Language and other forms of signing and attitudes within the deaf community toward sign variances. Material is presented through lecture, handouts, videotapes and supplementary practice as outlined in student videotexts and workbooks. This course includes lab time.

S01-B102 CULTURE AND ETHNOLOGY I
This course will look at the origins of culture and the development of some early cultural groups. The progress from early to modern cultures will be charted with discussion on such aspects of culture as language, values and norms, traditions and organizations. There will be some emphasis on the effects of urbanization in modern North American culture. As well, mosaic and melting-pot models within the North American context will be examined. Topics included here are cultural plurality, majority and minority cultures, cultures in conflict and cultures in transition. This course is a prerequisite for the Culture and Ethnology II course.

S01-B103 GROUP DYNAMICS
This course will give students experiential exercises in successful group dynamics processes. Discussion will centre around the stages of group growth and, subsequently, methods of intervention at each stage of group growth. This is presented as a one-week seminar.

S01-B104 INTERPRETATION: AN OVERVIEW
This course is designed to introduce the student to historical and contemporary perspectives of the Interpretation field.

S01-B105 SKILL BUILDING: ANALYZING ENGLISH
This course provides students with practice exercises in tech-
niques of rephrasing and restructuring passages in English while retaining the intended meaning of the passage. It is a prerequisite to Basic Translation Skills and Consecutive Interpretation.

S01-B106 CULTURE AND ETHNOLOGY II
Focus will be on case studies of cultural/ethnic groups, their size and locations. Students will complete an individual project dealing with topics such as the comparison of a critical cultural aspect over several cultural groups, an in-depth study of a particular culture, or a comparison of two cultures.

S01-B107 CONSECUTIVE INTERPRETATION
This course is designed to give the student a solid base in the practical aspects of consecutive interpretation. This course is a prerequisite to Simultaneous Interpretation, Year II.

S01-B108 DEAF CULTURE
This course is designed to introduce the student to the cultures of deaf people in North America. It will cover the factors of cultures, the features of cultures, the influence of American Sign Language on cultures, and the relationship between languages of deaf people and cultures. It will also discuss the similarities and differences of American and Canadian deaf cultures in addition to the values, norms, identities and subcultures. Material is presented through lecture, handouts, recommended reading, videotapes and student presentations.

S01-B109 THE MEDICAL PERSPECTIVE
This course is designed to give the student an overview of the medical aspects of deafness including information on the etiologies of deafness as well as the physiology of hearing and profiles of hearing losses.

S01-B110 SKILL BUILDING: ANALYZING ASL
This course provides students with practice exercises in techniques of rephrasing and restructuring passages in American Sign Language while retaining the intended meaning of the passage. It is a prerequisite to Basic Translation Skills and Consecutive Interpretation.

S01-B111 SOCIOLOGY OF DEAFNESS
An examination of the experiences, activities and perspectives of deaf people within the hearing world, as well as the impact on the lives of deaf people as a result of the assumptions and practices of hearing people.

S01-B112 BASIC TRANSLATION SKILLS
This course will give students practice in translating passages of English into American Sign Language and American Sign Language into English with sufficient time for complete language analysis in order to work out the translations. Attention will be paid to the appropriateness of vocabulary choice, sentence structure and register.

S01-B113 CROSS CULTURAL INTERACTION
This course will assist students to identify and articulate the factors behind potential cross-cultural problems, concerns and issues.

S01-B114 LANGUAGE: SYNTAX, SEMANTICS, PRAGMATICS
The student will increase her or his syntactic, pragmatic and semantically understanding of the English language through lectures and assignments on the topics. Language development models will be outlined and implications for the deaf examined.
VOCATIONAL INDUSTRIAL TEACHER EDUCATION

PURPOSE
To develop the knowledge and skills required for Vocational Industrial Teacher certification by Manitoba Education.

COURSE
Vocational Industrial Teacher Education is a ten-month certificate course with a September entry date. The course is designed to meet the certification requirements of Manitoba Education for vocational industrial teachers.

ENTRANCE REQUIREMENTS
A - 20 high school credits (Manitoba Grade 12 or equivalent high school preparation). Mathematics 300 or 301 and English 300 or 301 are recommended;

and

B - a Journeyman's Certificate in a designated trade and a minimum of six years approved work experience in that trade, including the apprenticeship period;

or

- evidence of satisfactory trade training in a non-designated trade and a minimum of six years approved work experience in that trade, including the training period;

or

- evidence of satisfactory training in an approved technical or industrial area other than the trades and a minimum of six years of approved work experience, including the training period specific to the technical or industrial area.

and

C - submission of acceptable verification of all work experience, as set out in (B) above*;

and

D - submission of a personal resume;

and

E - An interview with the Vocational Industrial Teacher Education Admissions Committee.

* Acceptable verification of training period/work experience would include a journeyman's licence or, in the case of a non-designated trade, documents which verify required training and supervised experience. As well, the applicant must include letters of reference which confirm six years of work experience in the applicant's area of specialty.

Mature Student Admission. Mature students may submit either the Manitoba Education Mature Student Grade 12 Diploma or G.E.D. 12 standing in lieu of 20 credits; however, they must also meet entrance requirements (B), (C), (D), and (E) above and be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Department Head, Teacher Education, for review.

This is a special selection course. The Selection Committee looks for applicants who have an above average skill/trade background, adequate academic preparation, and an aptitude for teaching. Applicants who are found to be marginal in mathematics or reading, but who are otherwise suitable candidates, may be required to take remedial programs to overcome deficiencies.

EMPLOYMENT POTENTIAL
Upon successful completion of this course, the graduate will qualify for a vocational teaching certificate issued by Manitoba Education. Graduates have found employment in high schools that offer vocational industrial courses and in community colleges.

For further information on possible transfer of credit, see the Vocational Industrial Teacher Education course brochure.

COURSE OUTLINE
Term 1
B22-E206 Educational Psychology
B23-E103 Audiovisual Education
B23-E104 Communication Skills
B23-E105 General Teaching Methods I
B23-E201 Organizing Industrial Education Facilities
B23-V202 Introduction to Computers

Term 2
B22-E204 Educational Testing & Evaluation
B22-E210 Classroom Counseling
B23-E202 Principles of Industrial Education
B23-V202 Introduction to Computers

Term 3
B23-T202 Student Teaching

SUBJECT DESCRIPTIONS
B22-E204 EDUCATIONAL TESTING AND EVALUATION
Construction, administration and evaluation of tests. Methods of evaluation of student progress during the school year. Mastery of the statistical analysis necessary for testing and evaluation.

B22-E206 EDUCATIONAL PSYCHOLOGY
The study of growth and development from infancy to maturity, with emphasis on adolescence. The learning process in acquiring skills, ideas, and attitudes. Motives and problems in the life of the individual student. Mental health of the teacher.

B23-E103 AUDIOVISUAL EDUCATION
Communication principles related to the application of audiovisual media to education. Audiovisual materials and equipment; their selection, preparation, utilization, and evaluation in industrial education.

B23-E104 COMMUNICATION SKILLS
This course involves reading, writing, listening, and speaking. This basic purpose is to create an increased awareness of the communication process. It is designed to interest and inform, provoke and challenge. Students are presented with both theoretic-
cal and practical concepts, emphasis being placed on their application within the education structure.

**B23-E105 GENERAL TEACHING METHODS I**


**B23-E201 ORGANIZING INDUSTRIAL EDUCATION FACILITIES**

Principles of effective and safe planning of industrial education facilities in relation to the objectives to be fulfilled. Emphasis on location, size, shape of laboratory, and its physical requirements: specifications, purchasing and placement of required equipment and supplies.

**B23-E202 PRINCIPLES OF INDUSTRIAL EDUCATION**

Basic philosophies of education in general and industrial education in particular. Overview of the history and development of industrial education. Role of industrial education in Canadian federal and provincial programs. Current trends. Emphasis will be placed on vocational industrial or industrial arts education as required. Student research and report seminars.

**B23-E203 COURSE DEVELOPMENT IN INDUSTRIAL EDUCATION**

Development of an orderly procedure for the identification of concepts and instructional units to be used in teaching. The culminating project will be a course outline involving analysis of content; instructional objectives; resource units and sample tests.

**B23-E205 GENERAL TEACHING METHODS II**

Prerequisite: B23-E105 General Teaching Methods I. Continuation of General Teaching Methods I with emphasis on teaching methods not covered previously. Additional areas of study include: class organization and management, public relations, professionalism, and research related to teaching methods in industrial education.

**B23-E301 INDEPENDENT STUDY**

Designed to provide the student meeting the prerequisites with an opportunity to engage in independent research and/or problem solving directly related to industrial arts education. Approval of the Chairman, Teacher Education Section, must be obtained to undertake this course. A student qualifying for independent study will be required to select and work in consultation with a staff advisor.

**B23-T202 STUDENT TEACHING**

A continuation of B23-T102 with less emphasis on observation and more emphasis on actual teaching. The program will also require greater overall teaching responsibilities including planning, classroom management, evaluation, and extracurricular activities.

**B23-V101 VOCATIONAL TRAINING & RELATED WORK EXPERIENCE**

Credit is received for related work experience.
PURPOSE
To develop the skills and knowledge required to safely and effectively perform the oxyacetylene, arc, tungsten-inert-gas, and metal-inert-gas welding processes and related operations.

COURSE
Welding is a seven-month certificate course with entry dates in September and November. The course comprises five hours each day of practical shop work, and two hours of classroom instruction in welding, mathematics, science, industrial communications and blueprint reading.

Please note that because Workers Compensation regulations stipulate that steel-toed footwear must be worn in industrial workplaces, students are required to provide and wear appropriate safety footwear in welding and machine shops, both in the college and during in-industry placements.

ENTRANCE REQUIREMENTS
- 7 high school credits (Manitoba Grade 10 or equivalent secondary school preparation) with Mathematics 100 or 101 and Science 100 or 101. English 100 or 101 is strongly recommended, or
- Adult Basic Education 7-10 program completion.

Mature Student Admission. Mature student applicants may submit other educational equivalents, including G.E.D. standing (scores on each of the five tests must be 41 or higher), in lieu of 7 credits; however, they must have successfully completed one of Mathematics 100, 101, 190, or Practical Mathematics - Elementary/Junior High Level and one of Science 100, 101 or 190. Mature students must also be 20 years of age on or before September 30 in the year of registration. All mature student applications are referred to the Director of Admissions/Registration for review.

EMPLOYMENT POTENTIAL
Some graduates have found employment in aircraft maintenance, in the manufacturing of farm equipment, and in heavy-equipment repairs. Other graduates are employed in highway construction, northern mines and hydro-electric power plants.

COURSE OUTLINE
T03-R033 Blue Print Reading & Sketching for Welding PE
T04-A011 Safety Precautions in Welding & Cutting
T04-A021 General Principles of Arc Welding, Theory
T04-A022 Fusion Welding
T04-A031 General Principles (Gas Metal Arc & Tungsten Inert)
T04-A041 Combined Review & Testing
T04-A042 Gas Metal Arc Welding (Semi-Automatic)
T04-A052 Tungsten Inert Gas Welding (T.I.G.)
T04-A082 Special Welding Applications
T04-G011 General Principles
T04-G012 Fusion (Gas) Welding, Brazing & Flame Cutting
T04-G021 Principles of Flame Cutting & Miscellaneous Applications
T04-M510 Related Machine Shop
T04-W012 In-Plant Training
T13-M504 Welding Mathematics
T13-S504 Welding Science
T14-C502 Communication

SUBJECT DESCRIPTIONS
T03-R033 BLUE PRINT READING AND SKETCHING FOR WELDING PE
Drawing interpretation as applied to the welding trade.

T04-A011 SAFETY PRECAUTIONS IN WELDING & CUTTING
Lectures involving safety hazards and precautions encountered in general welding processes. General electrical apparatus hazards and precautions, grounding methods, machine use and adjusting. Precautions in welding various types of work, containers, cylinders, etc.: Selection of linse shades. Prevention of radiation burns, elimination of toxic fumes, proper ventilation of work area, selection of proper work clothing and equipment, safety in material and job handling.

T04-A021 GENERAL PRINCIPLES OF ARC WELDING, THEORY
Circuit, arc, machines electrodes, polarity, arc blow, effects of welding heat on metals, welding definitions, amount of current for the job, types and position of welded joints.

T04-A022 FUSION WELDING
Arc welding practice in vertical up and vertical down, horizontal and overhead position on flat plate.

T04-A031 GENERAL PRINCIPLES (GAS METAL ARC & TUNGSTEN INERT)
Theory of process using shielding gas. Types of gases and control systems. Electrode materials and feeding system use and maintenance.

T04-A041 COMBINED REVIEW AND TESTING
Final theory test. A comprehensive test (primarily short-answer type) to determine degree of understanding of total course theory subjects. Test is administered following a complete review of theory topics.

T04-A042 GAS METAL ARC WELDING (SEMI-AUTOMATIC)
Maintenance and use of equipment, flow gages, wire feeders, hand guns, etc. Applications of various shielding gases (Helium, Argon, Nitrogen, CO2, etc.) Machine control settings.

T04-A052 TUNGSTEN INERT GAS WELDING TIG

T04-A082 SPECIAL WELDING APPLICATIONS
Special process techniques and application. Hard surfacing, metal spraying, arc-air gouging. Preparation of materials, safety precautions, etc.

T04-G011 GENERAL PRINCIPLES
Historical development, oxygen and acetylene, flame characteristics, equipment, set-up and operation of equipment, general precautions, identifying metals, preparation for welding, expansion and contraction.
T04-G012 FUSION (GAS) WELDING, BRAZING AND FLAME CUTTING
Safety in setting up and using oxy-acetylene equipment. Identifying and setting torch for carburizing, neutralizing, and oxidizing flame. Introduction to fusion welding, puddling and bead-running on sheet metal. Identification selecting weld rods and fusing filler rod to base metal. Welding butt joints, lap joints, fillet welds and corner welds on sheet steel in the flat horizonal, vertical and overhead. Performing the same joints on sheet steel using bronze brazing rod. Safely operating flame cutting equipment cutting various thickness of steel plate.

T04-G021 PRINCIPLES OF FLAME CUTTING AND MISCELLANEOUS APPLICATIONS
Lecture and demonstration (hands-on experience by student if possible) in flame brazing of aluminum, fusion brazing of cast iron (pre-heating, flux application) white metal welding, silver brazing of steel, copper, brass and cast iron, and hard surface application.

T04-M510 RELATED MACHINE SHOP
One week (25 hours). Basic metals, metal layout and measuring tools, metal working equipment and safety.

T04-W012 IN-PLANT TRAINING
The student is assigned to an industrial workplace for a two-week period. Under the direction of workplace management, the student will observe and participate in work practices.

T13-M504 WELDING MATH
Individual progress mathematics program utilizing diagnostic tests to identify remedial requirements for each student. Students are required to complete basic assignments on each of the following topics: operations with whole numbers, fractions, and decimals, solving and writing simple equations with one unknown, percent calculations, ratio and proportions, denominate numbers, metric measurement and calculation, squares and square roots, right angle triangle, Pythagoras theorem, measure of distance perimeters and circumference, measure of surface areas of various geometric figures, calculation of volume/capacity/mass for commonly-used containers.

T13-S504 WELDING SCIENCE
Mining methods, refining of ore, steel-making furnaces, types of steel, heat treatment of steel and critical temperatures, effects of welding on steel and lattice structure influence of expansion, mechanical properties, alloys and stainless steels.

T14-C502 COMMUNICATION
A program similar to T14-C504 but only 20 hours duration. T14-C504 is described as: "A self-paced practical course that develops communications skills from four viewpoints - job-seeker, employee, junior supervisor, small business owner. The course is tailored to fit the needs of individual students and the requirements of course Advisory Boards."