Red River Community College is a member of the Association of Canadian Community Colleges.

The college is sponsored jointly by the Government of the Province of Manitoba and the Government of Canada.

This calendar is approved by, and issued under, the authority of the Minister of Colleges and Universities Affairs. The college reserves the right to make changes in the information contained in this publication.
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CALENDAR OF EVENTS

1974

July 1  Dominion Day (College closed).
July 2  Teacher Education Summer Session opens.
July 29 Teacher Education second session opens.
August 5 Civic Holiday (College closed).
September 2 Labour Day (College closed).
September 3 Fall Term commences (see page 9 for other entry dates).
September 9 Final date for late registration for Day school courses.
September 9 Registration begins for Fall Term
September 9 Registration begins for Fall Term Evening Courses.
September 16 Fall Term Evening Courses commence.
October 14 Thanksgiving Day (College closed).
December 24 Last day of classes before Christmas vacation.
December 25 Christmas Day (College closed).
December 26 Boxing Day (College closed).
December 27 Offices re-open.

1975

January 1  New Year's Day (College closed).
January 2  Offices re-open.
January 6  Classes recommence.
January 6  Registration begins for Winter Term Evening Courses.
January 13 Winter Term Evening Courses commence.
January 22 Fall Term Day courses examinations commence.
January 31 Where applicable mid-term break begins.
February 3 Registration one year or less programs.
February 10 Registration Term 2 & 4
February 14 Final date for late Spring Term registration.
March 28 Good Friday (College closed).
March 31 Offices re-open.
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Certificate Courses Entry Dates

The first entry date shown can be considered as a firm date. Subsequent dates are tentative dates only. If classes are filled on the first date shown, subsequent dates will be null and void. Subsequent dates may be changed if the training situation warrants such a change. Where only one date is shown subsequent dates may be established if sufficient applications are received and if staff is available. Such additional classes may be operated on a second shift. (Assiniboine Community College dates not available at time of printing.)

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|                                 | The Pas  | Jan. 6         |
| Chef Training                   | Winnipeg | Sept. 3        |
| Child Care                      | Winnipeg | Sept. 3        |
| Clerk-Typist                    | Winnipeg | Sept. 4-Mar. 4-|
|                                 | The Pas  | Sept. 23-Jan. 6|
| Clerical Bookkeeping            | Winnipeg | Sept. 4-Nov. 18-
|                                 | The Pas  | Feb. 4-Jan. 6  |
| Commercial & Industrial Sales   | Winnipeg | Sept. 3        |
| Cooking Commercial              | Winnipeg | Sept. 3-Jan. 6-
<p>|                                 | The Pas  | Mar. 3         |
| Cosmetology                     | The Pas  | Sept. 3-Jan. 6 |
| Dental Assistant                | Winnipeg | Sept. 9        |
| Dental Auxiliary                | The Pas  | Sept. 3        |
| Diesel Mechanics                | Winnipeg | Sept. 5        |
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| Drafting Architectural          | Winnipeg | Sept. 5        |
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Department of Colleges and Universities Affairs
Province of Manitoba

The Honourable Ben Hanuschak
Minister

W.C. Lorimer
Deputy Minister

Community Colleges Division
E. B. Angood, Assistant Deputy Minister, Review and Development

J. E. McCannel, Assistant Deputy Minister, Operations
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Assistant Director,  
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C. H. HOWARD, B.SC., (C.E.),  
P. ENG.  
Assistant Director,  
Educational Support Services
R. A. DUNHAM, B. SC., B. ED.  
Principal,  
Industrial & Technology Division
G. A. JOSEPH, B. A., B. E.,  
P. ENG.  
Principal,  
Extension & Community Services Division
P. F. PENNER, B. A., B. ED.  
Principal,  
Health Sciences Division
R. A. SANBURN, B. SC.,  
BUS. ADMIN.  
Principal,  
Applied Arts & Business Division

Administration & Student Services
S. P. DIDCOTE, B. SC., (I.E.)  
Assistant Director
R. NEWMAN, CERT. PUBLIC ADMIN.  
Supervisor
G. ANDERSON  
Purchasing Coordinator
MRS. E. BAGOT  
Bookstore Manageress
N. KONOWALCHUK  
Accountant
M. LABELLE  
Administrative Assistant
D. G. LOWER  
Supervisor of Stores
W. H. GRANT  
Registrar
D. TYLER (MRS.), B.A.  
Admissions Officer
H. V. HUME, B. SC., B. ED.  
Supervisor, Guidance & Testing
D. CURTIS, B.A., B. ED.  
Counsellor
G. E. DAVIES  
Counsellor
R. M. FLOCH (MISS), B. SC. (H. EC.), B. ED.  
Counsellor
H. L. HENDERSON (MISS), B. A., B. ED.  
Counsellor
J. N. NEUFELD, B.A.,  
B. PAED., B. ED.  
Counsellor
M. H. SAWKA, B. SC., (E.E.), B. ED.  
Counsellor
C. A. SIMONSON, Coordinator of Support Services for the Deaf and Hard of Hearing

P. A. LAW (MRS.), R.N. Health Nurse

R. POLLOCK, B. SC., (PHYS. ED.) Dept. Head, Physical Education

J. GRAHAM (MISS) B. A., B. ED. Instructor, Physical Education

J. KAPLAN, B. SC., M. ED. Instructor, Physical Education

Educational Support Services

C. H. HOWARD, B. SC. (C.E.), Assistant Director

P. ENG.

B. BARNARD (MISS), B. N. Educational Development Officer

D. P. LOWE Educational Media Consultant

A. MIAH, B. A., L.L.B., M.SC. Chief Librarian,

J. GREEN Learning Resources Centre

L. E. MOUSSEAU, B.A. Manager/Producer

I. APPELEYARD (MISS) ETV Production Centre

J. GREEN Facility Utilization Coordinator

L. E. MOUSSEAU, B.A.

I. APPELEYARD (MISS)

J. G. CARTWRIGHT Supervisor, Food Services

S. L. URSEL Maintenance Superintendent, Manitoba Dept. of Public Works

J. KAISER Student Placement Office, Dept. of Manpower & Immigration
This calendar offers detailed information on the courses and subjects available through the divisions listed below.

1. The Applied Arts and Business Division offers arts-based courses, general education courses as a service to the other divisions, teacher education courses, business administration and commercial courses for business office training.

2. The Health Sciences Division offers courses in the Paramedical fields in cooperation with hospitals and other medical organizations.

3. The Industrial and Technology Division offers pre-employment and apprenticeship training in trade and industrial areas, and engineering technology courses for high school graduates.

4. The Extension and Community Services Division offers a wide selection of evening courses; adult basic education courses for persons lacking the prerequisites for vocation courses, Occupational English for persons lacking the necessary proficiency in English, courses in Management Development and Training in Industry.

Programs and courses are offered subject to sufficient enrolment and availability of instructional staff. Maximum limits on enrolment in some classes are governed also by availability of field work, placement, and capacity of facilities.

The college reserves the right to make changes in its fees, offerings, regulations and procedures.

Assiniboine Community College in Brandon and Keewatin Community College in The Pas offer similar services to the communities which they serve.

A. A. Loveridge, Principal, Assiniboine Community College, 1430 Victoria Avenue East, Brandon, Manitoba.

M. N. G. Eastman, Principal, Keewatin Community College, 7th Avenue at Charlebois Street, The Pas, Manitoba.
ADMISSION PROCEDURES

Prerequisites for Admission

Grades shown as prerequisites are Manitoba standings. Equivalent standings of applicants from other provinces and countries outside of Canada are acceptable. Applicants are urged to submit their academic transcripts to the college admissions officer for evaluation.

S.A.C.U. scores are not required for admission.

Persons lacking the formal requirements for admission to any course at Red River Community College are strongly urged to contact the college admissions officer to determine whether a suitable qualifying course is available.

Admissions Committee

All applications must be approved by an admissions committee established by the divisional principal. Applicants may be asked to appear before the committee for a personal interview and evaluation.

Where an applicant lacks the formal prerequisites and where there are extenuating circumstances, the admissions committee may approve admission on the basis of test results.

Details on the mature student admission plan are contained under the specific section of the calendar dealing with the course.

Part-Time Students

Providing space is available, many individual subjects are open to part-time students who have the necessary prerequisites. Persons interested in taking partial courses are urged to contact the college admissions officer for more details.

The courses of all part-time students are subject to approval by the admissions committee.

Senior Citizens

The college will admit Manitoba residents sixty years of age or over to subjects in which space exists following registration. There is a nominal tuition fee of $2. Persons so admitted will be expected to bear any additional costs covering books, supplies, and equipment (when applicable).

Recognition of G.E.D. Academic Equivalency Standing

Applicants who have written the General Educational Development Tests and who have been awarded grade 10 or grade 11 certificates of academic equivalency by the Department of Education will be considered as having met the academic prerequisites of courses which require grade 10 (or Adult 10) standing or grade 11 (or Adult 11) standing respectively and which do not have specific subject prerequisites for admission.

In the case of courses which require a grade 12 standing, the grade 12 dip-
Loma attained by way of the G.E.D. tests will be accepted where specific subject requirements in mathematics or science are not specified. Where specific subjects at the grade 12 level are required for admission applicants will be considered on the basis of individual course requirements.

To be eligible to write the General Educational Development Tests a person must have been a resident of Manitoba for at least six months, have reached nineteen years of age, have been out of school at least one full academic year, and the school class of which he was a member must have graduated.

Application forms may be obtained from any of the three community colleges or from the Department of Education, 312—1181 Portage Avenue, Winnipeg, R3C 0V8

Correspondence Upgrading Courses
The Correspondence Branch of the Manitoba Department of Education offers English and Mathematics upgrading courses at the grade 9 to 11 level. Appropriate standing in English and Mathematics gained through this program will be acceptable for admission of mature students who apply for courses having English and Mathematics prerequisite requirements. These subjects are only acceptable for those courses which have as a prerequisite grade 10 or 11 English or Mathematics and will not be acceptable for those courses which require proficiency in English and Mathematics at the grade 12 level.

Subject Credit or Advanced Standing
Credit for work completed prior to enrolling in any course in the college may be considered by an admissions committee on a subject by subject basis. It is the responsibility of the student to:

a) make a written request for credit to the admissions officer within three weeks of published commencement date for the course as stated in the college calendar; and

b) provide suitable documentation of subject content and the grade received for the work to be evaluated.

Course Credit or Inter-Institutional Transfer
A special working agreement between the University of Winnipeg and Red River Community College exists in the areas of Business Administration and Chemical Technology. (A similar agreement is pending in Child Care.)

A graduate of R.R.C.C. with a diploma in Chemical Technology may complete the requirements for a B.Sc. at the University of Winnipeg in two additional years. Conversely, a graduate of the University of Winnipeg with a major in Chemistry may complete the requirements for a diploma in Chemical Technology in one additional year. In either case both the B.Sc. and the diploma can be completed in four years instead of five years.

In the second arrangement an integrated program has been developed by which students may complete the requirements for the diploma in Business Administration and the B.A. in Administrative Studies in four years instead of the previous five. As an alternative, if each is completed separately, half a year's credit will be granted for whichever course is completed first.
A special arrangement has been made with the University of Manitoba for graduates of the college's teacher education course to receive advanced standing in the University of Manitoba B.Ed. program.

**English Language Requirement for Foreign Students**

All applicants whose native language is not English are required to write a TOEFL (Test of English as a Foreign Language) before their admittance can be considered. This test is available through the Educational Testing Service, Box 1025, Berkeley, California, 9470, U.S.A.

**Applications for Admission**

1. **Post-Secondary Courses**

The following regulations apply to courses which have a basic prerequisite of grade 12 and to the Pre-College courses.

All applicants who are paying their own fees are required to:

a) Apply in writing using the approved application form for Red River Community College.

b) Hold at least the minimum academic prerequisites listed under each course.

c) Submit a transcript of their high school marks (grades 11 and 12 where applicable) which should accompany the application. Processing of applications cannot be completed until the official transcripts have been received by the college, although students currently in high school are encouraged to submit their applications before they receive their school results in June.

d) Be sixteen years of age or over.

e) Be physically qualified in reference to the type of course selected.

f) When the number of applicants exceeds the accommodation available, the admissions committees reserve the right to accept those whom they consider most likely to succeed. In such instances, preference in admission will be given to students of the Province.

2. **Certificate Courses**

The following regulations apply to courses where basic prerequisites are less than grade 12.

Applicants who are not sponsored by Canada Manpower are classified as "provincial entry" applicants. Provincial entry applicants, are required to pay tuition fees, and must provide their own textbooks, supplies and other equipment.

Those applying as provincial entries must use the approved application form. A transcript of the marks received by an applicant in his last completed grade of academic schooling must be attached to the application.

Provincial entry applicants, when accepted will have their names placed on our waiting list and will be so notified. It is to be understood that, in a few courses lasting one year or less, there may be a waiting list of some length. Acceptance into such courses may not occur for a number of months.
3. Sponsored Applicants

Applicants who are being sponsored by Canada Manpower under the C.M.T.P. (Canada Manpower Training Plan) Program or by any other sponsoring agency must be documented by the sponsoring agency in accordance with agreements made with the community college.

If the sponsor is other than a Canada Manpower Centre, a letter or other form of commitment as to extent of sponsorship (tuition, books, etc.) must be received by the registrar.

This documentation must be completed prior to registration day when the applicants arrive at the college to commence their courses.
FINANCIAL INFORMATION

Fees
For courses which have a basic prerequisite of grade 12 and to the Pre-College courses, a tuition fee of $100 and student activity fee (see below) for each five-month term are payable in full on or before the date or registration for each term. Students who have had their applications approved by the admissions committee are encouraged to pay their tuition fees in advance of the registration date. This assists both the college and the individual student, as the time then spent on registration is kept to a minimum. (See individual courses for specific fees and other expenses.)

For courses which have entrance prerequisites less than grade 12, tuition fees are based on a monthly rate of $7 (except for Welding). The rate for Welding is $14 per month. The number of months for each course is shown under course details in this calendar. Fees for courses of more than six months’ duration are payable as follows: the fee for the first five months at the time of registration, the remainder of the fee at the end of five months’ training. Fees for courses of six months’ duration or less are payable in full at time of registration.

Refunds
A student leaving the course for any reason within the first thirty calendar days will be eligible for a refund of the tuition fee paid less the fee for one month’s tuition. A student leaving during the second thirty days will be eligible for a refund of the tuition fee paid less the fee for two months’ tuition. No refunds are made after the second thirty days unless special circumstances warrant consideration for a refund. The principal may exercise discretionary powers in such cases.

Student Activity Fees
A student activity fee based on the rate of $2 per month is payable at time of registration for the length of the period for which the student is enrolled.

Refunds of student activity fees must be obtained from the Student Association.

Sponsored Students
Students sponsored by Canada Manpower or any other agency normally will not be expected to pay their own fees. Applicants should abide by the regulations of the sponsoring agency.

Financial Assistance
Unfavorable financial circumstances need not deter deserving students from enrolling at Red River Community College. Assistance is available in various forms.

1. Canada Manpower Centre (C.M.T.P. Programs)

Qualified persons may be referred to training at Red River Community College through the Canada Manpower Training Program through Federal Canada Manpower Centre. Depending on age, marital status and status in
the labor force, an applicant may qualify for tuition, or tuition and a living allowance subsidy. Check with the local Manpower Centre to determine your eligibility.

2. **Manitoba Government Student Assistance Program**
Financial assistance is available under this program in the form of provincial government bursaries and Canada Student Loans. Depending on the course you are taking and your financial need, you may be eligible for bursary only, loan only, or both bursary and loan. A single application form covers both types of assistance.

Application forms and brochures explaining the program are available at the college or from the Student Aid Office, 1181 Portage Avenue, Winnipeg, R3C 0V8; Telephone 786-0152.

3. **Department of Health and Social Development Student Assistance**
If the amount of assistance received through provincial bursaries and/or Canada Student Loans is not sufficient to meet your needs, you may also apply for additional assistance through the Department of Health and Social Development.

Information about this extra assistance is also included in the student assistance brochure mentioned above, which is available at the college.

4. **Children of War Dead (Education Assistance Act)**
Tuition fees and monthly allowances are provided for children of veterans whose deaths were attributed to military service. Inquiries should be directed to the nearest district office of the Department of Veterans Affairs.

5. **Vocational Rehabilitation Training**
This program is sponsored jointly by the Government of Canada and the Province of Manitoba under the provisions of the Vocational Rehabilitation of Disabled Persons Agreement. All applicants must be over sixteen years of age. Interested persons may secure further information by corresponding with the Co-ordinator of Rehabilitation Services, Department of Health and Social Development, 141 Doncaster Blvd., Winnipeg, Manitoba.
SCHOLARSHIPS AND AWARDS

The Administrative Management Society Bursaries. Two at $100 each; one available in each of the Third and Fourth Term to students in Secretarial Science.

ASHRAE Bursary. The American Society of Heating, Refrigeration and Air Conditioning Engineers (Man. Chapter) awards $75 to a Term 4 Heat and Power Tech. student based on achievement in Term 3 courses relating to the heating, ventilating, and air conditioning field.

The Association of Administrative Assistants Awards. Two scholarships at $150; one available in each of the Second and Fourth Term to students in Secretarial Science.

Association of Manitoba Land Surveyors Scholarships. Two at $100 each to students entering the Third Term of Surveying Technology.

Bird Construction Company Limited Scholarships. $200 and $100 for students entering Term 3 of Building Technology.

Birks Family Foundation Bursary. Awarded by the Foundation on the recommendation of the college scholarship committee and are not restricted to a specific course and are renewable.

Bristol Aerospace Ltd. Scholarships. Two at $100 each to students entering Term 3 of Electronic and Mechanical Technology.

Building Technologists Association of Manitoba Inc., Scholarship. $25 to a student at the top of the class academically, at the end of the school year, in Architectural Drafting. $50 to a student at the top of the class academically, at the end of the first year in Design & Drafting Technology.

Canadian Information Processing Society Awards. Two $100 awards are available to students in Term 4 of the Computer Analyst/Programmer Course.

Canadian Kodak Co., Bursary. $100 to be awarded annually to the student in the Photographic Technician Course having the highest proficiency in photo techniques, leadership qualities, character and a potential for success in his or her chosen field.

Canadian Laboratory Supplies. Award for theory in Clinical Chemistry.

The Canadian Restaurant Association Foundation. One bursary of $200 available to a student enrolled in the second year of Hotel and Restaurant Administration.

Canadian Society of Lab. Technologist, Man. Branch. Award for technical ability in med. lab.

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

Canadian Structural Clay Association Scholarship. $50 plus a Medallion to a student in Design & Drafting Technology with the highest overall standing at the end of the fourth term.
Chemical Institute of Canada (Manitoba Chapter) Book Award. To a student in First Year Chemical Technology for outstanding progress.

Chemical Institute of Canada Silver Medal Award. To a student in Chemical Technology with the highest standing in Term 4.

Chemical Rubber Company Book and Scroll Award. To a student in the first year of the Chemical Technology, for outstanding achievement in the freshman Chemistry Subject.

Chevron Standard Oil Scholarship. $300 to a student entering Term 3 of Civil or Structural Technology.

Codville Scholarship Fund. $100 awarded annually to a student in the Meat-cutting course who is making favorable progress and who requires financial assistance.

Credit Grantors Association of Winnipeg. Two bursaries of $100 each, one available in each of the Third and Fourth Term, to students in Business Administration.

Data Processing Management Association Bursary. $200 available to a student in Term 3 of the Computer Analyst/Programmer course.

Fisher Scientific Company Book Award. To a student in Term 3 of Chemical Technology who has shown outstanding performance in Organic Chemistry during the first year.

Fisher Scientific Company. Award for theory in Clinical Microbiology.

Garland Commercial Ranges Limited Award. An annual award of $100 will be made to an outstanding student enrolled in the Cooking or Commercial Baking courses.

Gladys Bell Scholarship. The Gladys Bell Scholarship is awarded annually by her former associates and students to some deserving student in the Bookkeeping Course.

The Grummet Memorial Fund Bursary. $125 to a Manitoba student entering a Diploma Nursing Course in the province. Applications available from the Manitoba Association of Registered Nurses.

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. The courses may be taken at any Canadian university or other approved institution of higher learning.

Each award is tenable until the attainment of a first degree or for a maximum of four years. To be eligible a student must attain an average mark of 70% or higher in the appropriate secondary school examinations in the subjects required for admittance to the approved institution, or must have attained an average of 70% or more in a college year upon which application is based. Further information and application forms may be obtained from The Secretary, Committee on Higher Education, Imperial Oil Limited, 111 St. Clair Avenue West, Toronto 7, Ontario.

International Business Machines Company Limited Scholarships. Two at $100 each both available to students in the Second Term of the Computer Analyst/Programmer Course.
The International Nickel 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 immigrants status, of good scholastic record, with a demonstrated interest in extra-curricular affairs.

James Robert Shore Memorial Award. $100 awarded to the graduate in Fourth Term with the highest standing in the Technology Program.

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 the graduating year: a) academic and technical ability, b) participation in college activities, and c) good character and personality.

The awards will be made to one student from each of the following groups:

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.

The Manitoba Association of Registered Nurses. $100 to a student entering the 2nd year of the Diploma Nursing Course. Applications available from the M.A.R.N., 647 Broadway Avenue, Winnipeg, Manitoba.

The Manitoba Electrical Association Scholarship. $100 for a student in the Third Term of Electrical Technology.

The Manitoba Hotel Association. Two bursaries of $250 each, both of which are available to students entering the third term of the final year of Hotel and Restaurant Administration.

Manitoba Hydro Scholarship. $100 for a student entering Third Term of Electrical Technology.

The Manitoba Society of Certified Engineering Technicians and Technologists Scholarships. Three at $100 each to the top student member entering Third Term in Civil, Mechanical and Electrical/Electronics Technologies.

The Manitoba Sugar Company Limited Bursary. $100 to a student entering Third Term of Heat & Power or Production Technology.

Manitoba Telephone System Scholarship. $100 to a student entering the Third Term of Electronic Technology.

Winnipeg Chapter of National Secretaries Assoc. (International). Entrance bursary to a high school student selecting training in the secretarial field.

Mohawk Oil Company Limited Award. $250 presented annually to Third Term Business Administration students who are in the marketing pattern.

Mutchmor Award. To a graduating student in the Industrial Arts Teacher Education Program for outstanding achievement in Industrial Arts Education.

Ortho Pharmaceutical Co. Award for theory in Blood Bank Serology.

Pfizer Co. Award for theory in Haematology.

Pritchard Engineering Co. Ltd. Bursary. $300 to a student entering Third Term of a Mechanical Technology Program.
Robert Morse Corp. Scholarship. A scholarship of $50 and an ASM Handbook to be granted to the student receiving the highest combined standing in Industrial Materials MECH-107 and Production Welding MECH-207 of Mechanical Technology.

Robin Hood Multifoods Ltd. $50 twice annually to students in Commercial Baking.

The Roning Group. $100 to a Technology student displaying the greatest proficiency in oral and written communication, and in report writing during Terms 1 and 2.

Royal Canadian Engineers Memorial Scholarships. Scholarships of up to $500 each are offered annually to students, both male and female, who are attending any educational course of study or practical training course beyond secondary school level. Scholarships are awarded on the basis of merit and need to the most suitable candidates from among those students who apply for the scholarship.

A candidate to be eligible for the Royal Canadian Engineers Memorial Scholarship must be the child or grandchild of a person who served in any rank in any of the following components of the Canadian Armed Forces:

a) A Royal Canadian Engineers component of the Canadian Army during World War 1, World War II, or under the United Nations in Korea, or
b) The Royal Canadian Engineers in the Canadian Army Regular or Permanent Force or Militia or Non-Permanent Active Militia for not less than three continuous years, or
c) The Military Engineers Branch of the unified Canadian Armed Forces for not less than three continuous years after the first day of February, 1966.

Sears Limited (Winnipeg Branch) Trophy. A miniature of the original trophy will be awarded annually to the student with the highest standing in the final year of the Graphic Arts course.

The Sales and Advertising Club of Winnipeg. Contributes substantial sums of money each year for specific aids to facilitate instruction in the Advertising and Sales Field.

Society of Industrial and Cost Accountants' Award. Five awards of $100 each to Term 2 Business Admin. students based on scholarship and need. The awards are usually made in February and are normally made to students who plan to enter the Accounting Pattern in Terms 3 & 4.

Stafford Foods Limited Award. $50 available annually to a student in the Commercial Cooking course.

The T. Eaton Co. Canada Limited Bursaries. Two at $150 each; one available in each of the Third Term and the Fourth Term to students in Business Administration.

Templeton Engineering Scholarships. Two at $200 each to students entering the Third Term of Civil and Structural Technology.

Underwood McLellan and Associates Limited Scholarships. Two at $100 each to students entering the Third Term of Civil and Structural Technology.

The Winnipeg Opti-Mrs. Club. Two bursaries at $100 each available to students in Office Practices and Skills Courses under one year in duration.
The Women’s Advertising and Sales Club of Winnipeg Bursaries. Two at $100 each; one available to Second Term students in each of Advertising Art and Commercial & Industrial Sales.

Xerox of Canada Ltd. One $250 fellowship to a student in Electronic Technology, Industrial and Technology Division; one $250 fellowship to a student in Business Administration.

Warner Chilcott Co. Award. For general proficiency in med. lab.

Wiedman Brothers Limited and J. M. Schneider (Man.) Ltd. Award. $100 available annually to a student in the Commercial Cooking course.

Zeller’s Award. $100 to a Term Three Business Administration student who is planning to enter the marketing option in Term Four.
Board and Room
No dormitories are operated in connection with Red River Community College. The Student Association Office has a list of accommodations for students who wish to obtain board and room in the city. This list changes from day to day, and it is recommended that students consult it on or before registration day. The acceptability of all boarding places listed is left entirely to the discretion of the student.

Bookstore
Textbooks and supplies may be purchased from the college bookstore. Students will be provided with a list of required items. The bookstore does not handle used books.

Counselling Services
Counselling Services are provided for college students and for members of the community who are interested in enrolling in courses in the college. This is a free service staffed by trained and experienced counsellors and operated on a voluntary and confidential basis.

Some of the services provided are:

1. *Vocational and educational counselling*
   Clients are assisted to formulate appropriate educational and career goals.

2. *Testing providing information relative to*
   (a) Counselling: assistance in the process of decision making.
   (b) Vocational evaluations: recommendations for admission to courses.

3. *Personal Counselling*
   Personal problems interfering with academic and vocational achievement may be alleviated by discussion with a counsellor.

4. *Public Relations*
   The counselling staff participate in high school career days and give career talks to high school students and other interested groups.

5. *Information Centre*
   A wide selection of community college and university calendars and files of occupational information are maintained as an aid to people who are in the process of planning their careers or educational programs.

The Counselling Centre is located on the plaza level of Building C, Room 115. The office hours are from 8:00 A.M. to 4:45 P.M. Monday to Friday.

Appointments are preferred, but are not always essential. The following telephone numbers are direct lines to the Counselling Offices: 786-6335, 786-6362, 786-6288.
Support Services for the Deaf and Hard of Hearing

Support services are provided for all hearing impaired students interested in enrolling in day or evening courses at the college.

The supportive services include:

1. Interpreting and Notetaking
   Interpreters and notetakers will provide assistance in the classroom.

2. Preparatory Program and Tutoring
   A preparatory program is planned for Spring, 1974. Students will receive special tutoring in reading, writing, language and mathematics.

3. Counselling
   A counsellor will provide assistance in vocational, educational and personal areas of concern.

The Support Services for the Deaf and Hard of Hearing Office is located in Building C, Room 115, on the plaza level. The office hours are from 8:00 A.M. to 4:45 P.M.

For further information, please call 786-6381 (T.T.Y.).

The Crazy Ox Variety Store

Crazy Ox is the name given to the student variety retail store on the campus of Red River Community College. This store is wholly owned by the Student Association.

Dining Areas

The modern dining areas at the college provide excellent, low-cost meals during the mid-day lunch periods.

Field Trips

The work at Red River Community College is closely related to the work of industry. It is the policy of the college to encourage field trips to outstanding establishments closely related to the students' studies. Students are expected to bear their own expenses, if any, on these trips.

Health Centre

The college operates a health centre with services available to all students. A registered nurse is on duty from 8:00 a.m. to 4:00 p.m. Monday through Friday, except for statutory holidays. The services consist mainly of emergency care for persons who are ill or injured, arranging transportation to hospitals or clinics for those requiring it, providing information and literature pertaining to health education and arranging appointments for students with doctors, dentists and counsellors. Special services are arranged for those students who have physical disabilities, who are affected by conditions such as diabetes or epilepsy, or who require regular medications.

Illness, Accidents and Injuries

Red River Community College reserves the right to call a physician in case of illness or accident, the expense to be borne by the student.

Red River Community College has exerted and will continue to exert every
effort to avoid accidents, but incorporates the following statement as part of the understanding between themselves and their students:

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 Red River Community College’s instruction program wherever conducted, or incidental to other activities on the Red River Community College’s properties or elsewhere.

Filing of an application form carries with it approval and consent with respect to the college’s policy governing accidents or illness as hereon set forth.

Students should consider obtaining adequate Medical, Hospital and Accident Insurance coverage for the period while they are attending the college.

Learning Resources Centre

The Learning Resources Centre is located on the mall level of Building C in the College complex. Among its facilities are individual study carrels, leisure reading areas, group study and seminar rooms, periodical study areas, a microfilm and photocopying room, a preview room, audiovisual distribution section, a reference area and a bibliography and index area.

The Learning Resources Centre is well-equipped with up-to-date books, publications and audiovisual materials in the applied arts, business, science, technology and related subject areas. Audiovisual materials consist of films and filmstrips, video tapes, slides, records, tapes, transparencies with all the equipment necessary. All print and non-print materials and equipment are available to staff and students. Some special facilities are well-stocked reference, government documents and periodical collections. Orientation is provided to new students and instructors to make them familiar with the Learning Resources Centre and its use.

The Learning Resources Centre hours are: Monday to Thursday, 8:00 a.m. to 9:00 p.m.; Friday, 8:00 a.m. to 4:45 p.m.; and Saturday, 8:45 a.m. to 9:00 p.m.

Television Production Centre

The Educational Television Production Centre is a three studio facility. Two of the studios are used as in-service classrooms. They are equipped to provide instructors and students with the means to video-tape productions for immediate and limited playback. The third studio is a major production area where programs containing permanent course information are taped.

The master control area allows an instructor to play a video-tape, 16mm film or series of slides into any one of three lecture theatres to a large number of students. The E.T.V. Centre also has full editing and dubbing facilities.

A/V Production Centre

The A/V Production Centre provides teaching aids as follows for faculty use in classroom presentations: overhead transparencies, 35mm slides, filmstrips, movie film, audio tapes, posters, charts, signs, and support services for educational television (e.g. title cards, etc.)

The centre is staffed with several experts in many facets of A/V, and is headed by a media consultant.
Lockers

Lockers are available without cost to full-time students. As the college is not responsible for personal property, however, students should provide themselves with their own locks. Combination padlocks may be purchased from the bookstore.

Manitoba Workmen’s Compensation

All students (including apprentices) enrolled through the programs of Canada Manpower Training Plan or Vocational Rehabilitation Training are covered by Manitoba Workmen’s Compensation. This will include medical, hospital and other necessary costs which are directly attributable to compensable accidents. For students receiving allowances it will cover income replacement.

This accident coverage under Workmen’s Compensation does not cover extra curricular activities. It covers only activities related to the course which could be deemed necessary or compulsory.

A safety program is in continuous operation at all times in all departments.

Physical Education and Athletic Programs

The college physical education and athletic programs will attempt to reach the following objectives:

a) to awaken an interest in a variety of activities usually associated with social and family life in our society;

b) to increase knowledge of those activities commonly found in the high schools;

c) to provide a framework of intramural competition within which each student and staff member might feel at ease competing with others of equal ability and interests; and

d) to provide, in cooperation with the Students’ Association, leadership, facilities, and planning for competition against various teams from outside the college for the further education and satisfaction of the top athletes.

The college plays an active part in competition among the community colleges within Manitoba, and also among the community colleges of the western provinces. Competition in badminton, volleyball, curling, basketball, and hockey is available on an inter-provincial basis.

Through the cooperation of the Student Association, excellent coaches have been hired to coach these teams and to ensure the best possible learning situations for the players.

Credit Program in Physical Education

A maximum of two hours credit per term may be granted to students who enrol in special physical education credit classes. Courses such as Business Administration, Secretarial Science, etc., have certain optional course requirements. Physical education may be used to satisfy part or all of these requirements. One hour of credit will be granted for completing a class that meets once per week for the duration of the term. Although the optional requirements may only appear in the fourth term outlines, credit hours taken in other terms may be banked and used to satisfy fourth term requirements.

Placement and Career Planning Office

The Department of Manpower and Immigration, through its Canada Manpower
Centres, operates on-campus Career Planning Offices at various Community Colleges across Canada. The office at Red River Community College is located in Room C-211 Bldg. C. It coordinates all recruiting of graduates carried out by employers on campus for their Canadian operations. It also services orders from employers not recruiting on campus. Current information on career opportunities is readily available and those students seeking part-time or summer employment are also given assistance. All students in the college, are encouraged to take advantage of the services by contacting the Career Planning Office early in their academic year.

Hours are from 8:00 a.m. to 4:30 p.m., Monday through Friday.

Student Administrative Council
There is an active Student Association at Red River Community College. Membership in this organization gives a student many privileges. The Association levies a membership fee at the time of registration based on the duration of the course.

Study Skills Center
A well-equipped study skills center is available to students who wish to improve their skills in any or all of the following:

Reading Speed and Flexibility
Reading Comprehension and Vocabulary Development
Listening and Study Skills
Critical Reading and Thinking
Language Development

A thirty hour course incorporating all of the above is offered on a voluntary basis. To those who complete the course successfully, two credit hours will be awarded and the credit may be used in any course where options apply. Further information is available from Miss Sydney Porter, 213 Bldg. D.

Tools and Equipment
Relatively expensive tools and equipment are made available to the students by the college. Certain items which, for sanitary or other reasons should be personal property, are purchased by the student.
ACADEMIC REGULATIONS

Class Hours
Classes are normally in session from 8:00 a.m. until 6:00 p.m. five days per week, Monday through Friday. These hours may be altered in accordance with training requirements and facilities.

Office Hours
The administrative offices and the switchboard are open from 8:00 a.m. until 5:00 p.m. Monday through Friday.

Attendance
Evaluation of progress at Red River Community College is based on class, laboratory and shop assignments, term papers, and a series of examinations. In order to maintain satisfactory progress in all phases of the courses selected, regular attendance is not only expected but is essential. When a student remains away from school for a period of five consecutive days without notifying the college as to the reason for his/her absence, the student shall be considered as discontinuing his/her course.

Discipline
All students are subject to the rules and regulations of the college and may be suspended or dismissed if their conduct or progress is unsatisfactory. Disciplinary problems of an extreme or persistent nature will be dealt with by the disciplinary board of the college. Students causing damage to facilities, property or equipment will be dealt with immediately by administrative personnel. Penalties will range from a minimum of financial reparation to dismissal from the college.

Dress
Students are expected to dress in a manner appropriate to the classroom, laboratory or workshop in which they are working. In some shops, special protective clothing must be worn. Special items such as goggles, gloves, etc., are available from the Red River Community College's Bookstore. Coveralls, smocks and other such regular protective clothing may be purchased from the local merchants as the need is evidenced.

Course Content
The course content listed herein is intended to provide information for the guidance of applicants in the selection of appropriate courses. It is not intended to be so rigid and inflexible that it restricts the initiative of teachers and students. In general, the course will be conducted in accordance with the curriculum outlines but may, through consultation between Red River Community College authorities and the advisory committees, be subject to revision to meet special educational needs as they arise.

Scholastic Regulations
A student enrolled in any course must maintain a satisfactory scholastic stand-
Examination Appeals

All subject failures are carefully scrutinized before the final mark is recorded. Appeals therefore will be considered only with approval of the principal of the division concerned.

Final Examinations

In most courses, examinations are conducted at the end of each term. Term marks based on student assignments, progress tests, etc., are incorporated with the results of these examinations to determine the final grade.

Supplemental Examinations

A. Post-Secondary Courses

The following regulations apply to courses which have a basic prerequisite of grade 12.

1. A full-time student is defined as one enrolled for a term having a minimum of 25 credit hours as outlined in the college calendar.

2. A part-time student is defined as one enrolled for a term having less than 25 credit hours.

3. Full-time students may continue into the following term as full-time students provided they have met all prerequisites required for the subjects of that term.

4. Students who do not meet the criteria above may continue as part-time students in those subjects for which they have the necessary prerequisites, provided the program selected is approved by the admissions committee and that there is space in the class.

5. Students who have a grade point average of 1.5 or better will be permitted to write a supplemental in the subject or subjects failed. These supplementals will be written within the first week of the commencement of the following term.

6. Full-time students with a grade point average of less than 1.5 will not have supplemental privileges in the subjects failed. They may repeat failed subjects at a later time or take them at night school if they are provided.

7. Part-time students who have failures will be permitted supplemental privileges on the same basis as full-time students. (The criterion will be the grade point average based only on the subjects taken).

8. A diploma will be granted when 100 credit hours have been obtained in the subjects of the course as outlined in the college calendar. It is recommended that students clear supplementals as early as possible (a change in course subject content may make it more difficult for students to pass the examination at a later date).

9. A student wishing to enroll for a term previously failed must submit an application to the admissions officer of the college. The acceptance of such applicants is at the discretion of the admissions committee.
10. A student who does not attend a scheduled examination will receive a grade of did not write (D.N.W.) and will have supplemental privileges in that subject only if the absence is justified on medical grounds or on other circumstances acceptable to the principal of the division in which the student is registered. This regulation will apply regardless of the grade point average received in the examinations for which the student did attend.

B. Certificate Courses

The following regulations apply to courses with basic prerequisites of less than grade 12:

Students who do not meet the standards required for a certificate of attainment may be permitted supplemental privileges in a limited number of subjects, subject to the approval of the department head and the principal. Supplementals must be written within two years from the date of course termination. Time and place for writing supplementals are to be arranged in consultation with the department head.

Certificates and Diplomas

Certificates of attainment are granted to students in courses of one year or less in duration who meet the following requirements:

a) satisfactory completion of all subjects required for the course; and
b) recommendation of their instructor or department head and approval of the principal.

Diplomas are awarded to students who successfully complete the requirements of courses of two years' duration.

Duplicate certificates or diplomas will be issued on payment of a fee of $3. The above regulations do not apply to courses which represent only part of a training program (for example, apprenticeship courses and some courses offered in the health sciences division).

Convocation

Convocation exercises are held periodically at which time certificates and diplomas are awarded to candidates meeting the prescribed requirements.

Duration of Courses

The course duration where shown in months is approximate. Termination dates of each course will be established by the college to meet the required training time.

Credit Hours

Each subject in the post-secondary courses has a number of credit hours attached to it. Each term shows a minimum of 25 credit hours regardless of the number of subjects shown or the hours of instruction offered. A student must complete subjects totalling 25 credit hours to be considered successful in a full term of work, and 100 credit hours to earn a diploma. Credit hours are also used as the subject weightings when calculating the grade point averages.

Letter Grades and the Grade Point Average

The academic progress of students in most of the post-secondary college courses is recorded by letter grades. There is no implied relationship between let-
ter grades and percentages. The letter grades used, along with their related
grade points, and their descriptive interpretation are as follows:

<table>
<thead>
<tr>
<th>Letter Grades</th>
<th>Grade Points</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>4.0</td>
<td>Exceptional</td>
</tr>
<tr>
<td>A</td>
<td>4.0</td>
<td>Outstanding</td>
</tr>
<tr>
<td>B+</td>
<td>3.5</td>
<td>Above Average</td>
</tr>
<tr>
<td>B</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>C+</td>
<td>2.5</td>
<td>Average</td>
</tr>
<tr>
<td>C</td>
<td>2.0</td>
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<tr>
<td></td>
<td></td>
<td>performance</td>
</tr>
<tr>
<td>F</td>
<td>0.0</td>
<td>Failure</td>
</tr>
</tbody>
</table>

For some subjects which carry no credit hours, a grade of Pass (P) is given.

A grade point average is calculated by multiplying the grade points obtained
in each subject by the subject credit hours (shown elsewhere in the calendar),
totalling the products and then dividing this sum by the total weighting
(credit hours) for the term or the subjects taken.

**Change of Status**

It is the responsibility of the student to notify the registrar of any change in
address, educational status, or marital status that might occur during the period
that the student is enrolled at the college, and to supply any required information
that was not available at the time of registration, such as social insurance
number.
## Courses

<table>
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<td>Barbering</td>
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<td>Business Accountancy</td>
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<td>Business Administration</td>
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<tr>
<td>Clerk Typist</td>
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<tr>
<td>Commercial and Industrial Sales</td>
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<tr>
<td>Computer Analyst/Programmer</td>
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<td>Creative Communications</td>
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<td>Graphic Arts</td>
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<td>Hairdressing and Beauty Culture</td>
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<tr>
<td>Hotel and Restaurant Administration</td>
<td>72</td>
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<tr>
<td>Library Technician</td>
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<td>Photographic Technician</td>
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<td>Secretarial Science</td>
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<td>Stenography</td>
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<td>Teacher Education</td>
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SANBURN, R.A., B.SC. (BUS. ADMIN.)
ALFORD, A.R., B.SC. B. COMM.

JUDT, L., B.SC., M. SC.

PORTER, W.A.G., B. A.

WILLIAMSON, D.S., B.A., B.ED.

AHLUWALIA, R.S., B. COMM. D.B.M., R.I.A.
ANDERSON, T.J., B.A., M.B.A.
AUDET, F.
BALANDUK, J.G., R.I.A.

BECHE, J.L.

BELAMY, W.R.

BEREZOWIECKI, A.R., B.A.

BIEBRACH, W.H., B.COMM.

BIRD, J.
BOGUCKI, S., B.SC., M.SC. in ED.
BOYANOWSKI, M., DIPL. A.A.
BRIGGS, J.
BROWN, K.E.
CAMERON, D.B., B.COMM., C.A.
CAMPBELL, G.R.D., C.A., B.COMM., M.B.A.
CARROLL, M.
CARTWRIGHT, J.G.
CAVERLY, J.A., B.E., P.ENG.
CEASER, R.J., B.A., B.COMM.
CHANG, S., B.A.
CHOPP, L.M.
CHUBB, B.J., M.I.B.B.
COFFINS, Y., B.A.
CUTHBERT, J.B.
Daly, P.M.
DAVIDSON, J., B.A., B.L.S.

DERKEN, A., R.I.A.
DIXON, J., B.A.
DRYBURGH, K., B.SC.

Principal
Chairman, Business & Distributive Education Section
Chairman, Teacher Education Section
Chairman, Business Administration Section
Chairman, Applied Arts Section
Accounting
Management & Personnel
Creative Communications
Business Education Practices
Business Education Practices
Business Education Practices
Communications & Social Sciences
Dept. Head, Economics, Insurance & Law
Secretarial Science
Industrial Education
Business Education Skills
Business Education Practices
Computer Analyst/Programmer
Marketing & Merchandising
Accounting
Business Education Skills
Supervisor, Food Services
Marketing & Merchandising
Economics, Insurance & Law
Business Education Skills
Computer Analyst/Programmer
Food Services
Dept. Head, Secretarial Sc.
Graphic Arts
Business Education Skills
Communications & Social Sciences - Library
Technician
Dept. Head, Accounting
Business Education Skills
Computer Analyst/Programmer
LAM, P.T., B.SC.
LANGVIN, E.J., B.A.
LANGLOIS, M.A.
LAZAR, L., B.A., C.E.T.

LENTON, G., B.A., (HONS)
LEWIS-SMITH, J., DIPL. F.A.
MACKENZIE, H.J., B.COMM.
MACKINTOSH, J.W., B.SC., M.A.
MARCH, M.J., B.A.

MARSH, R.J.
MARTINI, M., DIPL. A.A.
MCKIBBIN, I.
MCMILLAN, J.B., B.SC.
MOHR, A., B.COMM. (HONS)
MUNILLA, R., DIPL. H.R.A.
NEEDHIN, N., R.I.A.
NEWTON, D.
NICOLAS, J., DIPL. A.A.

OKELL, I., B.A., L.L.B.
OSTERMANN, K., DIPL. A.A.
PALMER, W., B.A.
PANKIW, D.B., DIPL. F.A.
PARR, J.L., B.A.

PARTAKER, L.M.
PATerson, M., B.F.A.
PETER, J.
PLUMMER, V.J., B.SC., B.ED.
POLLOCK, G., B.A.

POLLON, M.A., DIPL. A.A.
PORTER, S.E., B.A., M.A.

PRIMEAU, E.
RAMPAL, W., B.A., B.ED., M.E.D.
RAMSAy, E.A., P.ENG., B.SC. in E.E., B.ED.
REDKOP, I., B. COMM.
REDSTON, J.W., B.B.A.

REICHARDT, F.L., A.P.A.
REID, A.D.
REMPLE, A., R.I.A.
RODERS, K.W.
RODKIN, L., B.COMM. (HONS.)
ROSENDAHL, R.R., B.SC., ED.
RUBY, M.R., DIPL. A.A.
SCHMIDT, J., B.SC.

Communications & Social Sciences
Economics, Insurance & Law
Business Teacher Education
Communications & Social Sciences
Economics, Insurance & Law
Advertising Art
Marketing & Merchandising
Marketing & Merchandising
Food Services
Business Education Skills
Hairdressing
Industrial Education
Management & Personnel
Accounting
Business Education Practices
Business Education Practices - Lab. Student Supervisor
Economics, Insurance & Law
Business Education Skills
Marketing & Merchandising
Advertising Art
Communications & Social Sciences
Business Education Practices
Photo Tech.
Food Services
Business Education Skills
Communications & Social Sciences
CAP - Lab. Student Supervisor
Accounting
Business Education Skills
Business Education Practices
Dept. Head, Industrial Education
Accounting
Dept. Head, Management & Personnel
Accounting
Computer Analyst/Programmer
Computer Analyst/Programmer
Business Education Practices
Dept. Head, CAP
Industrial Education
Business Education Skills
Computer Analyst/Programmer
SIMMONDS, A.H.
SIMPSON, D.H., B.A.

SJOBerg, K., B.COMM.
SMITH, S.J.
SPENCER, L.A.
SPRUNT, O.E.
SUNDMARK, R.A., D.IPL. F.A.
SURTEES, A.E.
TAYLOR, M.

VAN ROOY, W., A.A.S., B.S., M.S.
VINET, R.G., B.A., B.ED., M.ED.

WAIN, W., D.IPL. H.R.A.
WARMAN, H., B.A.
WATT, M.A.F., D.IPL. A.A.
WAWRYK, J.D.

WORONIUK, J.

YANCHYNski, L.

YOUNG, V.H., B.A., B.PAED., B.ED.
ZACHARIAS, H.E., B.A., B.ED.
ZUKE, E., B.SC. (M.E.), M.B.A.

Dept. Head, Creative Arts
Communications & Social Sciences
Management & Personnel
Business Education Practices
Food Services, Lab. Student Sup.
Creative Communications
Advertising Art
Advertising Art
Computer Analyst/Programmer,
Lab. Student Supervisor
Industrial Education
Dept. Head, Communications
and Social Sciences
Hotel Administration
Secretarial Science
Business Education Skills
Food Services, Lab. Student Supervisor
Photo Tech., Lab. Student Supervisor
Communications & Social Sciences, Lab. Student Sup.
Marketing & Merchandising
Communications & Social Sc.
Management & Personnel
Entrance Requirements (one of)

1. Grade 12; or
2. Completion of Pre-College Course; or
3. Exceptionally talented students if 17 years of age or over; or
4. Anyone not meeting the above requirements may apply as a mature student. A mature student is considered to be one who is at least 20 years of age on or before September 30 in the year of registration. Applicants may be required to write an entrance exam. An admissions committee will consider each applicant on an individual basis.

Each applicant will be required to appear for a personal interview by the admissions committee. A specified portfolio of art work is required.

Duration of Course

Two school years, each of ten months duration, leads to a diploma in applied arts (Dipl. A.A.). Each year is divided into two five-month terms with final examinations at the end of each term.

Fees and Expenses

The tuition fee is $100 for each term. Other expenses include books, incidentals, board and lodging.

Employment Opportunities

We are living in an age and a world dependent on good communication. Advertising Art is visual communication which plays a vital role in the process of presenting and promoting ideas and products in our dynamic society. Industry and commerce, therefore, require the services provided by qualified illustrators, and commercial artists.

For the student who possesses natural aptitudes, talent, and initiative, rewarding and exciting employment and careers may be found after graduation in the following fields: commercial art studios, advertising agencies, television-graphic and film departments, layout artists, retouching artists, illustration, advertising and publicity departments of industry and commerce, newspapers, magazines, free-lance artists and photographers, and other related areas.
Course Outline

TERM 1 *First Year*

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>COURSE DESCRIPTION</th>
<th>HOURS PER WEEK</th>
<th>CREDIT HOURS</th>
</tr>
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<tbody>
<tr>
<td>AART-101</td>
<td>Introduction to Advertising</td>
<td>1 LECT, 0 LAB</td>
<td>1</td>
</tr>
<tr>
<td>AART-103</td>
<td>Mechanical Drawing</td>
<td>1 LECT, 3 LAB</td>
<td>3</td>
</tr>
<tr>
<td>AART-104</td>
<td>Fundamentals of Drawing</td>
<td>1 LECT, 9 LAB</td>
<td>8</td>
</tr>
<tr>
<td>AART-105</td>
<td>Fundamentals of Design</td>
<td>3 LECT, 6 LAB</td>
<td>9</td>
</tr>
<tr>
<td>AART-106</td>
<td>Fundamentals of Photography</td>
<td>1 LECT, 3 LAB</td>
<td>3</td>
</tr>
<tr>
<td>AART-108</td>
<td>Introduction to Art</td>
<td>2 LECT, 0 LAB</td>
<td>1</td>
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TERM 2

<table>
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<tr>
<th>SUBJECT NO.</th>
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<tbody>
<tr>
<td>AART-201</td>
<td>Introduction to Advertising</td>
<td>1 LECT, 0 LAB</td>
<td>1</td>
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<tr>
<td>AART-203</td>
<td>Mechanical Drawing</td>
<td>1 LECT, 3 LAB</td>
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</tr>
<tr>
<td>AART-204</td>
<td>Drawing</td>
<td>0 LECT, 8 LAB</td>
<td>7</td>
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<tr>
<td>AART-205</td>
<td>Fundamentals of Design</td>
<td>2 LECT, 6 LAB</td>
<td>8</td>
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<tr>
<td>AART-206</td>
<td>Fundamentals of Photography</td>
<td>1 LECT, 3 LAB</td>
<td>3</td>
</tr>
<tr>
<td>AART-207</td>
<td>Reproduction Methods &amp; Materials</td>
<td>1 LECT, 2 LAB</td>
<td>2</td>
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<tr>
<td>AART-208</td>
<td>Introduction to Art</td>
<td>2 LECT, 0 LAB</td>
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Course Outline

TERM 3 *Second Year*

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>COURSE DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>AART-304</td>
<td>Drawing</td>
<td>0 LECT, 7 LAB</td>
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<tr>
<td>AART-305</td>
<td>Design and Illustration</td>
<td>1 LECT, 10 LAB</td>
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<tr>
<td>AART-310</td>
<td>Visual Exploration</td>
<td>1 LECT, 1 LAB</td>
<td>2</td>
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<tr>
<td>AART-316</td>
<td>Photography</td>
<td>0 LECT, 3 LAB</td>
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<tr>
<td>AART-317</td>
<td>Production Art</td>
<td>1 LECT, 3 LAB</td>
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<tr>
<td>SOSC-131</td>
<td>Introduction to Social Sciences</td>
<td>2 LECT, 1 LAB</td>
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<th></th>
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<th>LAB.</th>
<th>HOURS</th>
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<td>TERM 2</td>
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<td>TERM 3</td>
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## TERM 4

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<th>Semester 2</th>
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<tr>
<td>AART-405</td>
<td>Advanced Illustration</td>
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<td>OR</td>
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<tr>
<td>AART-408</td>
<td>Commercial Problems</td>
<td>3</td>
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<td>AART-410</td>
<td>Visual Explorations</td>
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<td>1</td>
<td>2</td>
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<tr>
<td>ADMN-103</td>
<td>Marketing</td>
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<tr>
<td>ENGL-107</td>
<td>Oral Communications</td>
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<tr>
<td>AART-416</td>
<td>Photography</td>
<td></td>
<td>3</td>
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<td><strong>Total</strong></td>
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</table>
BARBERING

Entrance Requirements
1. Academic: Grade 10 or A.B.E. Adult 10. Anyone who does not meet the above requirement may submit an application. The admissions committee will review applications on an individual basis.
2. Health: General good health, substantiated by recent medical, dental and chest X-Ray certificates prior to commencement of training.
3. Personal: Well co-ordinated hand movements, emotional stability, a pleasing personality and a progressive minded attitude are essential to a successful career in this field of training.

Punctuality and regular attendance are also of paramount importance.

Duration of Course
Approximately ten months. Successful completion of this course qualifies the graduate for a certificate of attainment.

Fees and Expenses
The tuition fee is $7 per month or fraction thereof plus $20 for student association dues. Other expenses include a modern kit of barbering tools, textbooks and notebooks and barber smocks totalling approximately $200.00.

Employment Opportunities
Modern day fashions have brought about significant changes in the world of barbering and the contemporary barber, of necessity, must be aware of these changes to benefit from them to the fullest. Longer hair trends and modern hair fashions have placed an onus on the barber to learn new cutting techniques and new procedures in order to cope with the demands of the fashion-conscious public. Therefore, the basic barber-styling course has been modified to incorporate the recent changes.

More and more barber shops are functioning as barbering-styling salons and are offering services such as modern hair styling, modern hairpiece fitting as well as modern men's hair-coloring. With increased services, the barber-stylist is in greater demand and his financial rewards are greater.

The young barber begins with a basic rate of pay which is protected by the Minimum Wage Act, but with experience develops his own clientele which of course, increases his take-home pay. Rules and regulations of the Barber's Act are under the jurisdiction of the Province of Manitoba, Department of Labour.

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Course Outline

SUPPLIES:
Students must supply themselves with at least two white or colored barbering smocks.

Textbooks, barbers' jackets and a complete kit of barbering tools for this course will cost approximately $200.00.

A. Related and Practical Theory Content .................................. 350 Hours
B. Practical Work Content .................................................... 1050 Hours

Total 1400 Hours

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>HOURS</th>
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<tbody>
<tr>
<td>BARB-101</td>
<td>Health and Sanitation 66</td>
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<tr>
<td>BARB-102</td>
<td>Barbering Implements, Honing, Stropping 85</td>
<td>2</td>
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<tr>
<td>BARB-103</td>
<td>Face Shaving 120</td>
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<tr>
<td>BARB-104</td>
<td>Men's Haircutting 720</td>
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<tr>
<td>BARB-105</td>
<td>Men's Hairstyling 116</td>
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<td>BARB-106</td>
<td>Current Trends-Hairpieces, Body waves, Hairstraightening 50</td>
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<tr>
<td>BARB-107</td>
<td>The Study of Skin &amp; Hair (related Anatomy &amp; Physiology) 30</td>
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<tr>
<td>BARB-108</td>
<td>Disorders of Scalp, Skin &amp; Hair 30</td>
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<tr>
<td>BARB-109</td>
<td>Shampoos, Hair Treatments, Facials 95</td>
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<tr>
<td>BARB-110</td>
<td>Light Therapy Applied, Cosmetic Products 20</td>
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<tr>
<td>BARB-111</td>
<td>Shop Management &amp; General Aspects 20</td>
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<tr>
<td>BARB-112</td>
<td>Modern Men's Haircoloring 48</td>
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</tr>
</tbody>
</table>

1,400 50
Entrance Requirements
A minimum of complete Grade 11 or A.B.E. Adult 11. Preference will be given to applicants with standing in the 200 or 201 level course in English and Mathematics; or
Anyone who does not meet the above prerequisites may submit an application. The admissions committee will review the application on an individual basis.

Duration of Course
Approximately ten months. Successful completion of this course qualifies the graduate for a certificate of attainment.

Fees and Expenses
The tuition fee is $7 per month or fraction thereof. Other expenses include textbooks and supplies totalling approximately $90.

Employment Opportunities
Management today cannot find time to develop and train all employees — the well-trained accountant will find many opportunities open to him. There is a need for the type of personnel that has been thoroughly trained to fill key positions and to accept responsibilities. The Business Accountancy course provides the student with a thorough working knowledge of double entry book-keeping and accounting. He is capable of maintaining a complete set of books in most business enterprises.

Course Outline
TERM 1

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
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<td>ACNT-160</td>
<td>Accounting</td>
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<td>ACNT-162</td>
<td>Business Communications</td>
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<tr>
<td>ACNT-164</td>
<td>Business Mathematics</td>
<td>2</td>
<td>3</td>
<td>5</td>
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<tr>
<td>ACNT-266</td>
<td>Introduction to Computers</td>
<td>2</td>
<td>2</td>
<td>3</td>
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<td>ADMN-106</td>
<td>Business Law</td>
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<td>2</td>
<td>3</td>
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<td></td>
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<tr>
<td>ACNT-260</td>
<td>Accounting</td>
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<tr>
<td>ACNT-261</td>
<td>Cost Accounting</td>
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<td>Business Communications</td>
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<td>ACNT-265</td>
<td>Principles of Organization &amp;</td>
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<td></td>
<td>Management</td>
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<tr>
<td>ACNT-169</td>
<td>Office Procedures, or</td>
<td>3</td>
<td>2</td>
<td>4</td>
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<tr>
<td>ACNT-168</td>
<td>Basic Typewriting</td>
<td>3</td>
<td>2</td>
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<tr>
<td>PHED-500</td>
<td>Physical Education (Optional)</td>
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<td>0</td>
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<td></td>
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<td><strong>14</strong></td>
<td><strong>17</strong></td>
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</tbody>
</table>
BRAINER ADMINISTRATION

Entrance Requirements

1. Complete Grade 12 standing. Preference will be given to applicants with standing in English and Mathematics; or

2. Complete standing in the Pre-Applied Arts, Pre-Business or the Pre-Technology Course, or

3. Mature student — A mature student is considered to be one who is at least twenty years of age on or before September 30, in the year of registration. Applicants may be required to write an entrance exam and/or appear for a personal interview. The admissions committee will consider each applicant on an individual basis.

Duration of Course

Two school years, each of ten months duration, leads to a diploma in applied arts (Dipl. A.A.). Each year is divided into five-month terms with final examinations at the end of each term.

Fees and Expenses

The tuition fee is $100 for each term. Other expenses include books, incidentals, board and lodging.

Employment Opportunities

During the past two decades, statistics show that there has been a very significant shift of employment to office occupations. Paralleling this shift has been a comparable increase in division of responsibility. Business and Industry can no longer wait for long periods of time to completely develop selected employees for key positions in administration and management.

There are at least four broad categories of management discernable, particularly in the large companies. Personnel management is concerned with the selection, coordination, and direction of employees. Technical production management is responsible for the efficient production of goods and services. Financial management involves raising, utilizing, and controlling the monetary capital of firms. Commercial management has the job of buying the materials for processing and selling the goods or services produced.

For the well-trained person who possesses initiative, leadership qualities and vision, opportunities for administrative employment exist in almost every type of business enterprise in Manitoba.
# Course Outline

## TERM 1  First Year

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>HOURS / WEEK</th>
<th>CREDIT HOURS</th>
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</thead>
<tbody>
<tr>
<td>ENGL-102</td>
<td>1</td>
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<tr>
<td>SOSC-131</td>
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<td>ADMN-101</td>
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<td>ADMN-102</td>
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<td>ADMN-103</td>
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<td>ADMN-106</td>
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<tr>
<td>ADMN-109</td>
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<tr>
<td>ADMN-110</td>
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</table>

**Total:** 17  9  25

- ADMN-116  Special Mathematics Tutorial  3
- ENGL-108  Study Skills  1  2

* Optional additions to normal program

## TERM 2

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
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<tbody>
<tr>
<td>ENGL-213</td>
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<td>SOSC-231</td>
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<td>ADMN-201</td>
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<td>ADMN-202</td>
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<td>ADMN-203</td>
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<tr>
<td>ADMN-206</td>
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**Total:** 17  12  25
**TERM 3 Second Year**

All students must take ENGL-310

<table>
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<th>Description</th>
<th>Hours</th>
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<tbody>
<tr>
<td>ENGL-310</td>
<td>Report Writing</td>
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Students must elect seven of the following ten subjects.  

A complete term is twenty-five credit hours.

<table>
<thead>
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<th>Course</th>
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<th>Hours</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>ADMN-302</td>
<td>International Economics &amp; Trade</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>ADMN-305</td>
<td>Statistical Analyses</td>
<td>2</td>
<td>2</td>
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<tr>
<td>ADMN-312</td>
<td>Business Finance</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>ADMN-313</td>
<td>Personnel</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>ADMN-314</td>
<td>Selling and Advertising</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>SALE-104</td>
<td>Consumer Behaviour</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>ADMN-304</td>
<td>Labor Economics &amp; Industrial</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>ADMN-321</td>
<td>Managerial Accounting A</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>ADMN-322</td>
<td>Computer Applications in Business</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>SOSC-334</td>
<td>Political Science</td>
<td>2</td>
<td>1</td>
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<tr>
<td>ADMN-323</td>
<td>Contemporary Economic Issues</td>
<td>2</td>
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</table>

**TERM 4**

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Hours</th>
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<tbody>
<tr>
<td>ADMN-402</td>
<td>Systems</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>ADMN-415</td>
<td>Business Management</td>
<td>2</td>
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</tr>
<tr>
<td>ADMN-419</td>
<td>Business Seminar</td>
<td>2</td>
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<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>4</td>
<td>5</td>
<td>10</td>
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</table>

Elect five of the following options:

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Hours</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADMN-403</td>
<td>Cost Accounting</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>ADMN-407</td>
<td>Production and Work Study</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>ADMN-409</td>
<td>Retail Accounting &amp; Budgeting</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>ADMN-410</td>
<td>Merchandising</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>ADMN-411</td>
<td>Public Finance</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>ADMN-412</td>
<td>Finance &amp; Financial Intermediaries</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>ADMN-420</td>
<td>Risk and Insurance</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>ADMN-421</td>
<td>Marketing Research</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>ADMN-422</td>
<td>Computer Programming</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>SOSC-431</td>
<td>Contemporary Issues in Canadian</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Society</td>
<td>2</td>
<td>1</td>
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<tr>
<td>ADMN-423</td>
<td>Quantitative Methods</td>
<td>2</td>
<td>1</td>
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<tr>
<td>ADMN-424</td>
<td>Canadian Real Estate</td>
<td>2</td>
<td>1</td>
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<tr>
<td>ADMN-427</td>
<td>Business Law 2</td>
<td>2</td>
<td>1</td>
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<tr>
<td>ADMN-426</td>
<td>Managerial Accounting B</td>
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</table>

**NOTE:** Students may elect another subject for credit purposes in other sections of the college, but it may not be more than three credit hours.
1. Accounting Pattern shall include:
   ADMN-403   Cost Accounting
   ADMN-426   Managerial Accounting — B

2. Marketing Pattern shall include:
   ADMN-410   Merchandising plus one of
   ADMN-409   Retail Accounting, or
   ADMN-421   Marketing Research

3. Administration Pattern elects any five options

   Note: Students may elect another subject of their own choice with
   equivalent or more credit hours offered within the college provided
   suitable scheduling can be arranged.
CLERICAL-BOOKKEEPING

Entrance Requirements
A minimum of complete Grade 10 or A.B.E. Adult 10; or
Anyone who does not meet the above prerequisites may submit an application. The admissions committee will review the application on an individual basis.

Duration of Course
Approximately ten months. Successful completion of this course qualifies the graduate for a certificate of attainment.
One of the two methods of instruction may be chosen:
1. lecture type classes
2. individual progress

Fees and Expenses
The tuition fee is $7 per month or fraction thereof. Other expenses include textbooks and supplies totalling approximately $100.

Employment Opportunities
Due to the emphasis on training in bookkeeping and accounting machines, the graduate frequently obtains employment with a large business firm where, in the accounting department, he/she may perform the specialized duties of an accounts receivable, accounts payable, payroll, invoice, or data processing clerk or operate bookkeeping or accounting equipment. If employed by a small business firm, the graduate may be responsible for all of the foregoing duties as well as general office work.

Course Outline

TERM 1

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT</th>
<th>LECT.</th>
<th>LAB.</th>
<th>CREDIT HOURS</th>
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</thead>
<tbody>
<tr>
<td>CBOM-140</td>
<td>Accounting</td>
<td>5</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>CBOM-142</td>
<td>Business Machines</td>
<td>0</td>
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<td>3</td>
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<tr>
<td>STNO-225</td>
<td>Office Procedures</td>
<td>1</td>
<td>1</td>
<td>2</td>
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<tr>
<td>CBOM-144</td>
<td>Business Mathematics</td>
<td>2</td>
<td>1</td>
<td>2</td>
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<tr>
<td>STNO-122</td>
<td>Basic Typewriting</td>
<td>3</td>
<td>5</td>
<td>6</td>
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<td>STNO-123</td>
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<td></td>
<td>*Physical Education (Optional)</td>
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<td><strong>Total</strong></td>
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## TERM 2

<table>
<thead>
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<th>HOURS/WEED</th>
<th>CREDIT HOURS</th>
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<tr>
<td>CBOM-242</td>
<td>Business Machines</td>
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<tr>
<td>STNO-225</td>
<td>Office Procedures</td>
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<td>2</td>
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<tr>
<td>CBOM-243</td>
<td>Data Processing</td>
<td>2 2</td>
<td>3</td>
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<tr>
<td>CBOM-244</td>
<td>Business Mathematics</td>
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<td>2</td>
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<td>STNO-223</td>
<td>Business Communications</td>
<td>3 1</td>
<td>3</td>
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<td></td>
<td>*Physical Education (Optional)</td>
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<td></td>
<td>Elect three of the following options</td>
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<td></td>
<td></td>
<td>14 21</td>
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<td>CBOM-240</td>
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<td>4</td>
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<td>CBOM-241</td>
<td>Accounting 2</td>
<td>2 3</td>
<td>4</td>
</tr>
<tr>
<td>STNO-222</td>
<td>Intermediate Typewriting</td>
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<td>4</td>
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<td>STNO-224</td>
<td>Advanced Typewriting</td>
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<tr>
<td>CBOM-247</td>
<td>Consumer Education</td>
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Entrance Requirements
A minimum of Grade 10 or A.B.E. Adult 10; or
Anyone who does not meet the above prerequisites may submit an application. The admissions committee will review the application on an individual basis.

Duration of Course
Approximately six months. Successful completion of this course qualifies the graduate for a certificate of attainment.

One of two methods of instruction may be chosen:
1. lecture type classes
2. individual progress

Fees and Expenses
The tuition fee is $7 per month or fraction thereof. Other expenses include textbooks and supplies totalling approximately $80.

Employment Opportunities
Graduates are employed as typists, filing clerks, receptionists, etc. In a small office, a clerk typist performs a number of general office duties. Employment opportunities remain in high demand.

Course Outline

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>HOURS / WEEK</th>
<th>CREDIT HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LECT.</td>
<td>LAB.</td>
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<tr>
<td>CLRK-100</td>
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<td>STNO-123</td>
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<td>3</td>
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<td>CLRK-102</td>
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<tr>
<td>CLRK-104</td>
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<td>1</td>
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<tr>
<td></td>
<td>12</td>
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</table>
COMMERCIAL AND INDUSTRIAL SALES

Entrance Requirements
1. Complete grade 12 or A.B.E. Adult 11; or
2. Complete standing in the Pre-Applied Arts, Pre-Business or the Pre-Technology course; or
3. Mature student - A mature student is considered to be one who is at least twenty years of age on or before September 30 in the year of registration. Applicants may be required to write an entrance exam and/or appear for a personal interview. The admissions committee will consider each applicant on an individual basis.

Duration of Course
The complete course is one school year of ten months which is divided into two five-month terms. Each term represents a comprehensive sales training program in itself but at different levels of achievement. Term 1 provides the fundamental training required for a career in basic sales. Term 2 develops the basic concepts further by applying them at an advanced level of skill-building. One week of in business experience is included in each term. Students who successfully complete Term 1 and withdraw during Term 2 may be issued a certificate of attainment in Basic Salesmanship. Successful completion of the two terms qualifies the graduate for a certificate of attainment in Commercial and Industrial Sales.

Fees and Expenses
The tuition fee is $100 for each term. Other expenses include books, board and lodging and incidentals.

Employment Opportunities
Persons who wish to make progress in their chosen careers must have important personal qualities as well as certain abilities. They must have the ability to think, to assess situations, to make decisions, to apply principles, to communicate orally and graphically, and to work with and supervise people. Employers now recognize that many of these abilities can be developed and cultivated in classroom and laboratory settings, as are provided at Red River Community College.

There are unlimited employment possibilities and opportunities for advancement for persons possessing a favourable combination of personal qualities and abilities acquired through training for selling retail consumer goods and services or goods, services and supplies to institutions and industrial firms.
# Course Outline

## TERM 1

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT</th>
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<th>LAB.</th>
<th>CREDIT HOURS</th>
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<td>SALE-114</td>
<td>Sales Communications</td>
<td>2</td>
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<td>SOSC-121</td>
<td>Human Behavior for Salesmen</td>
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<td>2</td>
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<td>SALE-101</td>
<td>Basic Salesmanship</td>
<td>2</td>
<td>3</td>
<td>5</td>
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<tr>
<td>SALE-102</td>
<td>&quot;In Business&quot; Training</td>
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<td>3</td>
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<tr>
<td>SALE-103</td>
<td>Basic Marketing</td>
<td>2</td>
<td>2</td>
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<tr>
<td>SALE-104</td>
<td>Consumer Behaviour</td>
<td>2</td>
<td>1</td>
<td>2</td>
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<tr>
<td>SALE-105</td>
<td>Accounting</td>
<td>1</td>
<td>1</td>
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<tr>
<td>SALE-106</td>
<td>Business Math &amp; Machines</td>
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<td>1</td>
<td>2</td>
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<tr>
<td>SALE-107</td>
<td>Structure &amp; Organization of Business</td>
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**Total**

<table>
<thead>
<tr>
<th>HOURS/WEEK</th>
<th>LECT.</th>
<th>LAB.</th>
<th>CREDIT</th>
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<tr>
<td>TERM 1</td>
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## TERM 2

<table>
<thead>
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<th>SUBJECT</th>
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<th>LAB.</th>
<th>CREDIT HOURS</th>
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</thead>
<tbody>
<tr>
<td>SALE-214</td>
<td>Advanced Sales Communications</td>
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<td>3</td>
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<tr>
<td>SOSC-221</td>
<td>Behavioral Science for Salesmen</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>SALE-201</td>
<td>Advanced Salesmanship</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>SALE-202</td>
<td>Advanced &quot;In Business&quot; Training</td>
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<td>4</td>
<td>2</td>
</tr>
<tr>
<td>SALE-203</td>
<td>Marketing Management</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>SALE-206</td>
<td>Advertising &amp; Other Promotions</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>SALE-207</td>
<td>Structure &amp; Organization of Business</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>SALE-208</td>
<td>Merchandising</td>
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<td>2</td>
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</table>

**Total**

<table>
<thead>
<tr>
<th>HOURS/WEEK</th>
<th>LECT.</th>
<th>LAB.</th>
<th>CREDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>TERM 2</td>
<td>14</td>
<td>16</td>
<td>25</td>
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</tbody>
</table>

59
COMPUTER ANALYST/PROGRAMMER

Entrance Requirements

1. Complete Grade 12 standing with demonstrated proficiency in English and Mathematics; or

2. Complete standing in Pre-Business Course or the Pre-Technology course; or

3. Mature student - A mature student is considered to be one who is at least twenty years of age by the month of entry into the course. Applicants may be required to appear for a personal interview. The admissions committee will consider each applicant on an individual basis.

4. All applicants are required to write an aptitude test before admission is considered.

5. Enrolment in this course is limited. Applicants are advised to apply early for commencement in February or September of each year.

Duration of Course

Two school years, each of ten months duration, leads to a diploma in applied arts (Dip. A.A.). Each of the ten months periods is divided into two equal terms with final term examinations written at the end of each term.

Fees and Expenses

The registration fee is $100 for each term. Other expenses will include books, incidentals, board and lodging.

Aims and Objectives

To provide training in problem recognition, analysis and solution as applied to business applications in data processing.

The Need for Computer Analysts and Programmers

The Information Explosion of the past decade is hardly news to the individual recently involved with some aspect of the educational system. It has proved no less a challenge, however, to businesses competing in the current highly competitive market place. Computer systems have evolved as perhaps the best answer to the problem of handling the masses of information now prevalent in the business world. Had computers not been applied to the handling of banking documents, it has been said that manual methods would not now be able to cope with the mountains of paper involved and we might very well have lost the personal cheque as a convenient form of money transfer.

Computer applications in such diversified areas as business accounting, credit authorization, market and sales forecasting and a host of communications and scientific uses do not just happen. Individuals must recognize a problem and foresee a computer solution. The problem must then be thoroughly analyzed and explored taking into account every possible condition that can arise. Next the solution must be formulated with an action to be taken for
each of the problem conditions. As a last step, the solution must be translated into a set of instructions for a computer to follow — the program. The job of problem recognition, analysis and solution and of computer instruction is the exciting occupation of the analyst programmer. The position is particularly challenging because it requires fresh and creative thought in problem solving while enforcing the rigid constraint of “explaining” the solution to the computer. Students with a strong aptitude for logical reasoning, basic mathematical ability and a penchant for analytical thought would be well advised to consider this course of study. There can be no doubt that analyst/programmers enjoy amongst the most exciting prospects of any area in the field of technology.

Course Outline

**TERM 1 First Year**

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>Subject Description</th>
<th>LECT.</th>
<th>LAB.</th>
<th>HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL-110</td>
<td>Business Communications</td>
<td>2</td>
<td>2</td>
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</tr>
<tr>
<td>ADMN-101</td>
<td>Accounting</td>
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<td>2</td>
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</tr>
<tr>
<td>ADMN-109</td>
<td>Business Organizations</td>
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<td>3</td>
</tr>
<tr>
<td>PROG-101</td>
<td>Data Processing Programming 1</td>
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<td>10</td>
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<td>PROG-110</td>
<td>Data Processing Mathematics 1</td>
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<td>3</td>
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</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>13</strong></td>
<td><strong>16</strong></td>
<td><strong>25</strong></td>
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</tbody>
</table>

**TERM 2**

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>Subject Description</th>
<th>LECT.</th>
<th>LAB.</th>
<th>HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL-208</td>
<td>Business Communications</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>ENGL-209</td>
<td>Study Skills</td>
<td>0</td>
<td>2</td>
<td>2</td>
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<tr>
<td>ADMN-111</td>
<td>Economic Principles</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>ADMN-208</td>
<td>Accounting</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>PROG-201</td>
<td>Data Processing Programming 2</td>
<td>4</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>PROG-210</td>
<td>Data Processing Mathematics 2</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>11</strong></td>
<td><strong>18</strong></td>
<td><strong>25</strong></td>
</tr>
</tbody>
</table>
Course Outline
TERM 3  Second Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADMN-221</td>
<td>Economic Principles</td>
<td>2</td>
</tr>
<tr>
<td>ADMN-303</td>
<td>Managerial Accounting</td>
<td>2</td>
</tr>
<tr>
<td>PROG-301</td>
<td>Data Processing Programming 3</td>
<td>3</td>
</tr>
<tr>
<td>PROG-310</td>
<td>Data Processing Mathematics 3</td>
<td>2</td>
</tr>
<tr>
<td>PROG-305</td>
<td>Systems Analysis and Design</td>
<td>3</td>
</tr>
<tr>
<td>PROG-304</td>
<td>Operating Systems</td>
<td>3</td>
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| Total       | 15 | 15 | 25 |

TERM 4

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOSC-131</td>
<td>Introduction to Social Sciences</td>
<td>2</td>
</tr>
<tr>
<td>ADMN-425</td>
<td>Essentials of Management</td>
<td>2</td>
</tr>
<tr>
<td>PROG-410</td>
<td>Data Processing Mathematics 4</td>
<td>3</td>
</tr>
<tr>
<td>PROG-411</td>
<td>Computer Topics &amp; Modern Concepts</td>
<td>3</td>
</tr>
<tr>
<td>PROG-412</td>
<td>D.P. Organization</td>
<td>2</td>
</tr>
<tr>
<td>PROG-405</td>
<td>Project &amp; Technical Report</td>
<td>8</td>
</tr>
</tbody>
</table>

| Total       | 12 | 18 | 25 |
CREATIVE COMMUNICATIONS

Entrance Requirements (one of)
1. Grade 12; or
2. Completion of Pre-College Course; or
3. Anyone not meeting the above requirements may apply as a mature student. A mature student is considered to be one who is at least twenty years of age on or before September 30 in the year of registration. Applicants may be required to write an entrance exam. An admissions committee will consider each applicant on an individual basis.

Applicants should be able to provide some evidence of writing ability. All applicants will be interviewed by an admissions committee.

Duration of Course
Two school years each of ten months duration, lead to a diploma in applied arts (Dipl. A.A.). Each year is divided into two five-month terms with final examinations at the end of each term.

Fees and Expenses
The tuition fee is $100 for each term. Other expenses include books, incidentals, board and lodging.

Employment Opportunities
Essential to good communication in our society are journalism and advertising. Virtually everything published or spoken in the print and broadcast media is written. The Creative Communications course is designed to meet the need of industry for qualified writers.

Students entering this course should have writing ability, a keen desire to write creatively, and an interest in the complete presentation of information in all media (such as radio, television, and photography). The successful graduate may find rewarding employment in any of these fields: daily and weekly newspapers, trade and consumers magazines, public relations departments, company publications, television, radio, government information services, advertising agencies, department and chain store advertising, direct mail firms.
# Course Outline

**TERM 1 First Year**

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>COURSE</th>
<th>HOURS / WEEK</th>
<th>CREDIT HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRCO-101</td>
<td>Creative Writing Workshop</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>CRCO-102</td>
<td>Reporting Workshop</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>ENGL-103</td>
<td>English and Composition</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>CRCO-104</td>
<td>Advertising</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>CRCO-105</td>
<td>Principles of Journalism</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>ENGL-106</td>
<td>Modern Literature</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>SOSC-131</td>
<td>Intro. to Social Sciences</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>ENGL-107</td>
<td>Oral Communications</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>ENGL-108</td>
<td>Study Skills</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>*CRCO-107</td>
<td>Typewriting (required for those who lack basic typing skills)</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>COURSE</th>
<th>HOURS / WEEK</th>
<th>CREDIT HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRCO-201</td>
<td>Creative Writing Workshop</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>CRCO-202</td>
<td>Reporting Workshop</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>CRCO-203</td>
<td>TV-Radio Lab.</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>CRCO-204</td>
<td>Advertising Media</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>CRCO-205</td>
<td>Editing</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>ENGL-207</td>
<td>Contemporary Literature</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>SOSC-231</td>
<td>Human Behavior in Organizations</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>SOSC-334</td>
<td>Political Science</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>CRCO-208</td>
<td>Design and Graphics</td>
<td>3</td>
<td>0</td>
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</table>

Total: 11 / 19 / 25

---

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Course Outline

TERM 3 Second Year

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>Course Name</th>
<th>LECT.</th>
<th>LAB.</th>
<th>CREDIT HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRCO-301</td>
<td>Copywriting Workshop</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>CRCO-302</td>
<td>Journalism Workshop</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>CRCO-303</td>
<td>TV-Radio Lab.</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>CRCO-304</td>
<td>Creative Writing</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>CRCO-305</td>
<td>Public Relations</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>CRCO-207</td>
<td>Photography</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>SOSC-431</td>
<td>Contemporary Issues in Canadian Society</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>CRCO-406</td>
<td>Economics and Law</td>
<td>2</td>
<td>2</td>
<td>3</td>
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</tbody>
</table>

|                        |                                                | 11    | 18   | 25           |

During Term 3 students are placed with business firms for practical work experience for a period of two weeks.

TERM 4

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>Course Name</th>
<th>LECT.</th>
<th>LAB.</th>
<th>CREDIT HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRCO-401</td>
<td>Writing Seminar</td>
<td>0</td>
<td>4</td>
<td>3</td>
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<tr>
<td>CRCO-402</td>
<td>Advanced Writing Projects</td>
<td></td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>CRCO-403</td>
<td>Cultural History</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>ADMN-103</td>
<td>Marketing</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

|                        |                                                | 4     | 9    | 13           |

Plus any 4 of:

| CRCO-404   | Special Problems in Advertising                 | 1     | 2    | 3            |
| CRCO-405   | Interpretive Reporting                          | 1     | 2    | 3            |
| CRCO-407   | Freelance Writing                               | 1     | 2    | 3            |
| CRCO-408   | Copywriting & Copy Editing                      | 1     | 2    | 3            |
| CRCO-409   | TV-Radio Lab.                                   | 0     | 3    | 3            |
| CRCO-410   | Public Relations                                | 1     | 2    | 3            |
| CRCO-411   | Mass Media & Society                            | 2     | 1    | 3            |
| CRCO-412   | Theatre Arts                                    | 1     | 2    | 3            |
| CRCO-414   | Theatre Production                              | 1     | 2    | 3            |
| CRCO-415   | Photo Journalism                                | 1     | 2    | 3            |

During Term 4 students are placed with business firms for a further two-week period of practical work experience.
Entrance Requirements

General Prerequisites for all Food Services courses:

1. Grade 10 or A.B.E. Adult 10.
2. Recent medical, dental and chest X-ray certificates will be required from each applicant before commencing training.
3. An application for Chef Training should possess the general prerequisites and either have successfully completed a Basic Cooking course, or had two years of general cooking in the industry and pass a written achievement test at the Red River Community College.
4. Anyone who does not meet the above prerequisites may submit an application. The admissions committee will review the application on an individual basis.

Duration of Courses

- Commercial Cooking ........................................ 8 months
- Chef Training .................................................. 8 months
- Commercial Baking ........................................... 5½ months
- Meatcutting .................................................... 5 months

Arrangements can be made for a qualified applicant to take specific sections of the Commercial Cooking, Commercial Baking or Meatcutting course when space is available.

* A special feature is provided in the Commercial Cooking course whereby every two months a new program starts, thus allowing people to participate at various times during a given year.

Fees and Expenses

The tuition fee for each course is $7 per month or fraction thereof. Other expenses include testbooks and supplies totalling approximately $65.

Employment Opportunities

Being part of a huge, ever-expanding service industry and being among the nation’s biggest employers, this field provides not only a high level of employment, but also a great variety of positions and mobility.

Restaurants, hotels, institutions, specialty houses, chain stores, catering companies, resorts, clubs, lodges — and small and larger stores — all are able to provide year-round employment for qualified people.
## Commercial Cooking
### Course Outline

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>Title</th>
<th>HOURS</th>
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<tbody>
<tr>
<td>COOK-102</td>
<td>Basic Cookery</td>
<td>260</td>
</tr>
<tr>
<td>COOK-201</td>
<td>Garde Manger</td>
<td>260</td>
</tr>
<tr>
<td>COOK 202</td>
<td>Pastry Shop</td>
<td>260</td>
</tr>
<tr>
<td>COOK-203</td>
<td>Restaurant Cooking</td>
<td>260</td>
</tr>
<tr>
<td>ENGL-503</td>
<td>Communications</td>
<td>20</td>
</tr>
<tr>
<td>RESC-510</td>
<td>Science</td>
<td>20</td>
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<tr>
<td>NUTR-507</td>
<td>Nutrition</td>
<td>20</td>
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1,100

## Commercial Baking
### Course Outline

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>Title</th>
<th>HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAKE-108</td>
<td>Basics of Baking</td>
<td>35</td>
</tr>
<tr>
<td>BAKE-102</td>
<td>Breads, Rolls &amp; Sweet Dough</td>
<td>210</td>
</tr>
<tr>
<td>BAKE-103</td>
<td>Plain &amp; Sweet Pastry</td>
<td>105</td>
</tr>
<tr>
<td>BAKE-104</td>
<td>Danish &amp; Puff Pastry</td>
<td>105</td>
</tr>
<tr>
<td>BAKE-105</td>
<td>Cake Making</td>
<td>175</td>
</tr>
<tr>
<td>BAKE-110</td>
<td>Cookies &amp; Short Breads</td>
<td>70</td>
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<tr>
<td>BAKE-111</td>
<td>Practical Baking</td>
<td>70</td>
</tr>
<tr>
<td>RESC-510</td>
<td>Science for Cooking &amp; Baking</td>
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</table>

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## Chef Training
### Course Outline

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>Title</th>
<th>HOURS</th>
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<tr>
<td>CHEF-301</td>
<td>Kitchen Management</td>
<td>148</td>
</tr>
<tr>
<td>CHEF-302</td>
<td>Garde Manger</td>
<td>148</td>
</tr>
<tr>
<td>CHEF-303</td>
<td>Patisserie</td>
<td>148</td>
</tr>
<tr>
<td>CHEF-304</td>
<td>Practical Work</td>
<td>496</td>
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</table>

Students will also receive instruction in accounting, nutrition, human relations, etc. 160

1,100
# Meat Cutting

## Course Outline

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MEAT-101</td>
<td>Shop Management</td>
<td>132</td>
</tr>
<tr>
<td>MEAT-102</td>
<td>Butchery of Meats, Fish &amp; Poultry</td>
<td>528</td>
</tr>
<tr>
<td>MATH-501</td>
<td>Mathematics</td>
<td>20</td>
</tr>
<tr>
<td>ENGL-503</td>
<td>Communication</td>
<td>20</td>
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</tbody>
</table>

**Total Credits:** 700
Graphic Arts

Entrance Requirements

A minimum of complete Grade 11; or A.B.E. Adult 11. Preference will be given to applicants with standing in the 200 or 201 level courses in English, Mathematics and Science. Special consideration will be given to men or women employed in the graphic arts industry who do not have the preceding prerequisites but who have a potential for further training. Anyone who does not meet the above requirements may submit an application. The admissions committee will review applications on an individual basis.

Applicants should be aware that color blindness may affect employment opportunities.

Duration of Course

Approximately ten months. Successful completion of this course qualifies the graduate for a certificate of attainment.

The training year is divided into three equal blocks. These blocks consist of the following subject areas:

1. Paste make-up; camera and darkroom.
2. Design and layout; hand composition; machine composition; type imposition.
3. Platen and cylinder press; offset imposition and platemaking; offset press; bindery.

The class is divided into three equal groups of students. Each group spends one-third of the year in each of the three subject blocks. The whole class takes English and Typing together.

This block system allows three starting dates (September, December and March) for students who wish to take only one or two of the three blocks. This is possible if there are openings in the groups. Maximum group capacity is twelve students.

Fees and Expenses

The tuition fee is $7 per month or fraction thereof. Other expenses include textbooks and supplies totalling approximately $50.

Employment Opportunities

Financial growth and technical progress in the graphic arts industry has been extraordinary. All evidence points to an even greater growth for the industry. The graphic arts industry employs 3,950 people, making it the fourth largest employer in Manitoba. There are over 200 Manitoba businesses providing printing services. Over 78,000 men and women are employed in the graphic arts industry in Canada.

Graduates may become apprentices and work toward their journeyman qualifications for a printing craft. Others may obtain employment in allied
service industries such as paper and ink companies, machinery suppliers, or advertising departments. Some may progress to plant, office, sales or administrative positions.

### Course Outline

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT</th>
<th>HOURS / WEEK</th>
<th>CREDIT HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>GART-100</td>
<td>English</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>GART-101</td>
<td>Typewriting</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>GART-103</td>
<td>Design &amp; Layout</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>GART-104</td>
<td>Hand Composition</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>GART-105</td>
<td>Machine Composition</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>GART-106</td>
<td>Type Imposition</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>GART-107</td>
<td>Platen &amp; Cylinder Press</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>GART-108</td>
<td>Paste Make-up</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>GART-109</td>
<td>Camera &amp; Darkroom</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>GART-110</td>
<td>Offset Imposition &amp; Platemaking</td>
<td>2</td>
<td>5</td>
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<tr>
<td>GART-111</td>
<td>Offset Press</td>
<td>2</td>
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<tr>
<td>GART-112</td>
<td>Bindery Operations</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
HAIRDRESSING AND BEAUTY CULTURE

Entrance Requirements

1. Academic; Grade 10 or A.B.E. Adult 10. Anyone who does not meet the above requirement may submit an application. Applications will be reviewed by the admissions committee on an individual basis.

2. Health: General good health, substantiated by recent medical, dental and chest X-ray certificates prior to commencement of training.

3. Personal: Well coordinated hand movements, emotional stability, a pleasing personality, and a progressive-minded attitude are essential to a successful career in this field of training.

Duration of Course

Approximately ten months. Successful completion of this course qualifies the graduate for a certificate of attainment.

Fees and Expenses

The tuition fee is $7 per month or fraction thereof. Other expenses include textbooks, and supplies including uniforms totalling approximately $100.

Employment Opportunities

Hair stylist, hair coloring technician, permanent waving technician, scalp and hair specialist, facial expert, make-up artist, manicurist, shop manager, or supervisor, shop owner.

Course Outline

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT</th>
<th>HOURS</th>
<th>CREDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAIR-125</td>
<td>Shop Department</td>
<td>40</td>
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</tr>
<tr>
<td>HAIR-126</td>
<td>Bacteriology, Sterilization and Sanitation</td>
<td>35</td>
<td>1</td>
</tr>
<tr>
<td>HAIR-127</td>
<td>Anatomy and Physiology</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>HAIR-128</td>
<td>Shampoos</td>
<td>105</td>
<td>3</td>
</tr>
<tr>
<td>HAIR-129</td>
<td>Hair &amp; Scalp Treatment</td>
<td>70</td>
<td>3</td>
</tr>
<tr>
<td>HAIR-130</td>
<td>Hairstyling</td>
<td>420</td>
<td>12</td>
</tr>
<tr>
<td>HAIR-131</td>
<td>Hair Shaping</td>
<td>210</td>
<td>10</td>
</tr>
<tr>
<td>HAIR-132</td>
<td>Cold Waving</td>
<td>140</td>
<td>6</td>
</tr>
<tr>
<td>HAIR-133</td>
<td>Manicuring</td>
<td>70</td>
<td>3</td>
</tr>
<tr>
<td>HAIR-134</td>
<td>Tinting &amp; Bleaching</td>
<td>175</td>
<td>6</td>
</tr>
<tr>
<td>HAIR-135</td>
<td>Skin &amp; Facial Treatment</td>
<td>70</td>
<td>3</td>
</tr>
<tr>
<td>HAIR-137</td>
<td>Beauty, Charm &amp; Poise</td>
<td>45</td>
<td>1</td>
</tr>
</tbody>
</table>

1,400 50
Entrance Requirements

1. Grade 12; or

2. Complete standing in the Pre-Applied Arts, Pre-Business or the Pre-Technology Course; or

3. Mature student - A mature student is considered to be one who is at least twenty years of age on or before September 30 in the year of registration. Applicants may be required to write an entrance exam and/or appear for a personal interview.

4. General good health, medical and dental certificates and a chest X-ray will be required of each applicant prior to training.

Duration of Course

Two school years each of ten months duration, leads to a diploma in applied arts (Dipl. A.A.). Each year is divided into two five-month terms with final examinations at the end of each term. (Extensive “in business” training may make it necessary to eliminate the one-week break between terms at the end of January.)

Fees and Expenses

The tuition fee is $100 for each term. Other expenses include books, incidentals, board and lodging.

Employment Opportunities

The hospitality industry throughout Canada is growing very rapidly. Since more people travel today than ever before and because of the increasing amount of leisure time most of us enjoy, more and more accommodation is being built. The hotels, motels, resorts, and restaurants which comprise the industry are continually being modernized, renovated, and expanded in order to provide the finest facilities in comfort, service, and safety.

All this means increased job opportunities for thoroughly-trained well qualified personnel. There is a wide range of middle management positions in the industry such as the supervision of the front office, sales, purchasing, accounting and auditing food and beverages, catering, banquets, and restaurants.

Well trained men and women who are willing to work hard can achieve and succeed in these positions. Personal initiative coupled with experience and further specialized training can lead to higher level management positions.

Essential to success in the hospitality industry are a liking and understanding of people. The career oriented individual will recognize the stimulating nature of the industry as more than compensating for irregular hours in a dynamic business environment. For this reason, all applicants are requested to make a preliminary investigation of the hospitality industry prior to enrolment in the course.
## Course Outline

### TERM 1  First Year

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT</th>
<th>LECT.</th>
<th>LAB.</th>
<th>CREDIT HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL-110</td>
<td>Business Communications</td>
<td>20</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>SOSC-131</td>
<td>Introduction to Social Sciences</td>
<td>30</td>
<td>20</td>
<td>2</td>
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<tr>
<td>ADMN-111</td>
<td>Economic Principles</td>
<td>40</td>
<td>40</td>
<td>3</td>
</tr>
<tr>
<td>HOTL-101</td>
<td>Foods and Beverages</td>
<td>40</td>
<td>60</td>
<td>4</td>
</tr>
<tr>
<td>HOTL-102</td>
<td>Housekeeping</td>
<td>40</td>
<td>20</td>
<td>3</td>
</tr>
<tr>
<td>HOTL-103</td>
<td>Typewriting</td>
<td>10</td>
<td>30</td>
<td>2</td>
</tr>
<tr>
<td>HOTL-104</td>
<td>Accounting</td>
<td>40</td>
<td>40</td>
<td>4</td>
</tr>
<tr>
<td>HOTL-105</td>
<td>Mathematics</td>
<td>40</td>
<td>40</td>
<td>2</td>
</tr>
<tr>
<td>HOTL-107</td>
<td>Introduction to Business</td>
<td>10</td>
<td>20</td>
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</table>

Total Hours: 270  Credit Hours: 330  Total Credit: 25

### TERM 2

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
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<th>LAB.</th>
<th>CREDIT HOURS</th>
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<tbody>
<tr>
<td>ENGL-208</td>
<td>Oral Communications</td>
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<tr>
<td>ENGL-209</td>
<td>Study Skills</td>
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<tr>
<td>SOSC-231</td>
<td>Human Behavior in Organizations</td>
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<td>20</td>
<td>2</td>
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<tr>
<td>HOTL-201</td>
<td>Foods and Beverage Service</td>
<td>40</td>
<td>60</td>
<td>4</td>
</tr>
<tr>
<td>HOTL-202</td>
<td>Building and Equipment</td>
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<td></td>
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<tr>
<td></td>
<td>Maintenance</td>
<td>40</td>
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<td>4</td>
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<tr>
<td>HOTL-203</td>
<td>Front Office Procedures</td>
<td>40</td>
<td>80</td>
<td>4</td>
</tr>
<tr>
<td>HOTL-204</td>
<td>Cost Controls</td>
<td>40</td>
<td>80</td>
<td>4</td>
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<tr>
<td>HOTL-206</td>
<td>Special Catering and Waitress</td>
<td>20</td>
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</tbody>
</table>

Total Hours: 220  Credit Hours: 380  Total Credit: 25
## Course Outline

### TERM 3  Second Year

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<tr>
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<th>SUBJECT</th>
<th>HOURS</th>
<th>CREDIT HOURS</th>
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<tbody>
<tr>
<td>HOTL-301</td>
<td>Food Service Operations</td>
<td>30</td>
<td>3</td>
</tr>
<tr>
<td>HOTL-303</td>
<td>Management Accounting</td>
<td>20</td>
<td>3</td>
</tr>
<tr>
<td>HOTL-313</td>
<td>Marketing</td>
<td>30</td>
<td>3</td>
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<tr>
<td>HOTL-308</td>
<td>Physical Facilities Layout</td>
<td>40</td>
<td>3</td>
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<tr>
<td>HOTL-314</td>
<td>Materials Control</td>
<td>30</td>
<td>3</td>
</tr>
<tr>
<td>HOTL-310</td>
<td>Foods and Beverage Service</td>
<td>40</td>
<td>4</td>
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<tr>
<td>HOTL-311</td>
<td>Personnel</td>
<td>30</td>
<td>3</td>
</tr>
<tr>
<td>HOTL-315</td>
<td>In Business Training</td>
<td>100</td>
<td>3</td>
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<td></td>
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<td><strong>220</strong></td>
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<td></td>
<td><strong>TERM 4</strong></td>
<td></td>
<td><strong>380</strong></td>
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<tr>
<td>HOTL-414</td>
<td>Food and Beverage Control</td>
<td>40</td>
<td>3</td>
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<tr>
<td>HOTL-408</td>
<td>Seminar and Field Work</td>
<td>20</td>
<td>3</td>
</tr>
<tr>
<td>HOTL-409</td>
<td>Beverage Management</td>
<td>20</td>
<td>3</td>
</tr>
<tr>
<td>HOTL-413</td>
<td>Law</td>
<td>40</td>
<td>3</td>
</tr>
<tr>
<td>HOTL-411</td>
<td>Financial Management</td>
<td>40</td>
<td>3</td>
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<tr>
<td>HOTL-415</td>
<td>Public Relations</td>
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<td></td>
<td><strong>180</strong></td>
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<td></td>
<td><strong>TERM 4</strong></td>
<td></td>
<td><strong>220</strong></td>
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<td></td>
<td>Elect two of the following options:</td>
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<tr>
<td></td>
<td>(HOTL-401 and HOTL-403 may not be taken in combination)</td>
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<tr>
<td>HOTL-401</td>
<td>Advanced Foods and Kitchen Management</td>
<td>40</td>
<td>60</td>
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<tr>
<td>HOTL-402</td>
<td>Speciality Group &amp; Resource Management</td>
<td>40</td>
<td>60</td>
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<tr>
<td>HOTL-403</td>
<td>In Business Training</td>
<td>40</td>
<td>60</td>
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<tr>
<td>HOTL-312</td>
<td>Introduction to Computers</td>
<td>40</td>
<td>60</td>
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<tr>
<td></td>
<td>*Other Elective</td>
<td>40</td>
<td>60</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td><strong>260</strong></td>
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<tr>
<td></td>
<td><strong>TERM 4</strong></td>
<td></td>
<td><strong>340</strong></td>
</tr>
</tbody>
</table>

*NOTE: Students may elect another subject of their own choice with equivalent or more credit hours offered within the college provided suitable scheduling can be arranged.
LIBRARY TECHNICIAN

Entrance Requirements (one of)

1. Grade 12 with demonstrated proficiency in English.

2. Mature student — A mature student is considered to be one who is at least twenty years of age on or before September 30, in the year of registration. Applicants may be required to write an entrance examination. The admissions committee will consider each applicant on an individual basis.

3. A.B.E. Adult 11 with demonstrated proficiency in English.

4. Complete standing in the Pre-College course.

All applicants will be interviewed by an admissions committee prior to enrolment.

Duration of Course

One school year, approximately ten months, divided into two equal terms with final examinations written at the end of each term. During the second term, practical experience will be gained by working in a library of recognized standing.

Fees and Expenses

The tuition fee for the Library Technician course is $100 for each of the two terms. Other expenses include textbooks, incidentals, board and lodging.

Employment Opportunities

The course provides training for middle level library employees who have training in library techniques beyond that of a clerk, but without the theoretical knowledge or subject background of a librarian.

Library work offers a wide range of opportunities for people who have an ability for work requiring exactness in detail, as well as an interest in people and books. Careers may be found in public, university, school or special libraries.
Course Outline

TERM 1

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>Description</th>
<th>LECT</th>
<th>LAB</th>
<th>CREDIT HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIBR-207</td>
<td>Introduction to Data Processing</td>
<td>3</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>LIBR-102</td>
<td>Library Organization and Administration</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>LIBR-103</td>
<td>Cataloguing and Classification</td>
<td>5</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>LIBR-107</td>
<td>Acquisition of Library Materials</td>
<td>4</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>LIBR-105</td>
<td>Library Techniques &amp; Routines</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>LIBR-106</td>
<td>Typewriting</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Laboratory &amp; Practical Work</td>
<td></td>
<td></td>
<td>10</td>
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<td></td>
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<td><strong>Total</strong></td>
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TERM 2

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<th>LECT</th>
<th>LAB</th>
<th>CREDIT HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIBR-201</td>
<td>Cataloguing &amp; Classifications</td>
<td>3</td>
<td>2</td>
<td>5</td>
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<tr>
<td>LIBR-203</td>
<td>Special Libraries</td>
<td>4</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>LIBR-206</td>
<td>Business Practices</td>
<td>3</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>LIBR-209</td>
<td>Audio-Visual Equipment Operation</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>LIBR-210</td>
<td>Audio-Visual Materials Production</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Laboratory and Field Placement</td>
<td>0</td>
<td>5</td>
<td><strong>0</strong></td>
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<tr>
<td></td>
<td></td>
<td><strong>Total</strong></td>
<td></td>
<td><strong>22</strong></td>
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</tbody>
</table>

*In addition to the above, at least three credit hours must be elected from other subjects (e.g. SOSC-131 Introduction to Social Sciences, ENGL-207 Contemporary Literature) in order to complete the required 25 credit hours for the term.

Practical Experience

Laboratory work includes practical experience in the various routines of the College Learning Resources Centre. In addition, students will spend four weeks in other established libraries in the community during the second term.
MEDICAL RECORDS TECHNICIAN

Entrance Requirements

1. A minimum of Grade 11 or Adult 11 with basic typewriting of 35 wpm on a five-minute timed-writing.

2. Anyone who does not meet the above prerequisites may submit an application. The admissions committee will review the application on an individual basis.

Duration of Course

Approximately ten months. Successful completion of this course qualifies the graduate for a certificate of attainment.

Fees and Expenses

The tuition fee is $7 per month or fraction thereof. Other expenses include textbooks and supplies totalling approximately $100.

Course Description

This ten-month course will prepare skilled medical record technicians to assist medical record librarians in the preparation, analysis, and preservation of health care information required by hospitals, patients, and other agencies.

Students will receive specialized training in all aspects of health care data, specifically the compilation, filing, and utilization of the medical record as a source document.

A practicum in hospitals will form an integral part of the course.

Prerequisites for success in this field are a mature personality, a strong sense of responsibility, and accurate, efficient work habits.

Employment Opportunities

There is a viable employment market in hospital medical records departments, clinics, and other paramedical agencies.
## Course Outline

### TERM 1

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT</th>
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<th>LAB.</th>
<th>HOURS</th>
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<tr>
<td>STNO-123</td>
<td>Business Communications</td>
<td>2</td>
<td>3</td>
<td>5</td>
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<tr>
<td>MREC-103</td>
<td>Medical Terminology 1</td>
<td>3</td>
<td>2</td>
<td>6</td>
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<tr>
<td>MREC-102</td>
<td>Medical Records Science 1</td>
<td>3</td>
<td>0</td>
<td>3</td>
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<tr>
<td>MREC-106</td>
<td>Typewriting</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>MREC-109</td>
<td>Anatomy and Physiology</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>SOSC-131</td>
<td>Introduction to Social Sciences</td>
<td>2</td>
<td>1</td>
<td>3</td>
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</table>

**Total Hours:** 14 10 25

*Includes two weeks' practicum experience*

### TERM 2

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT</th>
<th>LECT.</th>
<th>LAB.</th>
<th>HOURS</th>
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</thead>
<tbody>
<tr>
<td>MREC-104</td>
<td>Computer Application to Medical Statistics</td>
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<tr>
<td>MREC-201</td>
<td>Legal Aspects of Medical Records</td>
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<tr>
<td>MREC-202</td>
<td>Medical Records Science 2</td>
<td>2</td>
<td>1</td>
<td>3</td>
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<tr>
<td>MREC-203</td>
<td>Medical Terminology 2</td>
<td>5</td>
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<tr>
<td>MREC-204</td>
<td>Medical Coding</td>
<td>3</td>
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<td>MREC-206</td>
<td>Medical Transcription</td>
<td>2</td>
<td>3</td>
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<tr>
<td>MREC-209</td>
<td>Anatomy and Physiology</td>
<td>2</td>
<td>2</td>
<td>4</td>
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<tr>
<td>MREC-205</td>
<td>Business Organization &amp; Management 1</td>
<td>1</td>
<td>2</td>
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</tbody>
</table>

**Total Hours:** 18 11 25

*Includes two weeks' practicum experience*
PHOTOGRAPHIC TECHNICIAN

Entrance Requirements

A minimum of complete Grade 11 or A.B.E. Adult 11. Preference will be given to applicants with standing in the 200 or 201 level courses in English, Mathematics and Science.

Anyone who does not meet the above requirements may submit an application. The admissions committee will review all applications on an individual basis and interview all candidates.

Applicants should be aware that color blindness will affect employment opportunities.

Duration of Course

Approximately ten months. Successful completion of this course qualifies the graduate for a certificate of attainment.

Fees and Expenses

The tuition fee is $7 per month or fraction thereof. Other expenses include textbooks and supplies totalling approximately $50.

Employment Opportunities

An increasing demand in industry for photographic technicians provides many opportunities for those who desire a dynamic and challenging career. The commercial, industrial, educational, portraiture, medical, scientific and technical fields are all dependent upon photography in a variety of ways. Specifically these areas include: photo-finishing, retail marketing and advertising and communications photography via the media of television, newspapers and magazines.

Personnel requirements in these fields necessitate a sound working knowledge of the modern technical aspects and processes of photography. The Photographic Technician course is designed to give adequate preparation for employment in the industry and will provide a basis for future advanced study.
### Course Outline

#### TERM 1

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT NAME</th>
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<tr>
<td>FOTO-100</td>
<td>Monochrome Materials &amp; Processes</td>
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<tr>
<td>FOTO-101</td>
<td>Principles of Light &amp; Optics</td>
<td>2</td>
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<tr>
<td>FOTO-105</td>
<td>Camera Design &amp; Applications</td>
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<tr>
<td>ENGL-507</td>
<td>Communication</td>
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<tr>
<td>FOTO-104</td>
<td>Composition and Design</td>
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<tr>
<td>FOTO-102</td>
<td>Related Sciences</td>
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<td>FOTO-106</td>
<td>Laboratory Techniques - Film Processing &amp; Retouching</td>
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<td>FOTO-107</td>
<td>Laboratory Techniques - Printing &amp; Presentation</td>
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<td>FOTO-108</td>
<td>Basic Studio Techniques</td>
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#### TERM 2

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<td>FOTO-200</td>
<td>Colour Photography Materials and Processes</td>
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<td>FOTO-201</td>
<td>Historical &amp; Experimental Processes</td>
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<tr>
<td>FOTO-202</td>
<td>Related Sciences</td>
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<td>FOTO-203</td>
<td>Related Business Studies</td>
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<td>FOTO-204</td>
<td>Graphic Arts</td>
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<td>FOTO-205</td>
<td>Advanced Large Format Techniques</td>
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<td>FOTO-206</td>
<td>Advanced Small Format Techniques</td>
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<td>FOTO-207</td>
<td>Negative/Positive Colour Techniques</td>
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<td>FOTO-208</td>
<td>Transparency Colour Techniques</td>
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<tr>
<td>FOTO-209</td>
<td>Photographic Display and Presentation (Portfolio)</td>
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</tbody>
</table>
SECRETARIAL SCIENCE

Entrance Requirements

1. Complete Grade 12 standing; or
2. Complete standing in the Pre-Applied Arts, PreBusiness or the Pre-Technology Course;
3. Mature student - A mature student is considered to be one who is at least twenty years of age on or before September 30, in the year of registration. Applicants may be required to write an entrance exam and/or appear for a personal interview. The admissions committee will consider each applicant on an individual basis.

Duration of Course

Two school years each of ten months' duration, leads to a diploma in applied arts, (Dipl. A.A.). Each of the ten-month periods is divided into two equal terms with final examinations written at the end of each term.

Fees and Expenses

The tuition fee for the course in Secretarial Science is $100 for each of the four terms. Other expenses include textbooks, incidentals, board and lodging.

Employment Opportunities

The purpose of the Secretarial Science curriculum is to train, in a full two-year program, private secretaries and assistants to management who will satisfy the requirements of the most exacting executives. The course is designed for both men and women. The thorough training received by the graduates of Secretarial Science makes them valuable assistants to highly-placed executives.

Many of the graduates may go to private secretarial positions in the larger organizations. Others may find excellent positions in smaller offices where they may have greater responsibilities and a wider variety of duties.
## Course Outline

### TERM 1  First Year

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT NAME</th>
<th>HOURS / WEEK</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADMN-101</td>
<td>Accounting</td>
<td>3 LECT. 2 LAB. 4 CREDIT HOURS</td>
</tr>
<tr>
<td>ENGL-107</td>
<td>Oral Communications</td>
<td>2 LECT. 2 LAB. 2 CREDIT HOURS</td>
</tr>
<tr>
<td>SECR-106</td>
<td>Secretarial Procedures</td>
<td>2 LECT. 2 LAB. 3 CREDIT HOURS</td>
</tr>
<tr>
<td>SECR-102</td>
<td>Typewriting</td>
<td>2 LECT. 3 LAB. 4 CREDIT HOURS</td>
</tr>
<tr>
<td>SECR-103</td>
<td>Basic Shorthand</td>
<td>3 LECT. 2 LAB. 5 CREDIT HOURS</td>
</tr>
<tr>
<td>SECR-104</td>
<td>Introduction to Business</td>
<td>1 LECT. 1 LAB. 2 CREDIT HOURS</td>
</tr>
<tr>
<td>SECR-105</td>
<td>Statistics</td>
<td>2 LECT. 1 LAB. 3 CREDIT HOURS</td>
</tr>
<tr>
<td>SOSC-131</td>
<td>Introduction to Social Sciences</td>
<td>2 LECT. 1 LAB. 2 CREDIT HOURS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>17 LECT. 14 LAB. 25 CREDIT HOURS</td>
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### TERM 2

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT NAME</th>
<th>HOURS / WEEK</th>
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</thead>
<tbody>
<tr>
<td>ADMN-111</td>
<td>Economic Principles</td>
<td>2 LECT. 2 LAB. 4 CREDIT HOURS</td>
</tr>
<tr>
<td>ADMN-201</td>
<td>Accounting</td>
<td>3 LECT. 2 LAB. 4 CREDIT HOURS</td>
</tr>
<tr>
<td>ENGL-209</td>
<td>Study Skills</td>
<td>1 LECT. 1 LAB. 2 CREDIT HOURS</td>
</tr>
<tr>
<td>ENGL-211</td>
<td>Written English</td>
<td>1 LECT. 1 LAB. 1 CREDIT HOURS</td>
</tr>
<tr>
<td>SECR-201</td>
<td>Secretarial Procedures</td>
<td>1 LECT. 2 LAB. 3 CREDIT HOURS</td>
</tr>
<tr>
<td>SECR-202</td>
<td>Intermediate Typewriting</td>
<td>2 LECT. 3 LAB. 4 CREDIT HOURS</td>
</tr>
<tr>
<td>SECR-203</td>
<td>Shorthand &amp; Transcription</td>
<td>3 LECT. 2 LAB. 5 CREDIT HOURS</td>
</tr>
<tr>
<td>SOSC-231</td>
<td>Human Behaviour in Organizations</td>
<td>2 LECT. 1 LAB. 2 CREDIT HOURS</td>
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<tr>
<td></td>
<td></td>
<td>15 LECT. 14 LAB. 25 CREDIT HOURS</td>
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</table>

### TERM 3  Second Year

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT NAME</th>
<th>HOURS / WEEK</th>
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</thead>
<tbody>
<tr>
<td>ADMN-202</td>
<td>Economics</td>
<td>2 LECT. 2 LAB. 4 CREDIT HOURS</td>
</tr>
<tr>
<td>ENGL-310</td>
<td>Report Writing</td>
<td>1 LECT. 2 LAB. 2 CREDIT HOURS</td>
</tr>
<tr>
<td>SECR-301</td>
<td>Business Law</td>
<td>1 LECT. 1 LAB. 2 CREDIT HOURS</td>
</tr>
<tr>
<td>SECR-302</td>
<td>Advanced Typewriting</td>
<td>1 LECT. 4 LAB. 5 CREDIT HOURS</td>
</tr>
<tr>
<td>SECR-303</td>
<td>Advanced Shorthand &amp; Transcription</td>
<td>3 LECT. 3 LAB. 6 CREDIT HOURS</td>
</tr>
<tr>
<td>SECR-308</td>
<td>Secretarial Procedures</td>
<td>1 LECT. 2 LAB. 3 CREDIT HOURS</td>
</tr>
<tr>
<td></td>
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<td>9 LECT. 14 LAB. 22 CREDIT HOURS</td>
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**Elect one of:**

<table>
<thead>
<tr>
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<th>SUBJECT NAME</th>
<th>HOURS / WEEK</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADMN-313</td>
<td>Personnel</td>
<td>2 LECT. 1 LAB. 3 CREDIT HOURS</td>
</tr>
<tr>
<td>SOSC-334</td>
<td>Political Science</td>
<td>2 LECT. 1 LAB. 3 CREDIT HOURS</td>
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<tr>
<td></td>
<td></td>
<td>11 LECT. 15 LAB. 25 CREDIT HOURS</td>
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82
**Course Outline**

**TERM 4**

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>Course Title</th>
<th>HOURS / WEEK</th>
<th>CR EDIT HOURS</th>
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<tbody>
<tr>
<td>ENGL-413</td>
<td>Business Communications</td>
<td>2</td>
<td>4</td>
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<tr>
<td>SECR-401</td>
<td>Business Law</td>
<td>1</td>
<td>2</td>
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<td>SECR-402</td>
<td>Advanced Typewriting</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>SECR-403</td>
<td>Advanced Shorthand &amp; Transcription</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>SECR-409</td>
<td>Secretarial Procedures</td>
<td>1</td>
<td>3</td>
</tr>
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</table>

|                | Total                                            | 7            | 13            |

Elect:

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Title</th>
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<th>LAB.</th>
<th>CREDIT HOURS</th>
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<tbody>
<tr>
<td>SECR-410</td>
<td>Medical Terminology</td>
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<td>2</td>
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or any two of the following options:

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Title</th>
<th>LECT.</th>
<th>LAB.</th>
<th>CREDIT HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADMN-217</td>
<td>Introduction to Computers</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>ADMN-415</td>
<td>Business Management</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>SECR-307</td>
<td>Personal Finance</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>SECR-411</td>
<td>Legal Office Procedures</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>* Other Elective</td>
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<td>2</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

|                | Total                                            | 11    | 17   | 25           |

*Note: Students may elect another subject of their own choice with equivalent or more credit hours offered within the college provided suitable scheduling can be arranged.*
STENOGRAPHY COURSE

Entrance Requirements

A complete Grade 11 or A.B.E. Adult 11. Grade 12 is preferred.

Anyone who does not meet the above prerequisites may submit an application. The admissions committee will review the application on an individual basis.

Duration of Course

Approximately ten months. Successful completion of this course qualifies the graduate for a certificate of attainment. One of two methods of instruction may be chosen:

1. lecture type classes
2. individual progress

Fees and Expenses

The tuition fee is $7 per month or fraction thereof. Other expenses include textbooks and supplies totalling approximately $100.00.

Employment Opportunities

A student who has acquired a proficiency in the skills of typing and shorthand will find employment as a stenographer in a small office or in a steno pool in a larger office. The ambitious student who aspires to being a private or executive secretary will find that promotion to these positions is open to the stenographer who has gained work experience. Employment opportunities remain in high demand.

Course Outline

TERM 1

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT</th>
<th>HOURS / WEEK</th>
<th>CREDIT HOURS</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>LECT.</td>
<td>LAB.</td>
</tr>
<tr>
<td>STNO-120</td>
<td>Shorthand Theory</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>STNO-122</td>
<td>Basic Typewriting</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>STNO-123</td>
<td>Business Communications</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>STNO-126</td>
<td>Basic Bookkeeping</td>
<td>2</td>
<td>2</td>
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<tr>
<td>STNO-127</td>
<td>Business Mathematics</td>
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<td>2</td>
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<tr>
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<td>Physical Education (optional)</td>
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<td></td>
<td></td>
<td><strong>14</strong></td>
<td><strong>18</strong></td>
</tr>
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<td>TERM 2</td>
<td>Courses</td>
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<tr>
<td>STNO-220</td>
<td>Shorthand Transcription</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>STNO-222</td>
<td>Intermediate Typewriting</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>STNO-223</td>
<td>Business Communications</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>STNO-224</td>
<td>Advanced Typewriting</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>STNO-225</td>
<td>Office Procedures</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>STNO-226</td>
<td>Machine Transcription</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
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<td>22</td>
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</table>
## TEACHER EDUCATION COURSES

### Business Education

<table>
<thead>
<tr>
<th>Course</th>
<th>Duration</th>
<th>Code</th>
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</thead>
<tbody>
<tr>
<td>Accounting-Major (One-Year)</td>
<td></td>
<td>90</td>
</tr>
<tr>
<td>Secretarial-Major (One-Year)</td>
<td></td>
<td>92</td>
</tr>
<tr>
<td>Marketing-Major (One-Year)</td>
<td></td>
<td>94</td>
</tr>
<tr>
<td>Accounting-Major (Two-Year)</td>
<td></td>
<td>89</td>
</tr>
<tr>
<td>Secretarial-Major (Two-Year)</td>
<td></td>
<td>91</td>
</tr>
<tr>
<td>Marketing-Major (Two-Year)</td>
<td></td>
<td>93</td>
</tr>
</tbody>
</table>

### Industrial Education

<table>
<thead>
<tr>
<th>Course</th>
<th>Duration</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial Arts</td>
<td>(Two-Year)</td>
<td>96</td>
</tr>
<tr>
<td>Vocational Industrial</td>
<td>(One-Year)</td>
<td>97</td>
</tr>
</tbody>
</table>
BUSINESS TEACHER EDUCATION

Courses Offered

Three types of Business Teacher Education courses are offered.

The Secretarial-Major course places greater emphasis on the skill areas, particularly Pitman Shorthand. The Accounting-Major course places the emphasis on accounting, basic business, and data processing. The Marketing-Major course places greater emphasis on preparing to teach the distributive occupations.

Entrance Requirements to the Two-Year Course

Grade 12 standing.

Anyone not meeting the above requirement may apply as a mature student. A mature student is considered to be one who is at least twenty years of age on or before September 30 in the year of registration. Applicants will be required to write an entrance test and achieve an equivalent grade 12 standing on the General Educational Development (GED) Tests offered by the Department of Education. The admissions committee will consider each candidate on an individual basis.

Entrance Requirements to the One-Year Course

A grade 12 standing plus one year of post high school standing in an approved Business Education Program of approximately ten months’ duration. Credentials will be evaluated on an individual basis.

Secretarial and Accounting candidates are required to prove established speeds of 50 words per minute in typewriting and demonstrate proficiency in typewriting production. Secretarial candidates must also prove the established speed of 80 words per minute in Pitman Shorthand as well as proficiency in shorthand theory.

Graduates from the two-year Business Administration, Secretarial Science, and the Computer-Analyst/Programmer course at Red River Community College will be considered as eligible for the one-year program.

To All Candidates

Preference is given to applicants who have had satisfactory work experience and to those who have a record of high scholastic achievement.

All applicants will be required to attend a personal interview. Applicants will be required to submit references from their last school principal and/or employer.

Duration of the Course

Two school years, each of ten months’ duration.

or

One school year of ten months’ duration where the applicant has the post high school Business Education prerequisites.
Fees and Other Costs
The tuition fee for the course is $200 per school year. A student activity fee of $2 per month will be collected at the time of registration.
Books and supplies for the two-year course cost approximately $75 in the first year and $100 in the second year.

Financial Assistance
Applicants may apply for Canada Student Loans and Department of Education bursaries.
Applicants for admission to the one-year course may be eligible for sponsorship by Canada Manpower, under C.M.T.P.

Employment Opportunities
The Business Teacher Education course has been designed to meet the certification requirements of the Department of Education for Business Education teachers.
Graduates may be employed in the secondary schools of Manitoba and by the Provincial Community Colleges.
ACCOUNTING-MAJOR (TWO YEAR)

COURSE OUTLINE First Year

<table>
<thead>
<tr>
<th>COURSE</th>
<th>HOURS</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUTE-101</td>
<td>240</td>
<td>8</td>
</tr>
<tr>
<td>BUTE-113</td>
<td>160</td>
<td>4</td>
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<tr>
<td>BUTE-105</td>
<td>80</td>
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<tr>
<td>BUTE-114</td>
<td>120</td>
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<td>BUTE-108</td>
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<td>BUTE-112</td>
<td>80</td>
<td>4</td>
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<td>BUTE-205</td>
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<td>3</td>
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<td>BUTE-207</td>
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<td>BUTE-210</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>BUTE-223</td>
<td>60</td>
<td>3</td>
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<tr>
<td><strong>Totals</strong></td>
<td><strong>1,260</strong></td>
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COURSE OUTLINE Second Year

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<thead>
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<th>HOURS</th>
<th>CREDITS</th>
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</thead>
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<td>120</td>
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<td>BUTE-204</td>
<td>80</td>
<td>4</td>
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<td>BUTE-209</td>
<td>100</td>
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<td>BUTE-211</td>
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<tr>
<td>BUTE-212</td>
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<td>BUTE-213</td>
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<td>BUTE-216</td>
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<td>BUTE-203</td>
<td>160</td>
<td>4</td>
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<tr>
<td>BUTE-222</td>
<td>80</td>
<td>4</td>
</tr>
<tr>
<td>IATE-112</td>
<td>60</td>
<td>3</td>
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<tr>
<td>ADMN-403</td>
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<tr>
<td><strong>Totals</strong></td>
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## ACCOUNTING-MAJOR (ONE YEAR)

### COURSE OUTLINE

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUTE-101</td>
<td>Typewriting</td>
<td>240</td>
<td>8</td>
</tr>
<tr>
<td>BUTE-112</td>
<td>Data Processing 2</td>
<td>80</td>
<td>4</td>
</tr>
<tr>
<td>BUTE-209</td>
<td>Methods of Teaching Basic Business and Accounting</td>
<td>100</td>
<td>5</td>
</tr>
<tr>
<td>BUTE-211</td>
<td>Course Construction in Business Education</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>BUTE-212</td>
<td>Student Teaching</td>
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<tr>
<td>BUTE-213</td>
<td>Educational Testing &amp; Evaluation</td>
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<tr>
<td>BUTE-216</td>
<td>Methods of Teaching Typewriting</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>BUTE-218</td>
<td>Educational Psychology</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>BUTE-203</td>
<td>Managerial Accounting</td>
<td>160</td>
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<tr>
<td>ADMN-403</td>
<td>Cost Accounting</td>
<td>80</td>
<td>3</td>
</tr>
<tr>
<td>BUTE-210</td>
<td>Principles of Business Education</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>IATE-112</td>
<td>Audio Visual Education</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>BUTE-110</td>
<td>Introductory Psychology</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td></td>
<td><strong>1,230</strong></td>
<td><strong>51</strong></td>
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</tbody>
</table>

*Note: Where a student receives advance credit in a course, he must complete equal number of approved credits at RRCC or other post-secondary institutions.*
# Secretarial-Major (Two Year)

## Course Outline First Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUTE-101</td>
<td>Typewriting</td>
<td>240</td>
<td>8</td>
</tr>
<tr>
<td>BUTE-102</td>
<td>Shorthand</td>
<td>240</td>
<td>8</td>
</tr>
<tr>
<td>BUTE-113</td>
<td>Accounting Principles</td>
<td>160</td>
<td>4</td>
</tr>
<tr>
<td>BUTE-105</td>
<td>Business Mathematics &amp; Office Machines</td>
<td>80</td>
<td>3</td>
</tr>
<tr>
<td>BUTE-114</td>
<td>Cooperative Work Education</td>
<td>120</td>
<td>3</td>
</tr>
<tr>
<td>BUTE-107</td>
<td>Introduction to Business</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>BUTE-108</td>
<td>Business Law 1</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>BUTE-109</td>
<td>Communication Skills</td>
<td>80</td>
<td>4</td>
</tr>
<tr>
<td>BUTE-110</td>
<td>Introductory Psychology</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>BUTE-205</td>
<td>Marketing 1</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>BUTE-210</td>
<td>Principles of Business Education</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>BUTE-223</td>
<td>Business Law 2</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>IATE-112</td>
<td>Audio Visual Education</td>
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**Totals** 1,340 51

## Course Outline Second Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
<th>Credits</th>
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<tbody>
<tr>
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<td>Data Processing 1</td>
<td>80</td>
<td>4</td>
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<tr>
<td>BUTE-201</td>
<td>Shorthand Transcription &amp; Typewriting</td>
<td>120</td>
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<tr>
<td>BUTE-202</td>
<td>Office Practice</td>
<td>120</td>
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<tr>
<td>BUTE-204</td>
<td>Economics Principles 1</td>
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</tr>
<tr>
<td>BUTE-208</td>
<td>Methods of Teaching Shorthand &amp; Accounting</td>
<td>60</td>
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</tr>
<tr>
<td>BUTE-209</td>
<td>Methods of Teaching Basic Business</td>
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<td>BUTE-211</td>
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<td>60</td>
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<td>BUTE-212</td>
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</tr>
<tr>
<td>BUTE-213</td>
<td>Educational Testing &amp; Evaluation</td>
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<td>3</td>
</tr>
<tr>
<td>BUTE-216</td>
<td>Methods of Teaching Typewriting</td>
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<tr>
<td>BUTE-217</td>
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<tr>
<td>BUTE-218</td>
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</tr>
<tr>
<td>BUTE-222</td>
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**Totals** 1,090 49
## SECRETARIAL-MAJOR (ONE YEAR)

### COURSE OUTLINE

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<tr>
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<td>Marketing</td>
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<td>Methods of Teaching Shorthand</td>
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<td>3</td>
</tr>
<tr>
<td>BUTE-209</td>
<td>Methods of Teaching Basic Business and Accounting</td>
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<td></td>
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<tr>
<td>BUTE-211</td>
<td>Course Construction in Business</td>
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<td>Education</td>
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<tr>
<td>BUTE-212</td>
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</tr>
<tr>
<td>BUTE-213</td>
<td>Educational Testing &amp; Evaluation</td>
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</tr>
<tr>
<td>BUTE-216</td>
<td>Methods of Teaching Typewriting</td>
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<tr>
<td>BUTE-218</td>
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<tr>
<td>BUTE-210</td>
<td>Principles of Business Education</td>
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**NOTE:** Where a student receives advance credit in a course, he must complete equal number of approved credits at RRCC or other post-secondary institutions.
# MARKETING-MAJOR (TWO YEAR)

## COURSE OUTLINE First Year

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<th>Credits</th>
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<td>Cooperative Work Education</td>
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<td>BUTE-107</td>
<td>Introduction to Business</td>
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<td>BUTE-108</td>
<td>Business Law 1</td>
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<tr>
<td>BUTE-207</td>
<td>Marketing 2</td>
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<td>ADMN-410</td>
<td>Merchandising</td>
<td>60</td>
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<tr>
<td>BUTE-223</td>
<td>Business Law 2</td>
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<td>3</td>
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<tr>
<td>BUTE-210</td>
<td>Principles of Business Education</td>
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<td>3</td>
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<tr>
<td>SOSC-231</td>
<td>Human Behavior in Organization</td>
<td>60</td>
<td>3</td>
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<tr>
<td></td>
<td>Option</td>
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## COURSE OUTLINE Second Year

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<td>Managerial Accounting</td>
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<tr>
<td>BUTE-204</td>
<td>Economics Principles 1</td>
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<tr>
<td>BUTE-209</td>
<td>Methods of Teaching Basic Business and Accounting</td>
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<tr>
<td>BUTE-211</td>
<td>Course Construction in Business</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>BUTE-212</td>
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<td>BUTE-213</td>
<td>Educational Testing &amp; Evaluation</td>
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<td>BUTE-217</td>
<td>Business Organization and Management</td>
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<td>BUTE-218</td>
<td>Educational Psychology</td>
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<td>3</td>
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<tr>
<td>BUTE-222</td>
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<td>BUTE-206</td>
<td>Organizing Cooperative Work Experience</td>
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<tr>
<td>SALE-104</td>
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<td>ADMN-314</td>
<td>Selling and Advertising</td>
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<tr>
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<td>Methods of Teaching Marketing</td>
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<tr>
<td>BUTE-103</td>
<td>Basic Typewriting</td>
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93
## MARKETING-MAJOR (ONE YEAR)

### COURSE OUTLINE

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<tr>
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<td>ADMN-410</td>
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<td>SOSC-231</td>
<td>Human Behavior in Organization</td>
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<tr>
<td>BUTE-203</td>
<td>Managerial Accounting</td>
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<tr>
<td>BUTE-209</td>
<td>Methods of Teaching Basic Business and Accounting</td>
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<tr>
<td>BUTE-211</td>
<td>Course Construction in Business</td>
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<tr>
<td>BUTE-212</td>
<td>Student Teaching</td>
<td>150</td>
<td>6</td>
</tr>
<tr>
<td>BUTE-213</td>
<td>Educational Testing &amp; Evaluation</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>BUTE-218</td>
<td>Educational Psychology</td>
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<td>3</td>
</tr>
<tr>
<td>BUTE-206</td>
<td>Organizing Cooperative Work</td>
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<tr>
<td>ADMN-314</td>
<td>Selling and Advertising</td>
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</tr>
<tr>
<td>SALE-104</td>
<td>Consumer Behavior</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>BUTE-214</td>
<td>Methods of Teaching Marketing</td>
<td>60</td>
<td>3</td>
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<tr>
<td>BUTE-103</td>
<td>Basic Typewriting</td>
<td>120</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Option</td>
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<tr>
<td><strong>Totals</strong></td>
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<td>1,220</td>
<td>52</td>
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</table>
INDUSTRIAL ARTS TEACHER EDUCATION

Entrance Requirements
A complete grade 12 program as prescribed by the Department of Education.
Applicants not meeting the above requirements may apply as a mature student.
A mature student is considered to be one who is at least twenty years of age on or before September 30 in the year of registration. Applicants will be required to write an entrance test and achieve an equivalent grade 12 standing on the General Educational Development (GED) Tests offered by the Department of Education. The admissions committee will consider each candidate on an individual basis.
Preference will be given to applicants with proficiency in mathematics and the sciences. Applicants who have taken courses or who have been employed in situations where skills relevant to Industrial Arts have been developed are preferred.
All applicants will be required to attend a personal interview.
Applicants will be required to submit references from their last school principal and/or employer.

Duration of the Course
Two school years, each of ten months’ duration.
A maximum of one year’s credit may be transferred into the Two-Year Industrial Arts Teacher Education program for suitable training completed prior to enrollment.

Fees and Other Costs
The tuition fee for the course is $200 per school year. A student activity fee of $2 per month will be collected at the time of registration.
Books and supplies for the two-year course cost approximately $100 per year.

Financial Assistance
Applicants may apply for Canada Student Loans and Department of Education bursaries.

Tools and Equipment
Relatively expensive tools and equipment are made available by the college. Certain items which for sanitary or other reasons should be personal property are purchased by the student.

Employment Opportunities
The Industrial Arts Teacher Education course has been established to meet the certification requirements of the Department of Education for industrial arts teachers.
Graduates may be employed in the junior and senior high schools in Manitoba.
## INDUSTRIAL ARTS (TWO YEAR)

**COURSE OUTLINE First Year**

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<td>IATE-102</td>
<td>Metalwork</td>
<td>200</td>
<td>7</td>
</tr>
<tr>
<td>IATE-103</td>
<td>Graphic Arts</td>
<td>200</td>
<td>7</td>
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<tr>
<td>IATE-104</td>
<td>Woodwork</td>
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<td>7</td>
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<tr>
<td>IATE-105</td>
<td>Methods of Teaching Industrial Subjects</td>
<td>120</td>
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<tr>
<td>IATE-109</td>
<td>Communication Skills</td>
<td>80</td>
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<tr>
<td>IATE-112</td>
<td>Audio Visual Education</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>IATE-212</td>
<td>Student Teaching</td>
<td>150</td>
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<tr>
<td>BUTE-110</td>
<td>Introductory Psychology</td>
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**Totals**                                                                 1,270  50

**COURSE OUTLINE Second Year**

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<th>Hours</th>
<th>Credits</th>
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<td>Plastics</td>
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<tr>
<td>IATE-202</td>
<td>Electricity/Electronics</td>
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<td>IATE-203</td>
<td>Power Technology</td>
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<td>Organizing Industrial Education Facilities</td>
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<td>Principles of Industrial Education</td>
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<td>IATE-211</td>
<td>Course Construction in Industrial Education</td>
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<td>IATE-212</td>
<td>Student Teaching</td>
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<tr>
<td>BUTE-213</td>
<td>Educational Testing &amp; Evaluation</td>
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<td>3</td>
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<td>IATE-214</td>
<td>Independent Study by Arrangement</td>
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<td>(3)</td>
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**Totals**                                                                 1,210  50
Entrance Requirements

1. An approved grade 11 academic program or a grade 12 vocational program. Anyone not meeting the above requirements may apply as a mature student. A mature student is considered to be one who is at least twenty years of age on or before September 30 in the year of registration. Applicants will be required to write an entrance test and achieve an equivalent grade 12 standing on the General Educational Development (GED) Tests offered by the Department of Education. The admissions committee will consider each candidate on an individual basis.

2. A Journeyman's Certificate in a designated trade or evidence of satisfactory trade training and approved experience in a non-designated trade.

3. A Minimum of three years of approved work experience after journeyman certification or the equivalent experience in a non-designated trade.

All applicants will be required to attend a personal interview. All applicants must submit references from previous employers verifying a minimum of three years work experience after qualifying as a journeyman.

Duration of the Course
One school year of ten months’ duration.

Fees and Other Costs
The tuition fee for the course is $200 per school year. A student activity fee of $2 per month will be collected at the time of registration. Books and supplies for the ten month course will cost approximately $100.

Financial Assistance
Bursaries are available on the basis of need. Students may also apply for Canada Student Loans. Applicants are advised to investigate the possibility of sponsorship through the Canada Manpower Training Program. Students being sponsored by Canada Manpower or any other agency will not be expected to pay for books or fees.

Tools and Equipment
Relatively expensive tools and equipment are made available by the college. Certain items which for sanitary or other reasons should be personal property are purchased by the student.

Employment Opportunities
The Vocational Industrial Teacher Education course has been established to meet the certification requirement of the Department of Education for Vocational Industrial teachers.
Graduates may be employed by high schools offering vocational industrial courses and by community colleges.

**COURSE OUTLINE**

<table>
<thead>
<tr>
<th>COURSE</th>
<th>TITLE</th>
<th>HOURS</th>
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<td>VITE-102</td>
<td>Drawing Interpretation</td>
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<td>IATE-105</td>
<td>Methods of Teaching Industrial Subjects</td>
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<td>IATE-109</td>
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<td>IATE-112</td>
<td>Audio Visual Education</td>
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<td>General Science</td>
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<td>IATE-210</td>
<td>Principles of Industrial Education</td>
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<td>IATE-211</td>
<td>Course Construction in Industrial Education</td>
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<tr>
<td>IATE-212</td>
<td>Student Teaching</td>
<td>150</td>
<td>6</td>
</tr>
<tr>
<td>BUTE-213</td>
<td>Educational Testing &amp; Evaluation</td>
<td>60</td>
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<td>Pre-Applied Arts and Business Course</td>
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<tr>
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<tr>
<td>Agricultural Courses</td>
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FACULTY

Extension and Community Services Division

G. A. JOSEPH, B.A., B.E., P.ENG. Principal

Adult Basic Education

F. YADAO, B.SC., M.SC. Supervisor, Winnipeg
A. B. RAMRATTAN, B.A., DIP. IN ADULT ED. Evening Programs (Rural)

F. J. GAMALDO, B.A., CERT. IN ED. Assistant Supervisor, Wpg.
L. R. FLETCHER, B.A., B.ED. Curriculum Consultant
P. THIESSEN, B.A., B.ED., M.A. Educational Consultant

ALI, J., B.SC.
ANDERSON, J., B.A., M.ED.
BIRD, V. (MRS.)
BOZYK, B. (MISS), B.A.
BRAID, M. (MRS.)
BURKHARDT, A. (MISS), B.A., B.ED.
BURNTNIK, H. (MISS), B.A.
BUSHIE, G.
CHOW, B., B.A. (HONS.)
COX, T., B.SC.
DARVILL, D., B.A.
DOERKSEN, J., B.A., TH.B.
EISCHEN, T., B.A.
FARYON, W., B.A.L.L.B.
FORTUNE, P., B.SC.
FOSS, D. (MRS.)
FRASER, P. (MISS), B.A.
FROESE, J. B., B.SC.
FURLAN, M., B.A.
GALLINGER, R.
GLENNIE, S. (MRS.) B.A.
GRAEB, J., B.A.
GRAFTON, V., B.A.
GRILLER, A.
HACKETT, M. (MRS.) B.A.
HANSEN, M. (MRS.) B.SC. (H. EC.)
HARVEY, S., B.A.
HENDERSON, D.
HEUCHERT, F., B.A., B.ED.
KARALNICK, M., B.A., B.ED.
KELLINGTON, N., B.SC.
KEEP, C., B.A.
KLASSEN, W.
KNUDSEN, R., B.A.
LARSON, L. (MRS.)
LECKIE, W., B.A.
MCLAUGHLIN, S. (MRS.)
MCLEOD, K., A.M.M., B.SC.
MACKAY, C. (MRS.), B.A.
MACKAY, J.
MANDZIUK, S.
MANKASINGH, R., B.SC.
MARTIN, F.
MELEDSZUS, H., B.SC.
NELSON, C.
NICHOLSON, S. (MRS.)
OLIVER, R.,
PAYNE, E., B.A.
PEECH, N., B.SC., B.PED.
(PONS), B.ED.
PIERCE, N. (MRS.) B.A.
RAM, G., B.SC., M.SC. P.ENG., A.P.E.M., M.S.
RAMPERSADSINGH, R., B.SC.
RANVILLE, B., CERT. ADULT ED.
RANVILLE, D. (MISS)
SAMBORSKI, M. (MRS.)
SAMPSON, P. (MRS.) B.A.
SHIRK, C. (MISS) B.A.
SIEWSANKAR, L., (MRS.)
SIMARD, W.
SLIPETZ, W.
STANILAND, D., J. (MISS) B.A.
THORSTEINSON, T., B.A.
VANHARTEVELT, H., (MRS.), DIPL. PSYCHIATRIC TRAIN.
VATNSDAL, G., B.A.
WALMSLEY, R.
WILMOT, C., B.A.
ZWOLAK, P. (MISS) B.A.
Agriculture and Special Courses

A. C. CHORNEY, B.S.A., B.ED. .......................... Supervisor, Agriculture & Special Courses
B. RANDELL, B.S.A. .......................... Assistant Supervisor (Term)

G. AIME, DIP. AGR. .......................... G. MCPHEE, B.S.A.
J. BOWMAN, B.S.A. .......................... R. MELNICK, B.A. DIP. AGR.
M. ENNS, B.S.A. .......................... R. PASIECZKA, DIP. AGR.
C. HUNTER, DIP. AGR. .......................... N. PEECH, B.S.A., B.ED., B.PED.
W. JOHNSON, DIP. AGR. .......................... A. PETERS, B.S.A.
A. KLASSEN, DIP. AGR. .......................... S. PETERS, B.S.A.
J. KOSTAL, DIP. AGR. .......................... M. POLON, B.S.A.
A. LESANN, B.S.A. M.SC. .......................... V. PUSCH, B.S.A.
R. RASMUSSEN, B.S.A. .......................... R. KUBIC

Heavy Equipment Instructors

P. DEMURIAK .......................... R. KUBIC

Evening Program

G. S. ROSS, B.SC. .......................... Supervisor
G. A. DOBBIN, B.A. .......................... Assistant Supervisor

Management Development & Training in Industry

W. S. JEFFRIES, C.A. .......................... Senior Consultant
J. FERGUSON .......................... Consultant
C. W. KEIL .......................... Consultant
D. A. WATSON .......................... Consultant
ADULT BASIC EDUCATION

General Information
Adult Basic Education courses are offered in Manitoba to adults who wish to acquire further training in a community college in the province but lack the academic requirements for entry into college courses.

Location
Courses are offered at Red River Community College, Winnipeg; Assiniboine Community College, Brandon; Keewatin Community College, The Pas; and various rural centres.

Entrance Requirements
Courses are open to applicants who are sixteen years of age or over and have been out of school for at least one year. There is no minimum academic requirement set for admission into the program.

Admission Procedure
Before enrolling in a course, each applicant is required to write either a level placement test or a test of reading ability to ensure that he starts his program at a level for which he is qualified.

Training Allowance
Persons interested in obtaining information about training allowances should contact their local Canada Manpower Centre. Those who do not qualify for support from Canada Manpower may be eligible to receive assistance from the Department of Health and Social Development, the City Welfare Office, or the Department of Indian Affairs and Northern Development.

Cost
Persons who are not sponsored by Canada Manpower or any social agency may enrol in A.B.E. courses at a cost of $7 per month.

Further Information
Applicants are advised to contact their nearest Canada Manpower Centre or any of the following agencies in their community for information about the program:
Department of Health & Social Development
City Welfare Office
Department of Indian Affairs and Northern Development
Children's Aid Society
Red River Community College: Admission's Office or Adult Basic Education Program
Basic Literacy for Adult Development (BLADE)

This course gives adults the opportunity to achieve a grade 5 level in reading, other communication skills, and mathematics. It also allows adults to develop learning and living skills.

Approximate length of course: sixteen weeks.
Approximate grade equivalent: grade 5.

Course Content
1. Taped (cassettes) lessons and exercises on: sounds of English, BLADE cueing system, communication and mathematics.
2. How to learn: memorizing, discovering information and reasoning.
3. Effective living: parole in Canada, Workmen’s Compensation, baby care, credit buying.

Teaching Methods
Completely individualized. Tape-text lessons tell the student what he is to learn and the procedures for learning. Students progress through the course at their own speed. Teachers provide advice and assistance to individual students.

ADULT 5 — 10 PROGRAM

This course provides adult students with the opportunity to acquire academic skills necessary to enter a course of their choice in the college where an Adult 10 standing is admissible.

Approximate length of course: individualized instruction — sixteen to forty weeks; group instruction — up to forty weeks.
Approximate grade equivalent: grade 10.

Course Content
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.
Communication: Reading speed and comprehension development; spelling and vocabulary development; grammar, usage and mechanics; sentence and paragraph construction; expository paragraph writing.
Physical Science: Basic scientific concepts; measurements of forces, temperature, heat, pressure, density, work, electricity; systems of measurements; problem solving.

Teaching Methods
Individualized Instruction: Content material organized in blocks or units of subject matter, allowing students to take only those subjects necessary to pur-
sue their occupational goal. Students progress at their own rate and receive individual attention from teachers.

Group Instruction: Group instruction classes resemble the traditional classroom situation. Courses in this method of instruction begin and end on specified dates.

**ADULT 11 PROGRAM**

Adult 11 is divided into two sections, one of which is science-based and the other arts-based. Students entering the science-based section from Adult 10 are required to attain 75 percent in all subjects in Adult 10. Students entering into the arts-based section require 60 percent in all subjects. Applicants who have not completed Adult 10 may be admitted on the basis of placement test scores. Students should confirm the entrance requirement of the community college course of their choice before enrolling into Adult 11 to ensure that they have chosen the proper program.

Approximate length of Adult 11A and 11B courses: twenty weeks.

Approximate grade equivalent: grade 11.

**Course Content**

**Adult 11A (Science-Based)**

**Mathematics:** Exponents and scientific notation; fundamental operations of directed numbers; fundamental operations of algebra; equations in one unknown, special products and factoring; algebraic fractions, equations; graphical methods, simultaneous equations, trigonometry.

**Communication:** Writing development: spelling development; review of grammar usage; sentence construction usage; writing of paragraphs, letters, research papers. Reading development: speed and comprehension; vocabulary development.

**Physical Science:** Matter and energy; force; measurement; work, power, energy and machines; atomic structure; kinetic theory; thermal expansion; change of state; electrostatics; direct current circuits; heating effects; magnetic effects.

**Adult 11B (Arts-Based)**

**Business Mathematics:** Personal finance; loans and investments; taxation; business problems; business organization.

**Communication:** Review of grammar, usage, mechanics, and sentence structure; the writing of letters, paragraphs, summaries, and research papers; reading, speed and comprehension development; study skills.

**Canadian Economy:** Levels of government; distribution of powers; the judiciary; case studies in common law; national income; supply and demand; types of industries; business and labour organization; monetary and banking systems; alternate economic systems.

**Teaching Methods**

Group instruction method.
The Occupational English course offers instruction in English as a second language to those who are seriously handicapped in obtaining employment by reason of lack of proficiency in the English language.

Approximate length of course: Basic Course — eight weeks; Intermediate Course — eight weeks; Advanced Course — eight weeks.

Course Content

Basic Course: The alphabet; basic vocabulary related to practical situations (approximately 1500 words); basic grammar and mechanics; elementary reading and writing.

Intermediate Course: Vocabulary development; (review of basic course plus approximately 1500 additional words); grammar and mechanics; writing of sentences mastered in conversation; reading of newspapers, magazines, etc.

Advanced Course: To give the student the fluency and ability to express himself in correct English. To develop knowledge in written composition and specific forms of writing such as applications, letters and reports, etc.

Teaching Methods

A combination of classroom instruction and work in a language laboratory.
OPTIONS OF OFFERINGS

Options are available in the academic courses.

Human Relations
A course which allows students to experience personal growth and to acquire skills in dealing with problems of living in a complex and changing society.
Approximate length of course: sixteen weeks.
Course Content: Personal growth: deals with the area of self-image, connectedness, and power. Living skills: deals with money management and family life, health education, community and leisure, and citizenship and government.
Teaching Methods: Group and individual experiential activities allow students to practice or act out useful behaviours in dealing with their own life situations. The course also provides students with exposure to actual life situations and acquaints them with resources available in dealing with their problems.

Pre-O ccupational Orientation
This orientation program is available to all students in the Adult Basic Education course who wish to explore careers and occupations which are of interest to them.
Approximate length of activity: two weeks.
Content of Activity:
Initial Occupational Exploration: Consists of developing decision-making skills, knowledge of self and acquaintance with career clusters.
Occupational Preference: This consists of exploration of preferred occupations, actual work situation, or training institutions.
Tentative Occupational Choice: In-depth study of occupations and job search techniques.
Occupational Choice: Preparing for entry into: (1) training institutions, (2) employment, (3) on-the-job training.
Procedures:
Arranged with occupational exploration coordinator, counsellor and classroom instructor.
PRE-TECHNOLOGY COURSE

Entrance Requirements (one of)

1. Students who have discontinued Term 1 of a two-year program and who feel that future success at the college would be more assured by reviewing grade 12 topics; or

2. Students successful in A.B.E. Adult 11 and with a demonstrated proficiency in English, Mathematics and Physical Science; or

3. Anyone not meeting the above requirements may apply as a mature student. A mature student is considered to be one who is at least twenty years of age prior to the commencement of the course. Applicants may be required to write an entrance exam and/or appear for a personal interview. The admissions committee will consider each applicant on an individual basis.

The course will be of five months' duration. The successful completion of this course will allow a candidate academic eligibility for admission into any courses in technology at Red River Community College. The subject material offered will prepare a student for standing in Mathematics 301, English 301, and Physical Science 301. Department of Education standing will be available to students who are successful in meeting the objectives of this course. Students should indicate at the time of registration if they wish standing with the Department of Education for their Pre-College courses.

Fees and Expenses

The tuition fee for the Pre-College course is $100 for the five month term. Other expenses include textbooks, incidentals, board and lodging.

Course Outline

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PRE-APPLIED ARTS and BUSINESS COURSE

Entrance Requirements (one of)

1. Students who have discontinued Term 1 of a two-year program and who feel that future success at the College would be more assured by reviewing Grade 12 topics.

2. Students successful in A.B.E. Adult 11 and with a demonstrated proficiency in English, Mathematics and Social Studies.

3. Anyone not meeting the above requirements may apply as a mature student. A mature student is considered to be one who is at least twenty years of age prior to the commencement of the course. Applicants may be required to write an entrance exam and/or appear for a personal interview. The admissions committee will consider each applicant on an individual basis.

Course Information

The course will be of approximately five months' duration. The successful completion of this course will allow the candidate academic eligibility for admission into any course in the Business or Applied Arts Division at Red River Community College. The subject material offered will prepare a student for standing in the Mathematics 301 and English 301. Department of Education standing will be available to students who are successful in meeting the objectives of these courses. Students should indicate at the time of registration if they wish standing with the Department of Education for their Pre-College courses.

Fees and Expenses

The tuition fee for the Pre-College course is $100 for the five month term. Other expenses include textbooks, incidentals, board and lodging.

Course Outline

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The Agricultural Courses currently available are now in their seventh year of operation. These courses are offered at various locations throughout the Province of Manitoba. The courses are provided by the Red River and Assiniboine Community Colleges in cooperation with the Manitoba Department of Agriculture and Canada Manpower.

**Farm Management Course**

Farm Management is a 70 day course, running from mid-November until early March. The course is designed to instruct farm operators in the technology, techniques, and science of the operation of their farm business. Areas covered in the course include farm business management, land management, livestock management, farm engineering, mathematics and communications with the emphasis being placed on the best Management of the individual’s available resources.

The course is available to those operators who have a functional Grade 7 or A.B.E. equivalent, are 21 - 45 years of age, with the potential to develop a viable operation and are committed (own, manage or a partner) to a farm operation. Flexibility will be allowed in all of the requirements for course entrance.

**Special Agricultural Courses**

The Special Agricultural Courses are 20 days’ duration and are designed to improve the knowledge, skills, attitudes and management techniques of commercial farmers who have viable production enterprises. The ultimate aims of these courses is to maximize economic returns and improve the level of living through sound Management.

Entrance requirements vary for each course with some flexibility permitted.

**Beef Production Management**

Areas covered in this course include feeding and nutrition, breeding, herd health, marketing, industry analysis, equipment and buildings and Management.

This course is designed for farmers 21 - 50 years of age with a functional Grade 7 or equivalent, who have a breeding herd of 25 or more cows and currently operate a beef enterprise.

**Hog Production Management**

Areas covered in this course include feeding and nutrition, breeding, herd health, marketing, industry analysis, economics of production and Management.

This course is designed for farmers 21 - 50 years of age with a functional Grade 7 or equivalent, who have a breeding herd of 30 or more sows or finish 550 or more feeders and currently manage a hog enterprise.

**Dairy Production Management**

This course includes feeding, nutrition, breeding, herd health, marketing and policy, industry analysis and economics, buildings and equipment and Management as they apply to dairying.
The course is open to those farmers 21 - 50 years of age with a functional Grade 7 education or equivalent who are producing fluid or manufacturing milk and currently manage a dairy enterprise.

**Crop Production Management**

The Crop Production Management Course covers areas of concern including soil management, soil fertility, crop rotation, disease, insect and weed control, handling equipment, marketing, economics, and Management of crops.

The course is open to farmers 21 - 50 years of age with a functional Grade 7 education or equivalent who have at least three years experience in cereal grain and/or special crops production and are interested in improving their knowledge about crop production.

**Farm Business Planning**

This course includes analysis and study of agricultural industry and policy, goals, management principles, business performance, marketing, financing, decision-making, budgeting, planning, risk and uncertainty, accounting and overall business management. Time is to be allocated to both theory and practical exercises.

This course is open to those farmers who have exhibited good farm business management abilities, or are keeping good farm records, or have completed either a farm management course or a farm business group course and are 21 - 50 years of age.

**Basic Agriculture**

This year, a new course is being offered on a trial basis. This course in Basic Agriculture is aimed at a group of farmers previously not eligible for any specific agricultural training. The course is 25 days in length to be instructed over a 10-week period providing one week of classroom instruction alternating with one week of on-farm visits by the instructors.

The course is designed to improve the level of comprehension, increase the awareness of services available to farmers and to enable this group of farmers to interpret and utilize modern agricultural technological information. Areas of instruction include basic practical agricultural arithmetic, communications, animal biology and plant biology.

The course is open to farmers under the age of 45 years, with a Grade 7 or less, with a relatively low gross annual sales and an interest in agriculture with a desire to learn and improve.
HEAVY EQUIPMENT OPERATOR

Entrance Requirements
Age: 18 to 45 (21 to 45 preferred).
Good physical condition, strength, stamina.
Mechanical aptitude.
Some work history in related areas as farming, construction, mechanics, etc.
Ability to read and write.

Duration of Course
Six weeks (210 hours). This is a continuous intake course with a new group of trainees every three weeks throughout the year. For further information on starting dates check with a Canada Manpower Centre.

Employment Opportunities
There is a shortage of trained and fully competent heavy duty equipment operators in the heavy construction industry.
Working conditions are good and wages relatively high. Some work is seasonal in nature but there is a growing tendency toward year-round employment.

Course Outline
This course is divided into 60 hours of theory and 150 hours of practical application.
During the theory portion the candidates receive instruction on the following:
safety precautions; preventative maintenance; staking and grading techniques;
theory of earthmoving; pushing; bulldozing; ripping; loading, clearing; grading;
fuel and lubricants; repairs.
In the practical phase of the course the candidates apply their theory in a practical work situation operating bulldozers, rippers, scrapers, graders, and front end loaders.
Entrance Requirements
Grade 7 or A.B.E. Adult 8, (Lower formal education levels will be considered). Good health (medical and dental examinations are required).
Interest in employment as a homemaker.
All applicants are interviewed by a selection committee composed of prospective employers and representatives of agencies dealing with the use of a homemaker's services. Applicants are selected on the basis of maturity, interest and aptitude for this work.

Duration
Twelve weeks beginning in January. Contact local Canada Manpower Centre for exact starting date and eligibility for entrance into course.

Employment
Trainees may be hired by agencies employing homemakers, or by private individuals in need of such services.

Cooperating Agencies
Family Bureau
Children’s Aid Society of Winnipeg
Care Services
Victorian Order of Nurses
Canada Manpower

Course Outline
The course material is made up of both practical and theoretical information such as: human relations; communications, child care and development, nutrition, clothing safety; care of the home. Trainees will participate in field trips, field placements, demonstration sessions and classroom activities.
Instruction is provided by fully qualified personnel with aid from specialized workers in the various fields of interest to the homemaker.
Over 200 courses (and over 500 subjects) are offered in the Evening Program. These courses are available in the following areas (for more detailed information, see Evening Program calendar):

1. Business
   - Business Administration
   - Computer Analyst/Programmer
   - Commercial
   - Certified Professional Secretaries
   - Hotel, Motel and Restaurant Management
   - Diploma Courses:
     1. Business Administration
     2. Computer Analyst/Programmer

2. Applied Arts
   - Activity Workers
   - Advanced Barbering and Hairstyling
   - Graphic Arts
   - Library Services
   - New Horizons
   - Operators Hairstyling
   - Photography
   - Theatre Arts
   - Travel Services

3. Food Services

4. Health Sciences
   - Child Care
   - Social Welfare

5. Industrial and Technology
   - Technology
   - Apprenticeship
   - Building Construction Technician
   - Chemistry
   - Digital Circuits and the Digital Computer
   - Drafting
   - Industrial
   - Industrial Electrical Maintenance
   - Industrial Electronics
   - Industrial Supervision
   - Quality Control
   - Radio and Television Electronics
   - Structural Design
   - Town Planning
   - Trade Improvement

6. Management Development
   - Program Areas
     - Marketing
     - Human Resources
     - Material Resources
     - Financial Resources
     - Special courses in Management Development area.

7. Special Courses
   1. Over 50 in various areas

All the above courses are designed for the following purposes:

1. Credit courses for the Day Program.
2. Upgrading to the Journeyman level and beyond.
3. Upgrading to meet the prerequisite of credit courses.
4. General interest courses.
5. Courses which will help the community keep abreast of technological changes.

8. Senior Citizen Courses

Courses are available three times during the academic year: Fall, Winter and Spring Trimesters.
Registration Dates — 1974 - 1975

**Fall Trimester — 1974**
During regular office hours 9:00 a.m. - 4:00 p.m. Monday through Friday, up to and including September 11, 1974.
A special evening registration will be held Monday, September 9, 1974, from 7:00 p.m. to 9:00 p.m.
Fall Trimester classes will start September 16, 17 and 21, 1974.

**Winter Trimester — 1975**
During regular office hours 9:00 a.m. - 4:00 p.m. Monday through Friday, up to and including January 8, 1975.
A special evening registration will be held Monday, January 6, 1975, from 7:00 p.m. to 9:00 p.m.
Winter Trimester classes will start January 13, 14 and 18, 1975.

**Spring Trimester — 1975**
During regular office hours 9:00 a.m. - 4:00 p.m. Monday through Friday, up to and including Wednesday, April 9, 1975.
A special evening registration will be held Monday, April 7, 1975 from 7:00 p.m. to 9:00 p.m.
Spring Trimester classes start April 14, 15 and 19, 1975.
For detailed information concerning courses, diplomas or certificates request an Evening Program Calendar by phoning 786-6332, or writing Evening Program, Red River Community College.

**Rural Evening Programs**
Evening courses are offered in various rural communities. Most courses are credited by Red River Community College towards a diploma or certificate.
MANAGEMENT DEVELOPMENT & 
TRAINING-IN-INDUSTRY PROGRAMS

The Management Development and Training in Industry program provides assistance to employers, organizations, etc., who are interested in educating and training their employees and members for better employment opportunities. This is a flexible program which has been designed to respond to specific training requests. The training offered by this program can be presented either at the Community College or at a location requested by the group on any day of the week, either day or evening.

In addition to the presentation of training programs, the Community College will provide employers and groups with training materials for the presentation of training programs to their employees or members providing the employer or group has a person competent to act as a course leader and that the program is presented under the auspices of the Management Development Training in Industry Program. The material may be prepared specifically for the employer or group.

This comprehensive program is an integral part of the College. It has, therefore, the resources to provide training in supervisory management, business management, skills development and academic upgrading courses.

Assistance in the past has been provided to various professional organizations, industries, (including the fashion industry), aerospace industry, retail stores, hospitality industry, service industries, various types of manufacturing concerns and the Federal and Provincial Governments.
Red River Community College serves the community primarily by the courses listed in this calendar, most of which are offered at the campus at Notre Dame and King Edward. However, an increasingly important role is that of providing a variety of services which are not readily categorized.

The facilities of the college are made available to many groups for meetings, conferences, seminars, etc. Material developed by curriculum committees have been made available freely to groups in the community which can use them to advantage. Special courses are organized and operated on short notice in response to requests from various agencies. Experimental programs are being conducted in the field of adult basic education.

The college intends to extend its service to the community in areas where the college’s resources can be employed most effectively.

**Red River Community College Mobile Information Services**

This project is operated within the city of Winnipeg to provide information on all Red River Community College courses, student activities, entrance procedures, and evening courses.

The mobile centre moves to the major shopping centres, high schools and some residential areas.

It is operated as part of the Extension and Community Services of the College. The intent of this project is to take information on the College directly to the public.

**New Careers Program**

The A.B.E. New Careers program is designed to assist individuals to enter the teaching profession by providing them with on the job training and teacher training instruction towards an Adult Education certificate. The program started in 1971 at Red River Community College.
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<td>Medical Laboratory &amp; Radiological Technologies</td>
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FACULTY
Health Sciences Division

PENNER, P.F., B.A., B.ED.
BEATTIE, M. (MISS), R.N., B.N.
BLACK, R.G., R.N., B.N.
BRAUN, E. (MRS.), R.N., B.SC.N.
BRINDLE, E. (MRS.), R.N., B.SC.N.
CHALMERS, A.M. (MISS), R.N., CERT. NURS. ED.
CURLE, D.C., B.SC., A.R.T.

DICK, D.M. (MISS), R.N., B.SC., M.A.
ELLIS, N. (MRS.), B.SC., A.R.T.
GOLD, I.L., R.D.H.
GOOD, A., R.T. (R)

GRAMEK, G.M. (MISS), A.R.T.
GREENWOOD, M. (MRS.), R.N., B.N.
HIRST, E. (MISS), B.SC., A.R.T.
HOEHN, M.A. (MRS.), R.N., B.N.
HOLDEN, L. (MRS.), R.T.
HOWLETT, C.M. (MISS), R.N. L.C.S.L.T.

JASPER, P.M. (MRS.), R.N., CERT. NURS. ED.
KAMINSKY, J.H. (MISS), B.SC., A.R.T.
KMIECK, J. (MRS.), R.N.
LABUN, E. (MISS), R.N., B.N.
LAFRENIERE, G. (MRS.), R.N., B.SC., NURS. ED.

MUIRHEAD, M. (MISS), B.SC. (H.E.)
MCCARTIN, M. (MISS), R.N., B.N.
MCCOLM, A.P. (MRS.), R.N.
MCIVOR, N. (MRS.), R.N., CERT. P.H.N.

MCKENNAN, L.E. (MRS.), L.C.S.L.T.
PORTER, D.L., D.A.
REMPRL, M. (MISS), R.N., B.N.
SCORER, L. (MISS), R.N., B.SC.N.

Principal
Practical Nursing
Diploma Nursing
Diploma Nursing
Diploma Nursing
Practical Nursing
Medical Laboratory Technology
Supervisor, Diploma Nursing
Medical Laboratory Technology
Coordinator, Dental Assisting
Medical Radiological Technology
Lab. Student Sup.
Diploma Nursing
Med. Lab. Technology
Practical Nursing
Lab. Student Sup.
Department Head, Med.
Lab. Technology
Practical Nursing
Med. Lab. Technology
Diploma Nursing
Diploma Nursing
Diploma Nursing
Department Head, Med.
Radiological Technology
Child Care Services
Diploma Nursing
Practical Nursing
Department Head,
Practical Nursing
Med. Lab. Technology
Dental Assisting
Practical Nursing
Diploma Nursing

118
SMITH, B., B.A., C.E.F.
TSUJIMOTO, A. (MISS), B.SC., (L.A.)
WARMBROD, M. (MRS.), B.S., M.S.

WAYNE, P. (MRS.), R.N., B.N.
ZONNEVELD, M.J. (MRS.), R.N., B.N.

Social Sciences
Med. Lab. Technology
Coordinator, Child Care Services
Diploma Nursing
Diploma Nursing
DIPLOMA NURSING EDUCATION

Entrance Requirements

1. A complete Manitoba grade 12 or equivalent with at least one of Chemistry, Physics, Biology or Physical Science at the 300 or 301 level, or

2. Anyone not meeting the above requirements and applying as a mature student is requested to obtain grade 12 equivalency on the General Educational Development tests (G.E.D.) administered by the Department of Education. Applicants with grade 12 standing in two or more subjects should contact the college prior to applying to write G.E.D. tests.

A mature student is considered to be one who is at least twenty years of age on or before September 30 in the year of registration. Each applicant is considered individually by the admissions committee.

3. Applicants must be in good health as described on a personal health form. Emotional stability is essential. Instructions as to the required immunizations will be given once the admissions committee has approved the application.

4. In addition to the above admission requirements, interviews and entrance examinations may be required.

Course Information

The course, two school years in length, each of ten months’ duration, leads to a college diploma in Nursing Education and eligibility to write nurse registration examination (R.N.’s) in Manitoba. Each school year is divided into two five-month terms with final examinations at the end of each term. Classes commence in September of each year.

The students gain experience by working directly with patients, in a variety of settings within the hospital and health community. The college instructors are responsible for, and directly supervise, all nursing experiences planned for the students. Transportation to and from the centres in which the experiences are planned is the responsibility of the individual student.

Fees and Expenses

The tuition fee is $100 for each term. Other expenses include student fees, textbooks, supplies, uniforms and accessories costing approximately in each term: 1—$160; 2—$75; 3—$45; 4—$55.

Financial Assistance

Enquiries regarding possible bursary or loan assistance may be made at Red River Community College or through the student Aid Office, 1181 Portage Avenue, Winnipeg, Manitoba R3G 0V8, Phone 775-0261.
# Course Outline

## TERM 1

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Hours/WEEK</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ENGL-104</td>
<td>English</td>
<td>3</td>
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<tr>
<td>DNUR-101</td>
<td>Anatomy and Physiology</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>CHEM-115</td>
<td>Microbiology</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>PSHY-111</td>
<td>Psychology</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>DNUR-102</td>
<td>Nursing Fundamentals</td>
<td>2</td>
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</tr>
<tr>
<td>DNUR-103</td>
<td>Nursing Techniques</td>
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## TERM 2

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<th>Credit Hours</th>
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<tr>
<td>SOCL-103</td>
<td>Sociology</td>
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<tr>
<td>DNUR-201</td>
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<tr>
<td>PSYC-212</td>
<td>Developmental Psychology</td>
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<td>DNUR-202</td>
<td>The Growing Family</td>
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<tr>
<td>DNUR-203</td>
<td>Introduction to Nursing in Illness</td>
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<tr>
<td>DNUR-204</td>
<td>Basic Sciences</td>
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## TERM 3

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<td>SOCL-304</td>
<td>Social and Health Problems</td>
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</tr>
<tr>
<td>DNUR-301</td>
<td>Nursing of Adults &amp; Children in Illness - Part A</td>
<td>3</td>
<td>4</td>
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<tr>
<td>DNUR-302</td>
<td>Nursing of Adults &amp; Children in Illness - Part B</td>
<td>3</td>
<td>4</td>
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<tr>
<td>DNUR-305</td>
<td>The Practice of Nursing</td>
<td>2</td>
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<tr>
<td>DNUR-306</td>
<td>Nursing the Mentally Ill</td>
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<td>Course Code</td>
<td>Course Title</td>
<td>Term 1</td>
<td>Term 2</td>
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<tr>
<td>-------------</td>
<td>--------------------------------------------------</td>
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<tr>
<td>DNUR-406</td>
<td>Nursing &amp; Its Social Setting</td>
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<td>DNUR-407</td>
<td>Nursing Care Studies Seminar</td>
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<td>DNUR-408</td>
<td>The Practice of Nursing</td>
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<tr>
<td>DNUR-409</td>
<td>Nursing the Mentally Ill</td>
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<tr>
<td>DNUR-410</td>
<td>Providing Nursing Care</td>
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<tr>
<td>DNUR-411</td>
<td>Nursing of Adults &amp; Children in Illness — Part C</td>
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<tr>
<td></td>
<td></td>
<td><strong>12</strong></td>
<td><strong>16</strong></td>
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</table>

* See subject description
PRACTICAL NURSING

Entrance Requirements

1. Complete Manitoba grade 10, or equivalent standing with Science and/or Biology as a required subject, or
2. Adult 10 standing from the Adult Basic Education Course, or
3. Anyone who does not meet the above prerequisites may submit an application. The admissions committee will review the application on an individual basis.

Applicants must be between seventeen and fifty-five years of age and have good health verified by a medical statement. Emotional stability is essential. Instructions as to the required immunizations will be offered to each student once the admissions committee has approved the application.

In addition to the above admission requirements, interviews and entrance examinations may be required.

Applications for Admission

Entrance dates are in February and in September each year. Applicants should apply at least six months prior to the opening date of the course to the Admissions Officer, Red River Community College, 2055 Notre Dame Avenue, Winnipeg, Manitoba, R3H 0J9.

Duration and Type of Course

One year, of which about five months are spent at Red River Community College and six months spent at a Manitoba affiliated hospital.

Upon completion of the one-year program, students are required to write a licensing examination. If successful, a license is awarded and the graduate assumes the title “Licensed Practical Nurse.”

Tuition Fee

The tuition fee is $35 for the five-month term at the college. Other expenses include student fees, books (approximately $45), uniforms (approximately $40), transportation, incidentals and private living accommodation.

Expenses

A student allowance is paid by the hospital for the time spent in the hospital. This is not given during the time spent at the college.

Students may be sponsored by Canada Manpower, or may apply for a Department of Education Bursary.
## Course Outline

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJET</th>
<th>HOURS / WEEK</th>
<th>CREDIT HOURS</th>
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</thead>
<tbody>
<tr>
<td>NURS-101</td>
<td>Basic Nursing</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>NURS-102</td>
<td>Anatomy and Physiology</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>NURS-103</td>
<td>Medical and Surgical Nursing</td>
<td>6</td>
<td>0</td>
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<tr>
<td>NURS-104</td>
<td>Personal &amp; Vocational Relationship</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>NURS-105</td>
<td>Mother, Newborn and Child</td>
<td>5</td>
<td>0</td>
</tr>
</tbody>
</table>

|                  |                                              | 19           | 10           | 25           |

During the six months clinical period at the hospital students receive supervised experience in the following areas of nursing: medical, surgical, maternity, nursery, pediatrics, functional restitution of the aged and/or the long term patients. Many of the affiliating hospitals are in rural Manitoba.
Entrance Requirements
Current or eligible for current registration with the Manitoba Association of Registered Nurses. Applicants who have never been registered in Manitoba must contact the Association prior to being accepted for the course.

Course Information
The course, six weeks in length, is at present offered two or three times per year. Enrollment is limited; if selection is needed, priority is given to those who require the course to return to nursing and whose particular personal circumstances indicate the most benefit will be received. It provides graduate nurses with the up-to-date knowledge and skills needed to return to the nursing of adult patients with medical and surgical conditions. On completion of the course, a recommendation is sent to the M.A.R.N. on which eligibility for registration is determined.

Theory and practice are combined with approximately ten class days at the college and twenty clinical experience days in the hospitals. The schedule includes five to six hours per day Monday to Friday. Initial clinical experiences are with long term and geriatric hospital patients, in later periods students work with more acutely ill patients in medical-surgical nursing areas of a general hospital. The college instructors are responsible for and supervise the students in clinical experiences.

Fees and Expenses
Tuition fee is $40. Textbooks are approximately $15. A uniform is required for hospital experience.
A training course for Medical Laboratory Technologists has been developed by many of the larger hospitals and the Provincial Laboratories of Manitoba in conjunction with Red River Community College.

**Entrance Requirements**
A grade 12 standing with English 300 or 301, Mathematics 300 or 301, Chemistry 300 and one of Biology 300, Biology 301, or Physics 300, plus any other electives to give a complete Manitoba grade 12 standing.

**Applications for Admission**
All applicants must apply initially to the Red River Community College. Applications will be examined by an admissions committee and if approved for admission to the course the applicant will be required to apply to and be accepted by a training centre of his choice from those listed below.

**Training Centres**

- **Brandon General Hospital**, 150 McTavish Ave., E., Brandon, Manitoba. R7A 2B3
- **Deer Lodge Hospital (D.V.A.)**, Portage & Woodlawn, Winnipeg, Manitoba. R3J 0L3
- **Health Sciences Centre (General Centre)**, 700 William Avenue, Winnipeg, Manitoba. R3E 0Z3
- **Victoria General Hospital**, 2340 Pembina Highway, Winnipeg, Manitoba. R3T 2E8
- **Misericordia General Hospital**, 99 Cornish Avenue, Winnipeg, Manitoba. R3C 1A2
- **St. Boniface General Hospital**, 409 Tache Avenue, St. Boniface, Manitoba. R2H 2A6
- **Grace General Hospital**, 300 Booth Drive, Winnipeg, Manitoba. R3J 3M7

The number of student places is limited and is determined by the requirements of each training centre. Therefore, if one hospital has its training program filled a potential applicant may approach another hospital until the number required in the total program is reached.

Applicants are cautioned that normally more students apply than can be accommodated.

Students begin their courses at Red River Community College in September each year.

**Duration and Type of Course**
Students will attend the Red River Community College for a ten month period.
beginning in September. After successfully completing this period a minimum of one year of training is taken at the hospital where the student has been accepted.

At the end of this period and with the hospital’s recommendation the student writes the examination leading to a diploma as a Registered Medical Laboratory Technologist.

**Tuition Fee**
The tuition fee is $200 for ten months at Red River Community College. Other expenses include student activity fees, books, incidentals, board and lodging.

**Employment Opportunities**
Satisfactory completion of training qualifies the student to write registration examinations with the Canadian Society of Laboratory Technologists. Successful candidates will be awarded a certificate (R.T.) which is recognized anywhere in Canada.

Further training and experience can lead to advanced certification with the C.S.L.T. There is a steady demand for registered Medical Laboratory Technologists in hospital laboratories, medical clinics, research agencies and some commercial companies.

**Course Outline**

**TERM 1**

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT</th>
<th>LECT.</th>
<th>LAB.</th>
<th>HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEDL-101</td>
<td>Anatomy and Physiology</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>MEDL-102</td>
<td>Clinical Microbiology &amp; Immunology</td>
<td>2</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>MEDL-103</td>
<td>Clinical Chemistry</td>
<td>3</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>MEDL-104</td>
<td>Haematology</td>
<td>2</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>MEDL-105</td>
<td>Histology</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>MEDL-106</td>
<td>Blood Bank Serology</td>
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<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
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<td><strong>21</strong></td>
<td><strong>25</strong></td>
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**TERM 2**

<table>
<thead>
<tr>
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<th>SUBJECT</th>
<th>LECT.</th>
<th>LAB.</th>
<th>HOURS</th>
</tr>
</thead>
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<tr>
<td>MEDL-201</td>
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<td>2</td>
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</tr>
<tr>
<td>MEDL-202</td>
<td>Clinical Microbiology &amp; Immunology</td>
<td>2</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>MEDL-203</td>
<td>Clinical Chemistry</td>
<td>3</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>MEDL-204</td>
<td>Haematology</td>
<td>2</td>
<td>5</td>
<td>6</td>
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<td>MEDL-205</td>
<td>Histology</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>MEDL-206</td>
<td>Blood Bank Serology</td>
<td>1</td>
<td>3</td>
<td>2</td>
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<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>11</strong></td>
<td><strong>21</strong></td>
<td><strong>25</strong></td>
</tr>
</tbody>
</table>
(X-ray, Nuclear Medicine and Radiotherapy Technicians)

Entrance Requirements

A complete Manitoba grade 12 standing with demonstrated proficiency in English, Mathematics, Physics, or Physical Science. Applicants for Nuclear Medicine are required to have standing in Chemistry at the grade 12 level as well.

The applicant must be in good health and be interested in and sympathetic with persons who are ill or disabled.

Applicants who wish to qualify under mature student provisions must meet the following requirements:

1. at least nineteen years of age.
2. attend the five-month Red River Community College Pre-technology course and receive credit in the required subjects

   OR

   grade 12 standing in English, Mathematics, Physics or Physical Science

   (and Chemistry in the case of Nuclear Medicine)

   OR

   achieve a grade 12 equivalency standing in Manitoba on the G.E.D. tests.

   Applicants with G.E.D. equivalency standing will be required to demonstrate proficiency in Mathematics and Physics by writing entrance tests in these subjects.

3. Supply a complete record of both school and post-school attainment and experience.

4. After fulfilling the above requirements, the applicant must follow the method of selection for all educationally approved applicants and may be accepted by a training school of Radiography only after written acceptance by the Executive of the C.S.R.T. (Manitoba Division).

Applications for Admission

All applicants must apply initially to Red River Community College except in the case of those desiring to train in the field of Nuclear Medicine. Applications will be examined by an admissions committee and if approved for admission to the course the applicant will be required to apply to and be accepted by a training centre of his choice from those listed below.
Diagnostic Techniques (X-Ray Technicians Training)

Brandon General Hospital
150 McTavish Avenue E.,
Brandon, Manitoba.
R7A 2B3

Misericordia General Hospital,
99 Cornish Avenue,
Winnipeg, Manitoba.
R3C 1A2

Health Sciences Centre,
(Children’s Centre),
685 Banatyne Avenue,
Winnipeg, Manitoba.
R3E 0W1

St. Boniface General Hospital,
409 Tache Avenue,
St. Boniface, Manitoba.
R2H 2A6

Health Sciences Centre,
(General Centre),
700 William Avenue,
Winnipeg, Manitoba.
R3E 0Z3

Grace General Hospital,
300 Booth Drive,
Winnipeg, Manitoba.
R3J 3M7

Victoria General Hospital,
2340 Pembina Highway,
Winnipeg, Manitoba.
R3T 2E8

Radiotherapy

All applicants must apply initially to Red River Community College. Applications will be examined by an admissions committee and if approved for admission to the course, the applicant will be required to apply to and be accepted by the training centre: Health Sciences Centre (Cancer Centre), 700 Bannatyne Avenue, Winnipeg, Manitoba. R3E 0V9.

Applicants are cautioned that normally more students apply than can be accommodated according to Canadian Medical Association training regulations and the number of job opportunities available.

There is one entry date per year, August 1st, and students are advised to apply in the early Spring.

The program is of two years’ duration with a one-month hospital orientation, five months at Red River Community College and the remaining seventeen months in the hospital training centre.

Nuclear Medicine

For information and application forms please write to: Technical Instructor, Department of Nuclear Medicine, Health Sciences Centre, 700 William Avenue, Winnipeg, Manitoba. R3E 0Z3.

Applicants are cautioned that normally more students apply than can be accommodated.

There is only one training centre and the entry date for training is January 15th. Candidates are advised to apply early in the Fall.

The program is of two years’ duration with nineteen months in the hospital and five months spent at Red River Community College in a didactic program.
Duration and Type of Course

Students in the Diagnostic Techniques (X-ray Technicians's training) commence training in the beginning of July or December at the hospital training centre which accepted them. Students beginning in July will attend Red River Community College for a five-month period beginning in September. Students beginning in December will attend Red River Community College for a five-month period beginning in February. After successful completion of the College-based portion of training, students return to the hospital training centres for the remainder of the two-year program.

Radiotherapy and Nuclear Medicine students are accepted only once each year with start dates being the beginning of August and mid-January respectively.

At the end of the two-year period and with the hospital's recommendation the student writes the examination leading to a diploma as Registered Radiological Technician (R.T.R.). Certification as a Registered Radiotherapy Technician (R.T.T.) or as a Registered Nuclear Medicine Technician (R.T.N.M.) may be realized after successfully completing the required program in one of the centres listed above.

Tuition Fee

The tuition fee is $100 for the five-month term at Red River Community College. Other expenses include student activity fees, books, incidentals, board and lodging.

Employment Opportunities

The employment possibilities are in radiographic, therapeutic and nuclear medicine departments in large general hospitals in most cities in Canada, U.S.A., Great Britain and Australia.

Some technicians are employed as technical advisors and representatives for X-ray equipment and supply manufacturers. Other are engaged in aspects of teaching or research.

The R.T. diploma is recognized across Canada and in the U.S.A., Great Britain, Australia and Holland and Switzerland.
Course Outline for X-Ray Technicians Training

The following syllabus is approved by the Canadian Society of Radiological Technicians in cooperation with the Canadian Association of Radiologists.

The class hours designated for each of the following subjects are:

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT</th>
<th>HOURS / WEEK</th>
<th>CREDIT HOURS</th>
</tr>
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<tbody>
<tr>
<td>MEDR-109</td>
<td>Anatomy and Physiology</td>
<td>5 LECT. 2 LAB.</td>
<td>6</td>
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<tr>
<td>MEDR-110</td>
<td>Radiographic Positioning</td>
<td>4 LECT. 2 LAB.</td>
<td>6</td>
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<tr>
<td>MEDR-111</td>
<td>Radiation Physics, Radiobiology and Protection</td>
<td>2 LECT. 4 LAB.</td>
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</tr>
<tr>
<td>MEDR-112</td>
<td>Apparatus &amp; Accessory Equipment</td>
<td>3 LECT. 0 LAB.</td>
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</tr>
<tr>
<td>MEDR-113</td>
<td>Basic Sciences</td>
<td>2 LECT. 0 LAB.</td>
<td>3</td>
</tr>
<tr>
<td>MEDR-114</td>
<td>Image Recording in Radiography</td>
<td>4 LECT. 2 LAB.</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>20 LECT. 10 LAB.</td>
<td>25</td>
</tr>
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</table>

Course Outlines for Radiotherapy and Nuclear Medicine

These outlines are developed on an individual basis in conjunction with the hospital training centre.
The Manitoba Health Services Commission has programs for assisting students in obtaining full training in either Medical Laboratory or Radiological Technology leading to the R.T. in either the Canadian Society of Laboratory Technologists or the Canadian Society of Radiological Technicians. (See accounts of separate courses elsewhere in this calendar). In addition, students taking full training in one technology are required to take an Assistant's course in the other Technology. Total training time for both courses is thirty months.

**Entrance Requirements**

Entrance requirements are those of the technology in which full training is taken and these are listed elsewhere in this calendar.

See page 128 for entrance requirements for Medical Laboratory Technology. See page 130 for entrance requirements for Medical Radiological Technology.

**Length of Course**

Radiological R.T. and Laboratory Assistant Course.

Thirty months' training made up of 24 months in Medical Radiological (X-Ray) Technology (two months' orientation; five months at Red River Community College; fourteen months' X-Ray apprenticeship in Laboratory and X-Ray units in rural Manitoba and three months' X-Ray affiliation in Winnipeg or Brandon X-Ray departments) plus a six month Laboratory Assistant course.

Laboratory R.T. and X-Ray Assistant Course.

Thirty months' training made up of 24 months in Medical Laboratory Technology (nine months at Red River Community College; twelve month laboratory internship in a hospital laboratory and three month apprenticeship in Laboratory and X-Ray Units in rural Manitoba) plus a six-month X-Ray Assistant course.

**Financial Assistance**

No financial assistance will be provided during the first six months of training. However, after successfully completing the first six months of the course, the student will receive a bursary which will provide for:

1. payment of a bi-weekly stipend of $46 during the next twelve months of training.
2. payment of a bi-weekly stipend of $55 during the last twelve months of training.
3. reimbursement for textbooks, up to a maximum of $40.
4. reimbursement of all tuition fees paid by the student at the time of registration.

Graduates are required to accept employment with the Manitoba Government in rural Manitoba for a period of 24 months immediately following completion of the course. In the event that the Manitoba Health Services Commis-
sion does not have a position available, graduates must work in the Province during the same period in a position approved by the Department.

**Accommodation**

Students are responsible for their own room and board throughout the training period. Red River Community College keeps a registry of known accommodations suitable to students. Similarly, the Manitoba Health Services Commission knows of accommodation usually available in rural areas.

**Employment Opportunities**

There are opportunities in provincial laboratory and X-ray units and in hospitals throughout rural Manitoba. Canadian certification in these two fields is widely recognized in all provinces and other countries including most U.S.A. States, and British Commonwealth.

**Salary**

The present salary range for trained technologists in provincial institutions is $609.00 – $1149.00 per month.

**Applications for Admission**

All applications should be made to Red River Community College.

For additional information contact Manitoba Health Services Commission, telephone 786-7281 or 786-7243.
Entrance Requirements (one of)

1. Grade 12; or
2. Complete Pre-College course; or
3. Mature student — a mature student is considered to be one who is at least twenty years of age on or before September 30 in the year of registration.

All applicants must be in good health and a medical examination is required of all entering students.

Duration of Course

The course is conducted as a two-year diploma course with the option of terminating training at the end of the first year at which time a certificate of attainment will be awarded for successful completion of the first year of training. The course will be composed of two five-month terms in each college year.

Fees and Expenses

The tuition fee is $100 per five-month term. Textbooks, student activity fees and supplies may total approximately $100.

Course Objective

The objective of the course is to give the training necessary to enable graduates to provide the care for and to accept the responsibility for the development of pre-school children in day care centres and other child care agencies.

Employment Opportunities

An increasing number of day care and pre-school centres are being planned and operated. As these centres are developed, there will be a demand for trained workers.

Course Outline

TERM 1

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT NAME</th>
<th>HOURS / WEEK</th>
<th>CREDIT HOURS</th>
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<td>CCSC-102</td>
<td>Forum and Field Placement 1</td>
<td>8</td>
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<tr>
<td>CCSC-107</td>
<td>Philosophies of Child Care</td>
<td>4</td>
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<td>CCSC-106</td>
<td>Child Behavior &amp; Development</td>
<td>4</td>
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<td>CCSC-108</td>
<td>Creativity and Children</td>
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<td>ENGL-112</td>
<td>Children's Literature 1</td>
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<td>SOCL-106</td>
<td>Self Understanding &amp; Social Feeling 1</td>
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*option

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<td>CCSC-206</td>
<td>Nutrition &amp; Physical Care of the Child</td>
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<td>CCSC-207</td>
<td>Family Influences on the Child</td>
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<td>CCSC-208</td>
<td>Self Expression in Art</td>
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<td>CCSC-209</td>
<td>Elements of Music for Children</td>
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<td>ENGL-215</td>
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<td>SOCL-206</td>
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**Total Credits:** 29

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<td>SOSC-301</td>
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<td>Movement Education</td>
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**Total Credits:** 29

### TERM 4

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<td>CCSC-404</td>
<td>Child Care Service Implementation</td>
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<td>CCSC-405</td>
<td>Issues in Child Development and Child Care</td>
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<td>CCSC-407</td>
<td>Basic Accounting</td>
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**Total Credits:** 30
DENTAL ASSISTING

Entrance Requirements
Complete grade 12 with standing in at least one of Chemistry 300, Physical Science 301, or Biology 300 or 301. Lesser educational standing will be considered by the admissions committee, under the conditions set out by the college admissions officer. (Mature applicants who have had work experience in dental offices and who have performed some of the functions of dental assistance will be given priority over other mature applicants.)

Course Duration
The course is of ten months' duration with six months in Phase 1 and four months in Phase 2. Students successfully completing Phase 1 have the option of discontinuing and qualifying for a certificate.

Course Information
Students successfully completing Phase 1 of this course will be prepared to perform the duties of the chairside dental assistant. The dental assistant works under the supervision of a dentist and performs a wide variety of duties including chairside dental assisting, processing and mounting X-rays, sterilization and care of instruments, laboratory procedures and practice management.

Upon successful completion of Phase 2, students will be able to perform the duties of the chairside dental assistant, plus the following procedures: individual and group oral hygiene instruction, polishing of the teeth with mechanical polishers, application of decay-preventing agents to the teeth, exposing radiographs, making impressions for study models, and application of pit and fissure sealants.

Tuition Fees
Tuition fees are $20 per month plus a $2 monthly student association fee. Payment for the first phase, that is, six months, is required on entry.

Cost of books, lab coats, and supplies will be approximately $150. Most of this will be required on entry.
Course Outline

PHASE 1

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<td>DENT-102</td>
<td>Clinical &amp; Laboratory Sciences</td>
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<td></td>
<td>Supervised Clinical Experience</td>
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<td>DENT-103</td>
<td>Office Procedures</td>
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<td>(a) Typing</td>
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<td>(b) Records</td>
<td>1 (7 wks)</td>
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<td>(c) Bookkeeping</td>
<td>1 (2 wks)</td>
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<td>DENT-104</td>
<td>Introduction to Dental Assisting</td>
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<tr>
<td>DENT-105</td>
<td>Diet and Nutrition</td>
<td>1 (8 wks)</td>
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PHASE 2

At the time of writing Course Outlines are not complete. Generally stated, terminal objectives are the following:

1. Patient Education: The student will know and be able to apply techniques and principles of motivating people with particular emphasis on the dental office and public health field as the setting.

   The student will know why good oral hygiene and other preventive measures are important to good dental health.

   The student will be able to instruct patients in home care procedures, including brushing and flossing, designed to enable the patient to obtain a satisfactory level of oral health. The student will be able to perform dietary instruction using food intake diaries; basing the instructions on Canada’s Food Guide and the location of refined carbohydrate in the diet. To aid in this the student will be proficient in the use of other aids such as the caries susceptibility test, gingival health evaluation test and the use of the phase contrast microscope and disclosing dye.

2. Preventive Procedures: At the completion of their training, the Dental Assistant 2 will be able to properly perform a rubber cup prophylaxis, removing supragingival stain and soft deposits which are readily removable with the use of a rubber cup or brush. The student will be skilled in the proper use and maintenance of the dental equipment utilized.

   In addition, the student will be able to properly and safely apply topical fluoride treatment. This will include isolation with cotton rolls and drying of the teeth and application of the fluoride solution.

   Further, the student will be able to isolate, by the use of cotton rolls, those teeth selected by the dentist and properly apply a pit and fissure sealant according to the manufacturers’ instructions.

3. Diagnostic Aids: At the conclusion of their training the students will be
able to properly and consistently expose, develop and mount all types of intraoral and panoramic dental radiographs. In addition, they will have an understanding of the principles of radiography, X-ray equipment, as well as the types of films and the various radiographic exposures and developing techniques.

The Dental Assistant 2 will also be able to take impressions for study casts. This will include selection of the proper tray, manipulation of the impression material, taking of the impression and pouring and trimming of casts.
## INDUSTRIAL and TECHNOLOGY DIVISION

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FACULTY
Industrial and Technology Division

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SKINNER, J.D. Chairman
YANCHYSHYN, W., B.A.

ALLEN, W.G., C.E.T. Automotive
ANDERSON, G.E. Civil Technology
BAERGEN, J.R., B.SC. Industrial Mathematics
BALE, R.J. Carpenter & Woodworking
BALFOUR, A.C., C.E.T. Industrial Drafting
BARR, R.M., B.ED., M.A.M.T Technology Mathematics
BEECH, R.S. Watch Repair
BELL, J.A., B.SC., (E.E.), P.ENG. Electronic Technology
BLICO, R.S., M.I.E.E.E. Dept. Head, Industrial & Technology Communication

BOILY, L., B.SC., C.E.T. Technology Mathematics
BOROSKA, M.W., C.E.T. Industrial Electrical
BOURKE, A.P. Electrical Appliance Servicing
BRAUN, H. Automotive
BRAYFORD, B.P. Sheet Metal
BROWN, C.C. Industrial Science
BURIES, H., B.ENG., C.E.T. Technology Physics
BURNS, R.D., B.SC., P.ENG., C.A.P. Chemical Technology
BURZYNSKI, A.Z., B.SC., M.SC. Civil Technology
CAMPBELL, K.G., B.SC., B.ED., M.I.E.E.E. Technology Mathematics
CALDWELL, R.T., C.E.T. Technician, Electronic Technology
CARMICHAEL, L.E. Electronic Technology
CHIN, R., B.SC., (E.E.), P.ENG. Auto Body
CHISHOLM, S.T. Carpentry & Woodworking
CLAYTON, S.H. Electronic Technology
DALES, D.N. Carpenter & Woodworking
DAVIDSON, J.C.B. Electrical Technology
DEBEUCKELAERE, E.S. Auto Body
DEMEDASH, D., B.SC., (C.E.), P.ENG. Technology Mathematics
DENESCHUK, D., B.SC., (E.E.) Electrical Technology
DEROCHE, A.G. Auto Body
DITTBRENNER, G.E. Automotive
DOBINSKY, O.W. Technician, Electrical Technology
DOWELL, J.E., B.ENG., B.ED., P.ENG., M.E.I.C. Chemical Technology
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<td>(MRS.), R.T.</td>
<td>Dept. Head, Industrial Drafting</td>
</tr>
<tr>
<td>JACOBS, M.</td>
<td>B.Sc., (Hons.), M.Sc., Ph.D.</td>
<td>Chemical Lab Student Sup.</td>
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<td>JIVAN, A.P.</td>
<td>B.Sc., P.Eng.</td>
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<tr>
<td>JOHNSON, H.L.</td>
<td></td>
<td>Technology Mathematics</td>
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<tr>
<td>JOHNSON, J.D.</td>
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<tr>
<td>JOHNSTON, A.T.</td>
<td></td>
<td>Plumbing</td>
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<tr>
<td>KANE, R.O.</td>
<td>C.T.A.</td>
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<tr>
<td>KELL, K.A.J.</td>
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</tr>
<tr>
<td>KLASZ, J.</td>
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<td>KNIGHT, J.</td>
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<tr>
<td>KOLASKI, A.</td>
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<td>Aircraft Maintenance</td>
</tr>
<tr>
<td>KOLASKI, E.S.</td>
<td>B.Sc.,(C.E.), P.Eng.</td>
<td>Carpenter &amp; Woodworking</td>
</tr>
<tr>
<td>KRAMER, B.E.</td>
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<td>Civil Technology</td>
</tr>
<tr>
<td>KRYWY, S.</td>
<td>B.Sc., (E.E.), P.Eng.</td>
<td>Industrial Science</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Electronic Technology</td>
</tr>
<tr>
<td>Name</td>
<td>Qualifications</td>
<td>Department</td>
</tr>
<tr>
<td>-----------------------------</td>
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<tr>
<td>WILLIAMS, T.A.</td>
<td>B.Sc., (C.E.), P.Eng.</td>
<td>Civil Technology</td>
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<tr>
<td>YOUNG, W.K.</td>
<td></td>
<td>Diesel</td>
</tr>
<tr>
<td>YOUNGSON, K. (MRS.)</td>
<td></td>
<td>Storekeeper, Chemical Tech.</td>
</tr>
<tr>
<td>ZOLINSKI, M.J.</td>
<td></td>
<td>Machine Shop</td>
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<tr>
<td>ZURBA, B. (MRS.)</td>
<td>DIPL. T. (COMPUTER)</td>
<td>Technician, Electronic Tech.</td>
</tr>
</tbody>
</table>
AUTO/DIESEL DEPARTMENT
AUTO BODY REPAIR

Entrance Requirements
Grade 10 or Adult 10 in Adult Basic Education.
Anyone who does not meet the above prerequisites may submit an application.
The admissions committee will review the applications on an individual basis.

Duration of Course
The course is divided into two terms each of five months duration.
Students must complete Term 1 successfully to be eligible for Term 2.
Successful completion of this course qualifies the graduate for a certificate of attainment.

Fees and Expenses
The tuition fee is $7 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $45.

Course Outline
TERM 1

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT NAME</th>
<th>SUBJECT HOURS</th>
<th>CREDIT HOURS</th>
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</thead>
<tbody>
<tr>
<td>ENGL-503</td>
<td>Communications</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>MATH-508</td>
<td>Mathematics</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>RESC-515</td>
<td>Science</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>SHOP-505</td>
<td>Machine Shop</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>ABOD-101</td>
<td>Oxy-Acetylene Welding &amp; Cutting</td>
<td>205</td>
<td>9</td>
</tr>
<tr>
<td>ABOD-102</td>
<td>Hand Tools, Power Grinders, Vibrators</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>ABOD-103</td>
<td>Basic Metal Working &amp; Soldering</td>
<td>240</td>
<td>10</td>
</tr>
<tr>
<td>ABOD-104</td>
<td>Hydraulic Power Equipment and Alignment of Auto Bodies</td>
<td>35</td>
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</tr>
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</table>

660  25
TERM 2

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>MATH-508</td>
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</tr>
<tr>
<td>RESC-515</td>
<td>Science</td>
<td>40</td>
<td>1</td>
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<tr>
<td>ABOD-201</td>
<td>Hardware, Trim and Glass</td>
<td>30</td>
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</tr>
<tr>
<td>ABOD-202</td>
<td>Alignment of Frames &amp; Body Components</td>
<td>60</td>
<td>2</td>
</tr>
<tr>
<td>ABOD-204</td>
<td>Spray Painting Equipment</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>ABOD-205</td>
<td>Paint Products and Their Application</td>
<td>20</td>
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<tr>
<td>ABOD-206</td>
<td>Refinishing Vehicles</td>
<td>130</td>
<td>6</td>
</tr>
<tr>
<td>ABOD-207</td>
<td>Collision Damage Estimating</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>ABOD-253</td>
<td>Repairing Damaged Vehicles</td>
<td>300</td>
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</table>

**Employment Opportunities**

Students who successfully complete this course may find employment in a number of interesting fields such as: an auto body mechanic or painter working for an established shop, an insurance adjuster trainee, or a representative for auto body repair equipment and supplies in the sales field.

As well as finding employment in the above fields, there are opportunities for a student to work his way up to a supervisory position, such as shop foreman of an established automobile dealer or the owner and manager of his own auto body shop.
AUTOMOTIVE MECHANICAL REPAIR

Entrance Requirements
Grade 10 or Adult 10 in Adult Basic Education.
Anyone who does not meet the above prerequisites may submit an application. The admissions committee will review the applications on an individual basis.

Duration of Course
The course is divided into two terms each of five months duration. Students must complete Term 1 successfully to be eligible for Term 2. Successful completion of this course qualifies the graduate for a certificate of attainment.

Fees and Expenses
The tuition fee is $7 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $60.

Course Outline
TERM 1

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT</th>
<th>HOURS</th>
<th>CREDIT HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL-503</td>
<td>Communications</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>MATH-508</td>
<td>Mathematics</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>RESC 519</td>
<td>Science</td>
<td>80</td>
<td>3</td>
</tr>
<tr>
<td>SHOP-505</td>
<td>Machine Shop</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>AUTO-101</td>
<td>Shop Practice</td>
<td>25</td>
<td>1</td>
</tr>
<tr>
<td>AUTO-102</td>
<td>Engine 1 - Internal Combustion</td>
<td>110</td>
<td>5</td>
</tr>
<tr>
<td>AUTO-103</td>
<td>Engine 2 - Rebuilding</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>AUTO-104</td>
<td>Electrical Systems</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>AUTO-105</td>
<td>Tune Up</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>AUTO-106</td>
<td>Transmission</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>AUTO-107</td>
<td>Rear Axles &amp; Drivelines</td>
<td>25</td>
<td>1</td>
</tr>
<tr>
<td>AUTO-108</td>
<td>Brakes</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>AUTO-109</td>
<td>Steering &amp; Suspension</td>
<td>35</td>
<td>1</td>
</tr>
<tr>
<td>AUTO-110</td>
<td>Automatic Transmission</td>
<td>70</td>
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</table>

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>660</td>
<td>25</td>
</tr>
</tbody>
</table>

The above subjects will be covered during the first twenty weeks of the course. A mid-term exam will be written and the student's practical aptitude will be assessed. Those students who are successful in attaining the required marks and aptitudes will progress to Term 2. Term 1 comprises theory lectures and practical experiences on shop models and equipment.
TERM 2

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT</th>
<th>CREDIT HOURS</th>
<th>HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL-503</td>
<td>Communications</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>MATH-508</td>
<td>Mathematics</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>WELD-506</td>
<td>Welding</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>AUTO-252</td>
<td>Engines - Overhauling</td>
<td>100</td>
<td>4</td>
</tr>
<tr>
<td>AUTO-253</td>
<td>Electrical - Repairs and Adjusting</td>
<td>55</td>
<td>2</td>
</tr>
<tr>
<td>AUTO-254</td>
<td>Fuel System - Repairs &amp; Adjusting</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>AUTO-255</td>
<td>Tune-up - Dyno Testing</td>
<td>80</td>
<td>3</td>
</tr>
<tr>
<td>AUTO-256</td>
<td>Transmission - Standard</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>AUTO-257</td>
<td>Rear Axles and Drivelines</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>AUTO-258</td>
<td>Brakes - Hydraulic, Disc Power</td>
<td>70</td>
<td>3</td>
</tr>
<tr>
<td>AUTO-259</td>
<td>Steering Repairs</td>
<td>50</td>
<td>2</td>
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<tr>
<td>AUTO-260</td>
<td>Transmission - Automatic</td>
<td>45</td>
<td>2</td>
</tr>
<tr>
<td>AUTO-261</td>
<td>Air-Conditioning</td>
<td>25</td>
<td>1</td>
</tr>
<tr>
<td>AUTO-262</td>
<td>Basic Oscilloscope &amp; Dynamometer</td>
<td>25</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>660</strong></td>
<td><strong>25</strong></td>
</tr>
</tbody>
</table>

The above subjects will be covered during the second twenty weeks. These operations will be in the live garage shop where a student will be given the opportunity of diagnosing problems on the automobile, removal of units for replacement, disassemble, inspect and remanufacture, re-install and make final adjustments. Many varied types of machines and equipment will be utilized in the above mentioned operations. Students will be required to pass a comprehensive examination at the end of the course.

**Employment Opportunities**

Students who successfully complete this course may find employment in several interesting and diverse fields such as in automotive service as a journeyman mechanic, shop foreman, service manager, parts manager, machine operator, or other special areas; or in service fields as a service station operator, maintenance supervisor, or in auto parts outlets.
DIESEL MECHANICS - TRANSPORT

Entrance Requirements

Grade 10 or Adult 10 in Adult Basic Education. Anyone who does not meet the above prerequisites may submit an application. The admissions committee will review the applications on an individual basis.

Duration of Course

Approximately ten months. Successful completion of this course qualifies the graduate for a certificate of attainment.

Fees and Expenses

The tuition fee is $7 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $85.

Course Outline

<table>
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<th>SUBJECT NO.</th>
<th>SUBJECT</th>
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</tr>
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<tr>
<td>ENGL-503</td>
<td>Communications</td>
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<td>MATH-508</td>
<td>Mathematics</td>
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<td>SHOP-505</td>
<td>Machine Shop</td>
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<tr>
<td>RESC-520</td>
<td>Science</td>
<td></td>
<td>80</td>
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<tr>
<td>WELD-507</td>
<td>Welding - Arc</td>
<td></td>
<td>50</td>
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<td>WELD-506</td>
<td>Welding - Gas</td>
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<td>30</td>
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<tr>
<td>DESL-101</td>
<td>Running Gear 1</td>
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<td>DESL-102</td>
<td>Standard Transmissions</td>
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<td>DESL-103</td>
<td>Rear Axles</td>
<td></td>
<td>80</td>
</tr>
<tr>
<td>DESL-104</td>
<td>Brake Systems</td>
<td></td>
<td>80</td>
</tr>
<tr>
<td>DESL-105</td>
<td>Automatic &amp; Power Shift Transmission</td>
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<tr>
<td>DESL-106</td>
<td>Power Train</td>
<td></td>
<td>80</td>
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<tr>
<td>DESL-107</td>
<td>Engine Overhaul 1</td>
<td></td>
<td>80</td>
</tr>
<tr>
<td>DESL-108</td>
<td>Engine Overhaul 2</td>
<td></td>
<td>85</td>
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<tr>
<td>DESL-109</td>
<td>Engine Testing</td>
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<td>DESL-110</td>
<td>Hydraulics Lab</td>
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<tr>
<td>DESL-111</td>
<td>Electrical Lab</td>
<td></td>
<td>80</td>
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<tr>
<td>DESL-112</td>
<td>Fuel Systems Lab</td>
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<td>85</td>
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</table>

1,320 50

154
Employment Opportunities

Students who successfully complete this course may find employment as mechanics in several interesting and diverse fields, such as in:

1. The transportation industry which includes public, highway, railway and marine transport.

2. Heavy construction industry working on projects such as hydro-electric, highway, and pipelines the world over.

3. Agriculture — working for dealers and equipment manufacturers.

4. Power Generation — working wherever power supply is obtained from stationary diesel units.

5. Equipment suppliers and manufacturers.

As well as finding employment as mechanics, opportunities also exist in a host of related support jobs such as sales, equipment, representatives, parts merchandising and supervisory jobs.
CHEMICAL TECHNOLOGY DEPARTMENT

Entrance Requirements

1. English 301 or 300, Mathematics 301 or 300, Physical Science 301 or (Physics 300 and Chemistry 300), plus any other electives to give a complete Manitoba grade 12 standing. Candidates who have a complete grade 12 but who do not have the required subject indicated above are invited to apply to have their credentials reviewed by the admissions committee, or

2. Successful completion of the Pre-Technology course, or

3. Anyone not meeting the above requirements may apply as a mature student. A mature student is considered to be one who is at least twenty years of age on or before September 30 in the year of registration. Applicants may be required to write an entrance exam and/or appear for a personal interview. The admissions committee will consider each applicant on an individual basis.

Duration of Course

Two school years, each of ten months duration, leads to a diploma in technology (Dip. T). Each of the ten month periods is divided into two equal terms with final examinations written at the end of each term.

Course Information

The Chemical and Biochemical Technology programs are common in first year, therefore students who wish to transfer to the complementary technology may do so at the beginning of Term 3.

The Chemical and Biochemical Technology programs have both been accredited by the certification committee of chemical technologists of the Chemical Institute of Canada. Students registered in this program will be eligible for student membership in the Chemical Institute of Canada, and may write the examinations of the Chemical Institute to qualify for full professional membership.

Fees and Expenses

The tuition fee for the course in Chemical Technology is $100 for each of the four terms. Other expenses include textbooks, incidentals, board and lodging.
### CHEMICAL TECHNOLOGY

**Course Outline**

**TERM 1 First Year**

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>Course Title</th>
<th>LECT.</th>
<th>LAB.</th>
<th>HOURS</th>
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</thead>
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<tr>
<td>ENGL-101</td>
<td>Communications</td>
<td>3</td>
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<td>3</td>
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<tr>
<td>MATH-107</td>
<td>Mathematics</td>
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<td>2</td>
<td>3</td>
</tr>
<tr>
<td>ERON-104</td>
<td>Electricity &amp; Magnetism</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>CHEM-101</td>
<td>General Chemistry</td>
<td>3</td>
<td>3</td>
<td>5</td>
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<tr>
<td>CHEM-102</td>
<td>Descriptive Inorganic Chemistry</td>
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<td>0</td>
<td>3</td>
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<tr>
<td>CHEM-103</td>
<td>Inorganic Qualitative Analysis</td>
<td>3</td>
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<td>5</td>
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<tr>
<td>CHEM-107</td>
<td>Mechanics and Heat</td>
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<td>3</td>
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</table>

|              | **TOTAL**                                         | 18    | 12   | 25    |

**TERM 2**

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>Course Title</th>
<th>LECT.</th>
<th>LAB.</th>
<th>HOURS</th>
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<tbody>
<tr>
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<td>3</td>
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<tr>
<td>MATH-207</td>
<td>Mathematics</td>
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<td>2</td>
<td>4</td>
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<td>ERON-204</td>
<td>Electronics</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>CHEM-203</td>
<td>Inorganic Quantitative Analysis</td>
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<td>6</td>
<td>6</td>
</tr>
<tr>
<td>CHEM-204</td>
<td>Organic Chemistry</td>
<td>3</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>CHEM-207</td>
<td>Optics and Nuclear Chemistry</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

|              | **TOTAL**                                         | 15    | 16   | 25    |

**TERM 3 Second Year**

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>Course Title</th>
<th>LECT.</th>
<th>LAB.</th>
<th>HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH-307</td>
<td>Calculus</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>CHEM-304</td>
<td>Organic Chemistry</td>
<td>3</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>CHEM-305</td>
<td>Instrumental Chemical Analysis</td>
<td>2</td>
<td>8</td>
<td>7</td>
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<tr>
<td>CHEM-306</td>
<td>Physical Chemistry</td>
<td>3</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>CHEM-307</td>
<td>Laboratory Techniques</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>CHEM-309</td>
<td>Industrial Chemistry</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

|              | **TOTAL**                                         | 14    | 17   | 25    |
## Employment Opportunities

The technologist performs a special and indispensable role as a member of the scientific team in chemical research, product development, application, or production.

Since the Canadian chemical industry has experienced phenomenal growth in the last decade, there are many opportunities for students who possess the personal initiative and responsibility for the attainment of a diploma.

The Chemical Technologist may become employed as a research assistant, chemical analyst, plant control chemist, laboratory experimentation specialist, salesman and serviceman for chemical products and equipment, teacher’s aid, etc.

The chemical graduate finds employment in a wide variety of fields, such as foods, glass, rubber, building products, dyes, oils, lubricants, heavy chemicals, fuels, fertilizers, paper, paints, plastics, metals, mining and government agencies.

This course is designed for women as well as men. There are many jobs for which the industry prefers women, jobs that require a good color sense, patience and precision. Working conditions in most of the employing firms are the kind that would be attractive to women. The laboratories are safe, quiet and clean. The work is interesting and challenging. This field provides a wonderful opportunity to the girl with better than average intelligence who does not plan or cannot afford higher education but is not satisfied with the usual job opportunities found in the clerical fields.
Entrance Requirements
As outlined for Chemical Technology course (page 156).

Course Outline

First Year
As outlined for Chemical Technology course (page 157).

Course Outline

TERM 3  Second Year

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>Subject</th>
<th>LECT</th>
<th>LAB</th>
<th>HOURS</th>
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TERM 4

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Employment Opportunities

The biochemical technologist performs a special and indispensable role as a member of the scientific team in research, product development and application, production or quality control.

The nature of the task performed by the biochemical technologist depends
on their field of employment. Since biochemistry is the branch of science that deals with the chemistry of living things, the biochemical technologist can be engaged in studying matter, plan and carry out experiments through chemical reactions, or with living plants or animals; analyze food and other materials for content and purity; tabulate and evaluate results.

The biochemical technologist may work actively in medical and dental research, in the pharmaceutical industry developing new drugs and studying their effects; in the food industry, primarily in the area of quality control and safety standards; in the field of agriculture studying disease and effect of chemicals, fertilizers and pesticides on food products; in areas of air and water pollution, environmental health labs, teacher's aid, etc.
BIOLOGICAL TECHNOLOGY

Entrance Requirements

1. Applicants are encouraged to have, as entrance requirements, the following high school background:
   English 300 or 301, Mathematics 300 or 301, Physical Science 301 and Biology 300 or 301.

   or
   English 300 or 301, Mathematics 300 or 301 and two of the following:
   Biology 300 or 301, Physics 300, Chemistry 300 and any other electives to give a complete grade 12 standing, or

2. Successful completion of the Pre-Technology Course, or

3. Anyone not meeting the above requirements may apply as a mature student. A mature student is considered to be one who is at least twenty years of age on or before September 30 in the year of registration. Applicants may be required to write an entrance exam and/or appear for a personal interview. The admissions committee will consider each applicant on an individual basis.

Duration of Course

Two school years, each of ten months duration, leads to a diploma in technology (Dipl. T). Each of the ten month periods is divided into two equal terms with final examinations written at the end of each term.

Fees and Expenses

The tuition fee for the course in Biological Technology is $100 for each of the four terms. Other expenses include textbooks, incidentals, board and lodging.

Course Outline

TERM 1 First Year

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## TERM 3 Second Year

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## TERM 4

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## Employment Opportunities

Biology is the science dealing with the life processes of plant and animals, and is concerned with the composition of living matter and the chemical changes occurring in living tissue.

Emphasis is placed on theoretical and practical instruction in a broad variety of biological processes common to both botanical and zoological sciences. Technologists are required for field work, survey work of plant and animal population, related activities, and in laboratory situations. These activities
include animal care, plant growth, bacteriology, analytical analysis of biological material (the preparation of plant and animal material for microscopic examination, etc.)

Career opportunities are available in a wide variety of fields including university departments, medical schools, federal and provincial experimental and research stations, veterinary laboratories, fish and wildlife services, environmental and public health agencies, meat and food processing industries, inspectors of food and meat products.
CIVIL TECHNOLOGY DEPARTMENT

Entrance Requirements
1. English 301 or 300, Mathematics 301 or 300, Physical Science 301 or Physics 300, plus any other electives to give a complete Manitoba grade 12 standing. Candidates who have a complete grade 12 but who do not have the required subjects indicated above are invited to apply to have their credentials reviewed by the admissions committee, or
2. Successful completion of the Pre-Technology Course, or
3. Anyone not meeting the above requirements may apply as a mature student. A mature student is considered to be one who is at least twenty years of age on or before September 30 in the year of registration. Applicants may be required to write an entrance exam and/or appear for a personal interview. The admissions committee will consider each applicant on an individual basis.

Duration of Course
Two school years, each of ten months duration, leads to a diploma in technology (Dip. T). Each of the ten month periods is divided into two equal terms with final examinations written at the end of each term.

Fees and Expenses
The tuition fee is $100 for each term. Other expenses include books, incidentals, board and lodging.

Course Outline

TERM 1 First Year

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
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14 16 25
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**FLOW CHART SHOWING RELATIONSHIP OF BUILDING CIVIL, DESIGN & DRAFTING, STRUCTURAL AND SURVEYING TECHNOLOGY COURSES**

**TERM 1**
- Building
- Structural
- Civil
- Design and Drafting
- Surveying

**TERM 2**
- Building
- Structural
- Civil
- Design and Drafting
- Surveying

**TERM 3**
- Building
- Structural
- Civil
- Design and Drafting
- Surveying

**TERM 4**
- Building
- Structural
- Civil
- Design and Drafting
- Surveying
Entrance Requirements
As outlined for Civil Technology Department courses (page 164).

Course Outline

First Year
As outlined for Civil Technology Department courses (page 164).

Course Outline

TERM 3 Second Year

<table>
<thead>
<tr>
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<th>Subject</th>
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<td>Theory of Structures</td>
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<td>Timber Design &amp; Formwork</td>
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<td>Soil Mechanics</td>
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<td>Concrete Construction</td>
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TERM 4

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<td>Building Services &amp; Specifications</td>
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<td>Code Interpretation &amp; Safety</td>
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</table>

Employment Opportunities

The Building Technology course is designed to produce technologists who will receive a comprehensive training in the field of building construction.

The building technologist can be employed in the fields of estimating, construction and maintenance supervision, building inspection, materials testing, building products sales and other related areas. The graduate can also expect to work with consulting engineering firms, contractors, builders, fabricators, and suppliers of construction materials. After gaining the necessary experience he may choose to become self-employed as a construction supervisor or as a contractor.
CIVIL TECHNOLOGY

Entrance Requirements
As outlined for Civil Technology Department courses (page 164).

Course Outline
First Year
As outlined for Civil Technology Department courses (page 164).

Course Outline
TERM 3 Second Year

<table>
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TERM 4

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Employment Opportunities
The civil technologist is trained to assist the civil engineer in a variety of areas including construction of streets, highways, railroads, airports, drainage and flood protection facilities, hydroelectric development projects, plus the installation of adequate facilities for water supply and sewage disposal. The civil technologist could find employment in the planning design, construction or inspection of such projects. After gaining the necessary experience, a civil technologist might become a sales representative for a building materials
or engineering equipment manufacturer. He is trained to adopt engineering theory to construction techniques.

His work is often described as developmental, covering the stages between engineering concepts and the physically completed project.
DESIGN and DRAFTING TECHNOLOGY

Entrance Requirements
As outlined for Civil Technology Department courses (page 164).

Course Outline
TERM 1 First Year
As outlined for Civil Technology Department courses (page 164).

TERM 2

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Course Outline
TERM 3 Second Year

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT</th>
<th>HOURS / WEEK</th>
<th>CREDIT HOURS</th>
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<tr>
<td>DEDR-305</td>
<td>Architectural Detailing &amp; Design</td>
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<td>DEDR-312</td>
<td>Theory of Systems</td>
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<td>DEDR-321</td>
<td>Mechanical Drafting &amp; Design</td>
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<tr>
<td>DEDR-322</td>
<td>Materials and Specifications</td>
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<td><strong>13</strong> 17</td>
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EMPLOYMENT OPPORTUNITIES

The rapid absorption of new scientific knowledge into the engineering sciences and the increasing complexity of modern structures increases the need for clear, concise presentation of technical information.

This continuing change demands that design and working drawings—the working language of engineering and architecture—be prepared in order to convey this information from the designer to the fabricator, owner, financing agency, etc.

The Design and Drafting Technology course, which has a wide and varied content in the fields of both engineering and architecture, permits graduates of this course to be gainfully employed in a wide variety of job opportunities.

Graduates of this course have found employment with architects, consulting engineers, contractors, fabricators, and service industries as well as a variety of positions with the various departments of municipal, provincial and federal government services.
STRUCTURAL TECHNOLOGY

Entrance Requirements
As outlined for Civil Technology Department courses (page 164).

Course Outline
First Year
As outlined for Civil Technology Department courses (page 164).

Course Outline
TERM 3 Second Year
As outlined for Building Technology courses (page 166).

TERM 4

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
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<td>Foundations</td>
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<td>Structural Steel Design</td>
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<td>STRL-422</td>
<td>Design of Structures</td>
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</table>

16 14 25

Employment Opportunities
The structural technologist is trained to assist the structural engineer in the formulation and calculations of engineering design. Every commercial, industrial and large residential building, every highway and railroad bridge, every hydro-electric power plant and power transmission line, or any similar structure requires the services of structural engineers and structural technologists. The Structural Technology graduate can find job opportunities in structural design and analysis with consulting engineering firms, architectural firms, crown corporation or public works departments. After gaining the necessary experience the graduate could also find an interesting career in sales, or as a manager in the building materials or construction equipment fields.
Entrance Requirements
As outlined for Civil Technology Department courses (page 164).

Course Outline
First Year

TERM 1
As outlined for Civil Technology Department courses (page 164).

TERM 2

<table>
<thead>
<tr>
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Course Outline
TERM 3 Second Year

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<td>SURV 304</td>
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<td>SURV 307</td>
<td>Route Surveys</td>
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<td>SURV 316</td>
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<td>SURV 317</td>
<td>Soil Mechanics</td>
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<td></td>
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</table>
### Employment Opportunities

The Surveying Technology 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.

A graduate also has the opportunity for further technical advancement by obtaining a commission as a Manitoba land surveyor by serving a term of articles and successfully passing further examinations. This would open up the specialized field of cadastral surveying which is concerned with the registration of the extent of ownership of land.
CONSTRUCTION DEPARTMENT
CARPENTRY and WOODWORKING

Entrance Requirements
Grade 10 or Adult 10 in Adult Basic Education.
Anyone who does not meet the above prerequisites may submit an application. The admissions committee will review the applications on an individual basis.

Duration of Course
Approximately ten months. Successful completion of this course qualifies the graduate for a certificate of attainment.

Fees and Expenses
The tuition fee is $7 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $80.

Aim of the Course
The aim of the course is twofold due to the range of age of the students. The younger participants usually enter apprenticeship in carpentry after the successful completion of the course, receiving credit for the in-school-training and the actual working time. Students who had affiliations with the trade and do not wish to enter a formal apprenticeship, benefit particularly from the theoretical instruction. Provided they have the required practical experience they may subsequently apply for their journeyman’s examination under the Apprenticeship and Tradesmen’s Qualification Act and thus become fully qualified journeymen with the Provincial Certificate.
### Course Outline

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<tr>
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<tr>
<td>DRAF-504</td>
<td>Sketching &amp; Blueprint Reading</td>
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<tr>
<td>PDEC-107</td>
<td>Wood Finishing</td>
<td>2</td>
</tr>
<tr>
<td>WOOD-101</td>
<td>Hand Tools</td>
<td>4</td>
</tr>
<tr>
<td>WOOD-102</td>
<td>Woodworking Machines</td>
<td>6</td>
</tr>
<tr>
<td>WOOD-103</td>
<td>Concrete Form Construction</td>
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</tr>
<tr>
<td>WOOD-104</td>
<td>General Framing</td>
<td>3</td>
</tr>
<tr>
<td>WOOD-105</td>
<td>Equal Pitch Roofing</td>
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</tr>
<tr>
<td>WOOD-106</td>
<td>Stair Building</td>
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</tr>
<tr>
<td>WOOD-107</td>
<td>Finishing</td>
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</tr>
<tr>
<td>WOOD-108</td>
<td>Cabinet Work</td>
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<tr>
<td>WOOD-109</td>
<td>Unequal Pitch Roofing</td>
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<td>WOOD-110</td>
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<td>WOOD-111</td>
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</table>

**Total:** 1,320 HOURS

### Employment Opportunities

Employment is usually found in the building trades, either in commercial construction or housebuilding, and in factories and cabinet making shops. Journeymen find employment in other capacities too, such as foremen, supervisors, building inspectors, draftsmen, estimators, superintendents or specialists in related fields.
MASONRY

Entrance Requirements
Grade 9, or Adult 10 in the Adult Basic Education Course. Good health, physically strong and able to endure heights.

Anyone who does not meet the above prerequisites may submit an application. The admissions committee will review the applications on an individual basis.

Duration of Course
Approximately five months. Successful completion of this course qualifies the graduate for a certificate of attainment.

Fees and Expenses
The tuition fee is $7 per month, or fraction thereof. Other expenses include tool bag, spacing rule, 48’’ level (wood), trowel, hammer, bolster, jointers, nylon line, 9’’ - 10’’ torpedo level. The cost of these supplies is approximately $65 (can be bought over a five-month period). Textbooks and additional supplies cost $30.

Course Outline

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT</th>
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<td>Sketching &amp; Blueprint Reading</td>
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<td>MASN-101</td>
<td>Introduction, Materials, Tools</td>
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<tr>
<td>MASN-102</td>
<td>Masonry Bonds</td>
<td>28</td>
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<tr>
<td>MASN-103</td>
<td>Definitions</td>
<td>28</td>
</tr>
<tr>
<td>MASN-104</td>
<td>Walls</td>
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<td>MASN-105</td>
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<tr>
<td>MASN-106</td>
<td>Practical Work</td>
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<th>SUBECT HOURS</th>
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</thead>
<tbody>
<tr>
<td>Total</td>
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</table>

Employment Opportunities
The student who completed the course with a pass mark of 70% in theory and D in practical work will be accepted into the industry as an apprentice. After additional training, he can obtain journeyman status and then through personal endeavors will be eligible for positions such as foreman, estimator, draftsman, building inspector, maintenance man, contractor or building superintendent.
PAINTING and DECORATING

Entrance Requirements
Grade 10 or Adult 10 in Adult Basic Education.
Anyone who does not meet the above prerequisites may submit an application. The admissions committee will review the applications on an individual basis.

Duration of Course
Approximately five months. Successful completion of this course qualifies the graduate for a certificate of attainment.

Fees and Expenses
The tuition fee is $7 per month, or fraction thereof. Other expenses include textbooks and supplies totalling approximately $30.

Course Description
This course was drawn up to fulfill a need which has become increasingly apparent during recent years due to the rapid progress in the development of tools, materials, and techniques.
The instruction program provides a good grounding in fundamentals, basic skills, and knowledge of modern developments in tools, materials and procedures and their adaption to construction.
While the course is primarily intended to impart fundamental knowledge and skills, it is also concerned with maintaining standards of skill and craftsmanship, and instilling the traditions of integrity and pride of craft.

Employment Opportunities
A person who successfully completes this course will generally by given credit as an apprentice for the first level in the painting and decorating trade, with the opportunity of obtaining a Certificate of Qualification. This certificate identifies the holder as a journeyman, and he is recognized by employers and the public as a trained and competent tradesman. Painters and Decorators are employed by: construction contractors, home improvement contractors, civil service, public utilities, manufacturing companies, or are self-employed.
## Course Outline

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<thead>
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<th>SUBJECT NO.</th>
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<th>CREDIT HOURS</th>
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<td>Science</td>
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<tr>
<td>DRAF-504</td>
<td>Sketching &amp; Blueprint Reading</td>
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<td>PDEC-101</td>
<td>Introduction, Safety, Study and History of the Trade</td>
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<td>Basic Components of Paint</td>
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<td>PDEC-103</td>
<td>Preparation and Application of Coatings, Interior-Exterior</td>
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<td>PDEC-104</td>
<td>Tools, Equipment &amp; Safety</td>
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<td>Re-Painted Surfaces</td>
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<td>PDEC-106</td>
<td>Paint Failures, Causes &amp; Remedies</td>
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<td>Wood Finishing</td>
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<td>PDEC-108</td>
<td>Basic Color Theory &amp; Mixing</td>
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<td>PDEC-109</td>
<td>Paper Hanging &amp; Wall Covering</td>
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**Total HOURS:** 660  
**Total CREDIT HOURS:** 25
PLUMBING

Entrance Requirements
Grade 10 or Adult 10 in Adult Basic Education.
Anyone who does not meet the above prerequisites may submit an application. The admissions committee will review the applications on an individual basis.

Duration of Course
Approximately ten months. Successful completion of this course qualifies the graduate for a certificate of attainment.

Fees and Expenses
The tuition fee is $7 per month or fraction thereof. Other expenses including textbooks and supplies total approximately $50.

Course Outline

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<td>Machine Shop</td>
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<td>Welding</td>
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<td>Introduction to Plumbing</td>
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<td>PLUM-103</td>
<td>Regulations &amp; Project Installations</td>
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<td>Sheet Lead</td>
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<td>PLUM-105</td>
<td>Torches</td>
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<td>Pumps</td>
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<tr>
<td>PLUM-108</td>
<td>Rigging and Signaling</td>
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</table>

1,320

Employment Opportunities
The plumber is a craftsman who installs water and waste disposal systems in rural areas and residential homes as well as commercial buildings such as schools, hospitals, industrial plants and other structures. Job opportunities are found in almost every community, but most jobs are found in highly populated and industrial areas.

After graduating from this course a student usually can find employment with plumbing contractors and after further training on the job and in school as an apprentice, he can become a journeyman after successfully passing an examination. He can then go into business for himself or continue working for plumbing contractors, possibly becoming a foreman or an estimator.
UPHOLSTERY

Entrance Requirements
Grade 10 or Adult 10 in Adult Basic Education.
Anyone who does not meet the above prerequisites may submit an application. The admissions committee will review the applications on an individual basis.

Duration of Course
Approximately ten months. The course is divided into two terms each of five months duration. Students who successfully complete Term 1 may seek employment at that time or may, at the discretion of the college, continue into Term 2 of the course.

Fees and Expenses
The tuition fee is $7 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $40.

Course Outline
TERM 1

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<tr>
<td>UPHO-101</td>
<td>Basic Tools &amp; Equipment</td>
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<tr>
<td>UPHO-102</td>
<td>Spring Construction</td>
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<tr>
<td>UPHO-103</td>
<td>Burlap and Stuffing Up</td>
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<td>Trimmings</td>
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TERM 2

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<td>Foam Rubber Applications</td>
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<td>UPHO-203</td>
<td>Advanced General Upholstery</td>
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<td>Woodworking</td>
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<tr>
<td>UPHO-217</td>
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664  25

Employment Opportunities

The employment market served by this course has two major divisions. Completion of Term 1 provides the trainees with the necessary basic skills to obtain employment with manufacturing companies in this field as springers, trimmers, cutters, etc.

Completion of Term 2 qualifies the trainees to work in any of the above categories or to obtain employment in custom upholstering shops from where they may progress to become estimators, furniture salesman or inspectors.
Entrance Requirements
Grade 11 with proficiency in Mathematics and Physical Science, or Adult 11A in Adult Basic Education.

Anyone who does not meet the above prerequisites may submit an application. The admissions committee will review the application on an individual basis.

Duration of Course
Approximately ten months. Successful completion of this course qualifies the graduate for a certificate of attainment.

Fees and Expenses
The tuition fee is $7 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $75.

Employment Opportunities
The architectural technician may be employed as draftspersons in the following concerns: architectural, structural engineering, town planning, building subtrades. With experience gained in these fields, there is the possibility of advancement into the following situations: estimating, specification writing, technical representative or salesperson of building product lines, and building inspectors.

Course Outline

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT</th>
<th>CREDIT HOURS</th>
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</thead>
<tbody>
<tr>
<td>MATH-509</td>
<td>Mathematics</td>
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<tr>
<td>ADRA-101</td>
<td>Fundamentals of Delineation</td>
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<tr>
<td>ADRA-102</td>
<td>Applied (Arch) Drafting 1</td>
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<tr>
<td>ADRA-103</td>
<td>Calculating Machine Operation</td>
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<tr>
<td>ADRA-104</td>
<td>Surveying &amp; Topographical Drawing</td>
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<td>ADRA-105</td>
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<td>ADRA-112</td>
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1,320 50
MECHANICAL SYSTEMS DRAFTING

(Option)

Entrance Requirements
Grade 11 with proficiency in Mathematics and Physical Science, or Adult 11A in Adult Basic Education.
Anyone who does not meet the above prerequisites may submit an application. The admissions committee will review the application on an individual basis.

Duration of Course
Approximately ten months. Successful completion of this course qualifies the graduate for a certificate of attainment.

Fees and Expenses
The tuition fee is $7 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $75.

Employment Opportunities
Graduates are suitable for employment with mechanical contractors and consultants in the plumbing, heating and air conditioning fields as draftspersons, estimators and technical representatives.

Course Outline

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<td>ADRA-104</td>
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Part 2 (Mechanical Systems Drafting Option)

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Total: 1,320 50
MACHINE DRAFTING

Entrance Requirements
Grade 11 with proficiency in Mathematics and Physical Science, or Adult 11A in Adult Basic Education.
Anyone who does not meet the above prerequisites may submit an application. The admissions committee will review the applications on an individual basis.

Duration of Course
Approximately ten months. Successful completion of this course qualifies the graduate for a certificate of attainment.

Fees and Expenses
The tuition fee is $7 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $100.

Employment Opportunities
A variety of employment opportunities await the trained student in sheet metal working industries, tool and die production, machine shop drafting, and consulting engineers’ offices. With experience in some of the above situations, there are the possibilities of advancement into the technical representative and salesperson’s field of metal working equipment and products, and shop inspectors.

Course Outline

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<th>SUBJECT NO.</th>
<th>SUBJECT</th>
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1,320  50
Entrance Requirements

1. English 301 or 300, Mathematics 301 or 300, Physical Science 301 or Physics 300 plus any other electives to give a complete Manitoba grade 12 standing. Candidates who have a complete grade 12 but do not have the required subjects indicated above are invited to apply to have their credentials reviewed by the admissions committee, or

2. Successful completion of the Pre-Technology Course, or

3. Anyone not meeting the above requirements may apply as a mature student. A mature student is considered to be one who is at least twenty years of age on or before September 30 in the year of registration. Applicants may be required to write an entrance exam and/or appear for a personal interview. The admissions committee will consider each applicant on an individual basis.

Duration of Course

Two school years, each of ten months duration, leads to a diploma in technology (DipT. T.). Each of the ten month periods is divided into two equal terms with final examinations written at the end of each term.

Fees and Expenses

The tuition fee is $100 for each term. Other expenses include books, incidentals, board and lodging.

Course Outline

TERM 1 First Year

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<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT DESCRIPTION</th>
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<td>Physics</td>
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<td>Basic Electrical Instruments</td>
<td>2 LECT, 2 LAB</td>
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<td>Electric Circuits</td>
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<td>ERIC-108</td>
<td>Electrical/Electronic Drawing</td>
<td>1 LECT, 2 LAB</td>
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<td>ERON-108</td>
<td>Basic Electronics</td>
<td>2 LECT, 2 LAB</td>
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Total: 15 LECT, 15 LAB, 25 CREDIT HOURS
FLOW CHART SHOWING RELATIONSHIP OF COMPUTER, ELECTRICAL, ELECTRONIC, AND INSTRUMENTATION TECHNOLOGY COURSES

TERM 1
- Computer
- Electronic
- Electrical
- Instrumentation

TERM 2
- Computer
- Electronic
- Electrical
- Instrumentation

TERM 3
- Computer
- Electronic
- Electrical
- Instrumentation

TERM 4
- Computer
- Electronic
- Electrical
- Instrumentation

NOTE 1. A selection of options is offered in the various programs. Presentation of any given option is contingent upon availability of teaching staff plus having sufficient students select the option to warrant offering it.

NOTE 2. Prospective students not continuing from the preceding term (or students with deficiencies in preceding terms) must check with their department head regarding prerequisites.
# COMPUTER TECHNOLOGY

**Entrance Requirements**
As outlined for Electrical-Electronic Technology Departments courses (page 185).

**Course Outline**

**TERM 1 First Year**
As outlined for Electrical-Electronic Technology Departments courses (page 185).

**TERM 2**

<table>
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<td>ERON-210</td>
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<tr>
<td>COMP-209</td>
<td>Computer Topics</td>
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**TERM 3 Second Year**

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<td>ERON-306</td>
<td>Electronic Measurements</td>
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<td>3</td>
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<td>COMP-307</td>
<td>Control Systems</td>
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<tr>
<td>COMP-309</td>
<td>Logic Circuits &amp; Programming</td>
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<tr>
<td>COMP-311</td>
<td>Pulse Circuits</td>
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187
TERM 4

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<td>MATH-408</td>
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</tbody>
</table>

Electives other than the above listed may be chosen subject to approval by the department head.

Employment Opportunities

The graduate in Computer Technology has a thorough knowledge of electronic fundamentals, supplemented by an understanding of both the hardware and the software aspects of computer techniques. He may find challenging job opportunities as a computer applications technologist with industries using computers in process control, scientific application, data logging, numeric controlled machines or in areas of customer engineering.
ELECTRICAL TECHNOLOGY

Entrance Requirements
As outlined for Electrical-Electronic Technology Departments courses (page 185).

Course Outline
TERM 1 First Year
As outlined for Electrical-Electronic Technology Departments courses (page 185).

TERM 2

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT</th>
<th>LECT.</th>
<th>LAB.</th>
<th>CREDIT HOURS</th>
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<tr>
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Course Outline
TERM 3 Second Year

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<td>Digital &amp; Computer Control Techniques</td>
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<td>Industrial Electronics</td>
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<td>ERIC-313</td>
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<td>Electrical Practices &amp; Design</td>
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TERM 4

ERIC-405 Electrical Machines ............................. 2 3 5
ERIC-406 Control Systems ................................. 2 3 4
ERIC-408 Industrial Electronics ......................... 2 3 5
ERIC-412 Electrical Transmission & Measurements ...... 3 2 4
ERIC-414 Switchgear & Protection ......................... 2 3 4
Plus one of the following electives ........................ 4 0 3

15 14 25

ERON-414 Manufacturing Techniques
MATH-408 Numerical Methods with Fortran
ERON-410 Business Topics
ERIC-418 Technical Research & Report
ERIC-419 HVDC Systems
Other (on approval)

Employment Opportunities
The graduate occupies a key and unique spot between the engineer and craftsman. Trained to adapt engineering theory to industrial practice, he is limited only by his personal horizon. Consulting engineers, manufacturers, power companies, government agencies, contractors and distributors are some of the groups offering employment in this dynamic and challenging field.
ELECTRONIC TECHNOLOGY

Entrance Requirements
As outlined for Electrical-Electronic Technology Departments courses (page 185).

Course Outline
TERM 1 First Year
As outlined for Electrical-Electronic Technology Departments courses (page 185).

TERM 2

<table>
<thead>
<tr>
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<th>SUBJECT</th>
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<td>ERON-209</td>
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TERM 3 Second Year

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TERM 4

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<td>ERON-413</td>
<td>Audio Systems</td>
<td>2</td>
</tr>
<tr>
<td>ERON-415</td>
<td>Radar Systems</td>
<td>2</td>
</tr>
</tbody>
</table>

Electives, other than the above listed, may be chosen subject to approval by the department head.

**Employment Opportunities**

The electronic technologist is limited only by his personal horizon. There is a place in research and development with government agencies and industrial laboratories, in installation and maintenance with communications organizations, in design, in development and production with manufacturers, in technical sales and marketing—there is, in fact, a place for a technologist wherever electronic equipment is utilized.
INSTRUMENTATION TECHNOLOGY

Entrance Requirements
As outlined for Electrical-Electronic Technology Departments courses (page 185).

Course Outline
TERM 1 First Year
As outlined for Electrical-Electronic Technology Departments courses (page 185).

TERM 2

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>COURSE TITLE</th>
<th>HOURS / WEEK</th>
<th>CREDIT HOURS</th>
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<tbody>
<tr>
<td>ENGL-201</td>
<td>Report Writing</td>
<td>3</td>
<td>0</td>
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<tr>
<td>MATH-202</td>
<td>Calculus</td>
<td>3</td>
<td>2</td>
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<tr>
<td>RESC-204</td>
<td>Instrumentation Physics</td>
<td>2</td>
<td>2</td>
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<tr>
<td>INST-203</td>
<td>Basic Instrumentation</td>
<td>2</td>
<td>2</td>
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<tr>
<td>INST-204</td>
<td>Instrumentation Layout &amp; Design</td>
<td>1</td>
<td>2</td>
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<tr>
<td>INST-207</td>
<td>Electric Circuits</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>INST-209</td>
<td>Computational Techniques</td>
<td>0</td>
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<tr>
<td>ERON-208</td>
<td>Basic Electronics</td>
<td>2</td>
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<td></td>
<td></td>
<td><strong>16</strong></td>
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Course Outline
TERM 3 Second Year

<table>
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<tbody>
<tr>
<td>MATH-305</td>
<td>Calculus</td>
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</tr>
<tr>
<td>INST-301</td>
<td>Fluid Mechanics</td>
<td>2</td>
</tr>
<tr>
<td>INST-302</td>
<td>Process Measurements</td>
<td>2</td>
</tr>
<tr>
<td>INST-305</td>
<td>Industrial Hydraulics</td>
<td>2</td>
</tr>
<tr>
<td>INST-306</td>
<td>Digital &amp; Computer Control Techniques</td>
<td>2</td>
</tr>
<tr>
<td>INST-308</td>
<td>Electrical Practices</td>
<td>2</td>
</tr>
<tr>
<td>INST-309</td>
<td>Industrial Electronics</td>
<td>2</td>
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193
TERM 4

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>INST-402</td>
<td>Process Measurements</td>
<td>2</td>
</tr>
<tr>
<td>INST-403</td>
<td>Industrial Control Applications</td>
<td>2</td>
</tr>
<tr>
<td>INST-404</td>
<td>Chemical Instrumentation</td>
<td>3</td>
</tr>
<tr>
<td>INST-405</td>
<td>Process Analysis</td>
<td>2</td>
</tr>
<tr>
<td>INST-409</td>
<td>Industrial Electronics</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Plus one elective:</td>
<td></td>
</tr>
<tr>
<td>INST-406</td>
<td>Control Systems</td>
<td></td>
</tr>
<tr>
<td>INST-418</td>
<td>Technical Research &amp; Report</td>
<td></td>
</tr>
</tbody>
</table>

Other elective (on approval)

Employment Opportunities

There are two main fields of employment. One is with firms who design, manufacture and sell engineering, laboratory, scientific and optical instruments; the other is in industries such as the chemical, petroleum refining, papermaking, electrical utility, atomic research and the air transport fields. Smaller numbers of technicians are in meteorology, geophysics and similar scientific fields.

Occupations in instrumentation are still emerging and there is considerable overlap between instrumentation, mechanical, chemical and electrical technologists. Consequently, duties will vary from industry to industry, and from company to company within the same industry. In general, technologists are involved in the design and modification of process control systems.
ELECTRICAL DEPARTMENT (INDUSTRIAL)
MAJOR APPLIANCE SERVICING TECHNICIAN

Entrance Requirements

Grade 10 or Adult 10 in Adult Basic Education.

Most companies employing graduates require that they be bonded, therefore students should be bondable.

Anyone who does not meet the above prerequisites may submit an application. The admissions committee will review the application on an individual basis.

Duration of Course

Approximately ten months. Successful completion of this course qualifies the graduate for a certificate of attainment.

Fees and Expenses

The tuition fee is $7 per month or fraction thereof. Other expenses including textbooks and supplies total approximately $80.

Course Outline

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT</th>
<th>HOURS</th>
<th>CRedit HOURS</th>
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</thead>
<tbody>
<tr>
<td>MATH-509</td>
<td>Mathematics</td>
<td>80</td>
<td>3</td>
</tr>
<tr>
<td>RESC-522</td>
<td>Science</td>
<td>80</td>
<td>3</td>
</tr>
<tr>
<td>SHOP-505</td>
<td>Machine Shop</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>MARK-504</td>
<td>Marketing</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>OSPR-506</td>
<td>Office Systems &amp; Procedures</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>APPL-101</td>
<td>Elementary Circuitry</td>
<td>80</td>
<td>3</td>
</tr>
<tr>
<td>APPL-102</td>
<td>Fundamentals of Electricity</td>
<td>100</td>
<td>4</td>
</tr>
<tr>
<td>APPL-103</td>
<td>A.C. Fundamentals</td>
<td>80</td>
<td>3</td>
</tr>
<tr>
<td>APPL-104</td>
<td>A.C. Motors</td>
<td>20</td>
<td>1</td>
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<tr>
<td>APPL-105</td>
<td>Electrical Code</td>
<td>90</td>
<td>3</td>
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<tr>
<td>APPL-106</td>
<td>Electrical Ranges</td>
<td>80</td>
<td>3</td>
</tr>
<tr>
<td>APPL-107</td>
<td>Electric Dryers</td>
<td>120</td>
<td>4</td>
</tr>
<tr>
<td>APPL-108</td>
<td>Automatic Washing Machines</td>
<td>220</td>
<td>8</td>
</tr>
<tr>
<td>APPL-109</td>
<td>Refrigeration (Household)</td>
<td>220</td>
<td>8</td>
</tr>
</tbody>
</table>

Employment Opportunities

Employment opportunities for students who successfully complete this course will expand. More appliances of increasing complexity will be used, requiring more maintenance and repair.

Employment opportunities are available in the following fields: field service for national manufacturers, independent service companies, and dealer operated service departments.
REFRIGERATION and AIR CONDITIONING

Entrance Requirements
Grade 11 or Adult 11A in Adult Basic Education.
Anyone who does not meet the above prerequisites may submit an application. The admissions committee will review the applications on an individual basis.

Duration of Course
Approximately ten months. Successful completion of this course qualifies the graduate for a certificate of attainment.

Fees and Expenses
The tuition fee is $7 per month or fraction thereof. Other expenses including textbooks and supplies total approximately $80.

Course Outline

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<tr>
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<th>SUBJECT</th>
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<tr>
<td>ENG.L-503</td>
<td>Communications</td>
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<tr>
<td>MATH-509</td>
<td>Mathematics</td>
<td>80</td>
</tr>
<tr>
<td>RESC-521</td>
<td>Science</td>
<td>80</td>
</tr>
<tr>
<td>DRAF-504</td>
<td>Sketching &amp; Blueprint Reading</td>
<td>40</td>
</tr>
<tr>
<td>SHOP-505</td>
<td>Machine Shop</td>
<td>60</td>
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<tr>
<td>WELD-506</td>
<td>Welding</td>
<td>60</td>
</tr>
<tr>
<td>FRIG-101</td>
<td>Safety and Fundamentals</td>
<td>60</td>
</tr>
<tr>
<td>FRIG-102</td>
<td>Basic Refrigeration Systems</td>
<td>180</td>
</tr>
<tr>
<td>FRIG-103</td>
<td>Commercial Systems</td>
<td>400</td>
</tr>
<tr>
<td>FRIG-104</td>
<td>Calculations</td>
<td>100</td>
</tr>
<tr>
<td>FRIG-105</td>
<td>Basic Air Conditioning Systems</td>
<td>40</td>
</tr>
<tr>
<td>FRIG-106</td>
<td>Refrigeration Electrical</td>
<td>180</td>
</tr>
</tbody>
</table>

1,320  50

Employment Opportunities
Students who successfully complete this course may find employment in several areas:
1. Contractors engaged in installation, service and repair of commercial and industrial refrigeration and air conditioning equipment.
2. Many buildings and institutions such as hotels, hospitals, etc., employ refrigeration mechanics on their maintenance staff.
3. Firms engaged in manufacturing and suppliers of refrigeration equipment.
4. Independent service companies who service and repair domestic and/or commercial refrigeration equipment.
5. Service departments of large retail stores who sell domestic refrigerators, home freezers, unit air conditioners, humidifiers, etc.
Entrance Requirements
Grade 10 or Adult 10 in Adult Basic Education. Grade 11 preferred.
Anyone who does not meet the above prerequisites may submit an application. The admissions committee will review the applications on an individual basis.

Duration of Course
Approximately ten months. Successful completion of this course qualifies the graduate for a certificate of attainment.

NOTE: This course is divided into two five-month sections, Term 1 and Term 2. To continue into Term 2 the student must successfully complete Term 1.

Fees and Expenses
The tuition fee is $7 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $120.

Course Outline
TERM 1

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
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<th>CREDIT HOURS</th>
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<td>MATH-509</td>
<td>Mathematics</td>
<td>40</td>
</tr>
<tr>
<td>RESC-523</td>
<td>Science</td>
<td>40</td>
</tr>
<tr>
<td>SHOP-505</td>
<td>Machine Shop</td>
<td>30</td>
</tr>
<tr>
<td>TRIC-101</td>
<td>Fundamentals of Electricity</td>
<td>120</td>
</tr>
<tr>
<td>TRIC-102</td>
<td>Residential Blueprint Reading</td>
<td>160</td>
</tr>
<tr>
<td>TRIC-103</td>
<td>Direct Current Machines &amp; Controls</td>
<td>80</td>
</tr>
<tr>
<td>TRIC-151</td>
<td>Residential Wiring</td>
<td>110</td>
</tr>
<tr>
<td>TRIC-152</td>
<td>Electrical Lab.</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>660</strong></td>
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<tr>
<td></td>
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</table>
TERM 2

<table>
<thead>
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<th>Course Title</th>
<th>Credits</th>
<th>Level</th>
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</tr>
<tr>
<td>RESC-523</td>
<td>Science</td>
<td>40</td>
<td>1</td>
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<tr>
<td>TRIC-201</td>
<td>Alternating Current Fundamentals</td>
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<td>3</td>
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<tr>
<td>TRIC-202</td>
<td>3-Phase Systems &amp; Transformers</td>
<td>40</td>
<td>1</td>
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<tr>
<td>TRIC-203</td>
<td>Alternating Current Machines &amp; Controls</td>
<td>80</td>
<td>2</td>
</tr>
<tr>
<td>TRIC-204</td>
<td>Electric Motor Repair</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>TRIC-205</td>
<td>Commercial Blueprint Reading</td>
<td>80</td>
<td>3</td>
</tr>
<tr>
<td>TRIC-251</td>
<td>Commercial Wiring</td>
<td>60</td>
<td>4</td>
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<tr>
<td>TRIC-252</td>
<td>Electrical Lab. (A.C.)</td>
<td>60</td>
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<tr>
<td>TRIC-253</td>
<td>Electric Motor Repair</td>
<td>120</td>
<td>4</td>
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<tr>
<td></td>
<td></td>
<td><strong>660</strong></td>
<td><strong>25</strong></td>
</tr>
</tbody>
</table>

Employment Opportunities

Students who successfully complete Term 1 may find employment in the electrical field. The student who completes Term 1 and enters the Electrical Construction Trade as an Apprentice will receive credit for Level 1 of the Apprenticeship program sponsored by the Department of Labour.

Students who successfully complete Term 2 may find employment in the following fields.

1. The utility companies as they generate and distribute electrical energy.
2. Electrical contractors.
3. Manufacturers of electrical equipment and machinery.
4. Industry as a whole where they use electrical installations and equipment.
5. Distributors of electrical equipment and machinery.

The student who completes Term 2 and enters the Electrical Construction Trade as an Apprentice will receive credits for Levels 1 and 2 of the Apprenticeship program sponsored by the Department of Labour.
ELECTRONICS DEPARTMENT (INDUSTRIAL)  
DOMESTIC ELECTRONICS  
(with 2 month color T.V. option)  

Entrance Requirements  
Grade 11 or Adult 11A in Adult Basic Education.  
Those who do not have the above prerequisites may apply to the admissions committee on an individual basis.  

Duration of Course  
Approximately ten months. Successful completion of the twelve month course qualifies the graduate for a certificate of attainment in Color Television.  

Fees and Expenses  
The tuition fee is $7 per month or fraction thereof. Other expenses including textbooks and supplies total approximately $60.  

Employment Opportunities  
Graduates can readily find employment in television manufacturer's service depots, retail outlet service departments, electronic wholesale and distributors, color television service shops or self employment.  

Course Outline  
TERM 1  

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT</th>
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<tr>
<td>MATH-509</td>
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<tr>
<td>RESC-525</td>
<td>Science</td>
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</tr>
<tr>
<td>TVES-112</td>
<td>Direct Current Fundamentals</td>
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<td>70</td>
</tr>
<tr>
<td>TVES-113</td>
<td>Alternating Current Fundamentals</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>TVES-114</td>
<td>Electronic Fundamentals</td>
<td></td>
<td>100</td>
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<tr>
<td>TVES-115</td>
<td>AM and FM Transmitters</td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>TVES-116</td>
<td>Radio Receivers and Servicing</td>
<td></td>
<td>150</td>
</tr>
<tr>
<td>TVES-117</td>
<td>FM, Stereo, Hi-Fi, TV Basics</td>
<td></td>
<td>120</td>
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<td></td>
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### TERM 2

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<td>Communications</td>
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<td>DRAF-504</td>
<td>Electronic Drafting</td>
<td>30</td>
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<tr>
<td>MARK-504</td>
<td>Marketing</td>
<td>40</td>
<td>2</td>
</tr>
<tr>
<td>TVES-201</td>
<td>Television Standards &amp; Fundamentals</td>
<td>30</td>
<td>2</td>
</tr>
<tr>
<td>TVES-202</td>
<td>Antennas &amp; Master Antenna Systems</td>
<td>20</td>
<td>2</td>
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<tr>
<td>TVES-203</td>
<td>Television Receivers &amp; Servicing</td>
<td>450</td>
<td>12</td>
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<tr>
<td>TVES-204</td>
<td>Closed Circuit Television</td>
<td>50</td>
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<td></td>
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### TERM 3

<table>
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<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT</th>
<th>HOURS</th>
<th>CREDIT HOURS</th>
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<tbody>
<tr>
<td>TVES-301</td>
<td>Color Television</td>
<td>220</td>
<td>8</td>
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<tr>
<td>TVES-302</td>
<td>Solid State Television</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>270</td>
<td>10</td>
</tr>
</tbody>
</table>
INDUSTRIAL ELECTRONICS

Entrance Requirements
This is a demanding course and candidates should have a minimum of Grade 11 with proficiency in mathematics and physics or Adult 11A in Adult Basic Education.

Those who do not have the above prerequisites may apply to the admissions committee on an individual basis.

Duration of Course
Approximately ten months. Successful completion of this course qualifies the graduate for a certificate of attainment.

Fees and Expenses
The tuition fee is $7 per month or fraction thereof. Other expenses including textbooks and supplies total $80.

Employment Opportunities
Successful completion of the course in Industrial Electronics will serve to prepare the student for employment in several fields. These may include:

1. Service and maintenance of control equipment in production plants of all types.
2. Laboratory and testing situations involving electronic controls and instrumentation.
3. Any other area of industry where electronic control and devices are used and require maintenance and servicing, including ancillary shop facilities where equipment is manufactured and/or serviced.

As well as employment opportunities as technicians, a large number of related support jobs such as sales, equipment representatives, parts merchandising, and supervisory posts are open to people trained in this area.
## Course Outline

### TERM 1

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
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<td>MATH-513</td>
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<tr>
<td>RESC-525</td>
<td>Science</td>
<td>40</td>
<td>2</td>
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<tr>
<td>DRAF-504</td>
<td>Drafting</td>
<td>30</td>
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<tr>
<td>IRON-109</td>
<td>DC Fundamentals</td>
<td>100</td>
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<tr>
<td>IRON-110</td>
<td>AC Fundamentals</td>
<td>75</td>
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<tr>
<td>IRON-111</td>
<td>Test Equipment</td>
<td>25</td>
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<tr>
<td>IRON-112</td>
<td>Transistors and Tubes</td>
<td>100</td>
<td>4</td>
</tr>
<tr>
<td>IRON-113</td>
<td>Power Supplies</td>
<td>50</td>
<td>1</td>
</tr>
<tr>
<td>IRON-114</td>
<td>Amplifiers</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>IRON-115</td>
<td>Oscillators, Multivibrators &amp; Flip-Flops</td>
<td>50</td>
<td>3</td>
</tr>
<tr>
<td>IRON-116</td>
<td>Introduction to Logic &amp; Switching</td>
<td>40</td>
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</table>

Total Credit Hours: 660, Total Hours: 25

Only students who have successfully completed Term 1 will be allowed to enter Term 2.

### TERM 2

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT</th>
<th>CREDIT HOURS</th>
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</thead>
<tbody>
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<tr>
<td>MATH-613</td>
<td>Mathematics</td>
<td>80</td>
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</tr>
<tr>
<td>IRON-201</td>
<td>Timing Fundamentals</td>
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<td>1</td>
</tr>
<tr>
<td>IRON-202</td>
<td>Gaseous Electron Tubes</td>
<td>80</td>
<td>2</td>
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<tr>
<td>IRON-203</td>
<td>Phase Shift Circuits</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>IRON-204</td>
<td>Electron Tube Time Delay Circuits</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>IRON-205</td>
<td>Semiconductors</td>
<td>160</td>
<td>6</td>
</tr>
<tr>
<td>IRON-206</td>
<td>Photosensitive Devices</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>IRON-207</td>
<td>Relays</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>IRON-208</td>
<td>Motor Control Circuits</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>IRON-209</td>
<td>Pulse and Gating Circuits</td>
<td>150</td>
<td>6</td>
</tr>
<tr>
<td>IRON-210</td>
<td>Closed Circuit Television</td>
<td>20</td>
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</tr>
</tbody>
</table>

Total Credit Hours: 660, Total Hours: 25
RADIO OPERATING and ELECTRONIC COMMUNICATIONS

Entrance Requirements
Grade 11 with proficiency in mathematics and physics, or Adult 11A in Adult Basic Education.

Anyone who does not meet the above prerequisites may submit an application. The admissions committee will review the applications on an individual basis.

Duration of Course
Approximately ten months. Successful completion of this course qualifies the graduate for a certificate of attainment.

Fees and Expenses
The tuition fee is $7 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $70.

Course Outline

<table>
<thead>
<tr>
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<th>SUBJECT HOURS</th>
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<tbody>
<tr>
<td>ENGL-503</td>
<td>Communications</td>
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<tr>
<td>MATH-509</td>
<td>Mathematics</td>
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</tr>
<tr>
<td>RESC-523</td>
<td>Science</td>
<td>40</td>
</tr>
<tr>
<td>RADO-101</td>
<td>DC and AC Fundamentals</td>
<td>100</td>
</tr>
<tr>
<td>RADO-102</td>
<td>Tubes and Transistors</td>
<td>60</td>
</tr>
<tr>
<td>RADO-103</td>
<td>Oscillators</td>
<td>30</td>
</tr>
<tr>
<td>RADO-104</td>
<td>Receivers</td>
<td>50</td>
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<tr>
<td>RADO-105</td>
<td>Test Equipment</td>
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<tr>
<td>RADO-106</td>
<td>Communication Receivers (Marine)</td>
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</tr>
<tr>
<td>RADO-107</td>
<td>Communication Transmitters (Marine)</td>
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<tr>
<td>RADO-108</td>
<td>Programmed Senders (Auto-Key)</td>
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<tr>
<td>RADO-109</td>
<td>Automatic Alarm Systems (Radio)</td>
<td>30</td>
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<tr>
<td>RADO-110</td>
<td>Direction Finding Systems</td>
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<tr>
<td>RADO-111</td>
<td>Emergency Equipment (Marine)</td>
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<tr>
<td>RADO-112</td>
<td>Antenna &amp; Propagation Fundamentals</td>
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<tr>
<td>RADO-113</td>
<td>Morse Code (Receiving &amp; Sending)</td>
<td>310</td>
</tr>
<tr>
<td>RADO-114</td>
<td>Normal Traffic Procedure</td>
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<tr>
<td>RADO-115</td>
<td>Special Service Procedure</td>
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<tr>
<td>RADO-116</td>
<td>Toll Computation</td>
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</tr>
<tr>
<td>RADO-117</td>
<td>Typing &amp; Teletype</td>
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</table>

1,320                                   50
Employment Opportunities

Students who successfully complete this course and pass the 2nd class commercial Radio Operators examinations (D.O.C.), qualify for an internationally accepted certificate. In addition, graduates will qualify for employment as a communication specialist in any one of the following areas: Ministry of Transport, Department of Communications, weather stations, railways, airlines, R.C.M.P., ship’s radio officer and air traffic control.
TELECOMMUNICATIONS

Entrance Requirements
Grade 11 Academic or Adult 11A in Adult Basic Education, with ability in mathematics and physics. Candidates must pass a test for color-blindness.
Those who do not have the above prerequisites may apply to the admissions committee on an individual basis.

Duration of Course
Approximately ten months. Successful completion of this course qualifies the graduate for a certificate of attainment.

Fees and Expenses
The tuition fee is $7 per month or fraction thereof. Other expenses including textbooks and supplies total approximately $75.

Course Outline
TERM 1

<table>
<thead>
<tr>
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<th>SUBJECT</th>
<th>HOURS</th>
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<td>ENGL-513</td>
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<tr>
<td>MATH-513</td>
<td>Mathematics</td>
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<td>RESC-525</td>
<td>Science</td>
<td>40</td>
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<tr>
<td>RADO-117</td>
<td>Typing and Teletype</td>
<td>30</td>
<td>2</td>
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<tr>
<td>TCOM-101</td>
<td>Electrical Fundamentals</td>
<td>250</td>
<td>8</td>
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<tr>
<td>TCOM-102</td>
<td>Semiconductors and Vacuum Tubes</td>
<td>100</td>
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<td>TCOM-103</td>
<td>Radio Receivers and Transmitters</td>
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660  25

TERM 2

<table>
<thead>
<tr>
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<th>HOURS</th>
<th>CREDIT HOURS</th>
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<td>ENGL-613</td>
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<tr>
<td>MATH-613</td>
<td>Mathematics</td>
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<tr>
<td>RADO-217</td>
<td>Typing and Teletype</td>
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<tr>
<td>TCOM-201</td>
<td>Circuit Reading</td>
<td>40</td>
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<tr>
<td>TCOM-202</td>
<td>Introduction to Microwave</td>
<td>80</td>
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<tr>
<td>TCOM-203</td>
<td>Radio Receivers and Transmitters</td>
<td>150</td>
<td>6</td>
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<tr>
<td>TCOM-204</td>
<td>Basic Telecommunications</td>
<td>200</td>
<td>7</td>
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<tr>
<td>TCOM-205</td>
<td>Introduction to Data Communication</td>
<td>60</td>
<td>3</td>
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</tbody>
</table>

660  25
Employment Opportunities

Students who successfully complete this course find employment with telephone and telecommunications companies as installers, troubleshooters, or operators. Manufacturers of telecommunications equipment employ graduates as installers, service technicians, and technical sales representatives.
Entrance Requirements
1. Complete Manitoba Grade 11 with proficiency in Mathematics 200 or 201, and Physics 200 or Physical Science 201; or
2. Successful completion of Adult Basic Education, Adult 11 (science based); or
3. Anyone not meeting the above requirements may apply as a mature student. A mature student is considered to be one who is at least twenty years of age on or before September 30 in the year of registration.

NOTE: Because of the limited capacity of this program, the Admissions Committee will make final selections of those applicants who appear to be most likely to succeed. Applicants will be required to write a mechanical aptitude test.

Duration of Program
One college year with a minimum of 1550 hours or approximately eleven months. At the conclusion of the college training, the Ministry of Transport may assign time credit towards the three year training required for the Aircraft Maintenance "M" license.

Fees and Expenses
The tuition fee is $7 per month, or fraction thereof. Other expenses will include textbooks (approximately $100), incidentals, board and lodging.

Employment Opportunities
There is a continual upsurge in the flying hours for light aircraft. This in itself requires mechanical maintenance on the aircraft and consequently the need for fully trained maintenance personnel. Employment in this field is self-satisfying and demanding and the future for the individual will depend only on his own personal incentives.
<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>Course Title</th>
<th>MINIMUM HOURS</th>
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<tbody>
<tr>
<td>AIRC-100</td>
<td>Hand Tools, Precision Instruments</td>
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<tr>
<td>AIRC-105</td>
<td>Metallurgy</td>
<td>70</td>
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<tr>
<td>AIRC-110</td>
<td>Approved Parts, Aerodynamics</td>
<td>55</td>
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<tr>
<td>AIRC-115</td>
<td>Sheet Metal, Structures</td>
<td>155</td>
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<tr>
<td>AIRC-120</td>
<td>Plastics</td>
<td>25</td>
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<tr>
<td>AIRC-125</td>
<td>Engines</td>
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<tr>
<td>AIRC-130</td>
<td>Aircraft Systems</td>
<td>80</td>
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<tr>
<td>AIRC-135</td>
<td>Aircraft Plumbing</td>
<td>35</td>
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<tr>
<td>AIRC-140</td>
<td>Carburetion &amp; Valve Timing</td>
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<tr>
<td>AIRC-145</td>
<td>Ignition Systems &amp; Timing</td>
<td>60</td>
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<tr>
<td>AIRC-150</td>
<td>Landing Gear</td>
<td>60</td>
</tr>
<tr>
<td>AIRC-200</td>
<td>Controls and Rigging</td>
<td>50</td>
</tr>
<tr>
<td>AIRC-205</td>
<td>Cooling, Lub, Supercharging</td>
<td>30</td>
</tr>
<tr>
<td>AIRC-210</td>
<td>Installing, etc. Engines</td>
<td>90</td>
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<tr>
<td>AIRC-215</td>
<td>Elect, Power and Systems</td>
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<tr>
<td>AIRC-220</td>
<td>Electronics and Associated Systems</td>
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<td>AIRC-225</td>
<td>Turbine Engines</td>
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<tr>
<td>AIRC-230</td>
<td>Propellers</td>
<td>50</td>
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<tr>
<td>AIRC-235</td>
<td>Instruments, Systems</td>
<td>40</td>
</tr>
<tr>
<td>AIRC-240</td>
<td>Rotary Wing Aircraft</td>
<td>90</td>
</tr>
<tr>
<td>AIRC-245</td>
<td>Fabric &amp; Wood Surfaces</td>
<td>30</td>
</tr>
<tr>
<td>AIRC-250</td>
<td>Maintenance Procedures &amp; Regulations</td>
<td>160</td>
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</table>

**Total:** 1550
MECHANICAL TECHNOLOGY

Entrance Requirements
1. English 301 or 300, Mathematics 301 or 300, Physical Science 301 or Physics 300 plus any other electives to give a complete Manitoba grade 12 standing. Candidates who have a complete grade 12 but do not have the required subjects indicated above are invited to apply to have their credentials reviewed by the admissions committee, or
2. Successful completion of the Pre-Technology Course, or
3. Anyone not meeting the above requirements may apply as a mature student. A mature student is considered to be one who is at least twenty years of age on or before September 30 in the year of registration. Applicants may be required to write an entrance exam and/or appear for a personal interview. The admissions committee will consider each applicant on an individual basis.

Duration of Course
Two school years, each of ten months duration, leads to a diploma in technology (Dipl. T.). Each of the ten month periods is divided into two equal terms with final examinations written at the end of each term.

Fees and Expenses
The tuition fee is $100 for each term. Other expenses include books, incidentals, board and lodging.

FLOW CHART SHOWING RELATIONSHIP OF HEAT & POWER, AND PRODUCTION TECHNOLOGY COURSES

TERM 1

Heat & Power  
Production

TERM 2

Heat & Power  
Production

TERM 3

Heat & Power  
Production

TERM 4

Heat & Power  
Production
## Course Outline

**TERM 1  First Year**

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>CREDIT HOURS</th>
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</thead>
<tbody>
<tr>
<td>ENGL-101</td>
<td>Communications</td>
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<tr>
<td>MATH-106</td>
<td>Mathematics</td>
</tr>
<tr>
<td>MECH-102</td>
<td>Electrical Fundamentals</td>
</tr>
<tr>
<td>MECH-103</td>
<td>Manufacturing Processes</td>
</tr>
<tr>
<td>MECH-104</td>
<td>Mechanical Drafting</td>
</tr>
<tr>
<td>MECH-105</td>
<td>Applied Mechanics</td>
</tr>
<tr>
<td>MECH-106</td>
<td>Management Methods</td>
</tr>
<tr>
<td>MECH-107</td>
<td>Industrial Materials</td>
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**HOURS / WEEK**

<table>
<thead>
<tr>
<th>LECT.</th>
<th>LAB.</th>
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</thead>
<tbody>
<tr>
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**CREDIT HOURS**

| 25 |

---

**TERM 2**

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
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<tbody>
<tr>
<td>MATH-206</td>
<td>Mathematics</td>
</tr>
<tr>
<td>ENGL-201</td>
<td>Report Writing</td>
</tr>
<tr>
<td>MECH-205</td>
<td>Applied Mechanics</td>
</tr>
<tr>
<td>MECH-206</td>
<td>Industrial Electronics</td>
</tr>
<tr>
<td>MECH-207</td>
<td>Production Welding</td>
</tr>
<tr>
<td>MECH-208</td>
<td>Stress Analysis</td>
</tr>
<tr>
<td>MECH-209</td>
<td>Industrial Fluid Mechanics</td>
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</table>

**HOURS / WEEK**

<table>
<thead>
<tr>
<th>LECT.</th>
<th>LAB.</th>
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</thead>
<tbody>
<tr>
<td>16</td>
<td>14</td>
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</table>

**CREDIT HOURS**

| 25 |
HEAT and POWER TECHNOLOGY

Entrance Requirements
As outlined for Mechanical Technology Department courses (page 209).

Course Outline

First Year
As outlined for Mechanical Technology Department courses (page 209).

TERM 3  Second Year

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT NAME</th>
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<th>HOURS</th>
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<tbody>
<tr>
<td>MATH-306</td>
<td>Mathematics</td>
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<tr>
<td>MECH-309</td>
<td>Work Study</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>MECH-321</td>
<td>Machine Design</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>HEPR-310</td>
<td>Instrumentation &amp; Controls</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>HEPR-311</td>
<td>Fluid Power</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>HEPR-313</td>
<td>Heating &amp; Ventilation</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>HEPR-321</td>
<td>Thermodynamics</td>
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<td>HEPR-327</td>
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TERM 4

<table>
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<tbody>
<tr>
<td>MECH-405</td>
<td>Automation</td>
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<td>4</td>
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<tr>
<td>HEPR-407</td>
<td>Human Relations &amp; Technical Report</td>
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<td>2</td>
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<td>HEPR-412</td>
<td>Mechanical Equipment for Buildings</td>
<td>2</td>
<td>1</td>
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<tr>
<td>HEPR-413</td>
<td>Heating &amp; Ventilation</td>
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<td>HEPR-414</td>
<td>Refrigeration</td>
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<td>HEPR-415</td>
<td>Internal Combustion Engines</td>
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<td>HEPR-426</td>
<td>Thermodynamics</td>
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Scope of Heat and Power Technology
The Heat and Power Technology course was developed to cover approximately one-half of the broad field of mechanical technology. It is a composite program, involving the sciences of heat transfer and mechanical power, and its aim is to make the students aware of the most efficient use of equipment in the building, construction, industrial, and mining fields. The graduates of this course will act as a liaison between the mechanical engineer and the craftsman.
Employment Opportunities

Graduates have found employment in consulting engineering offices, plant engineering offices, rocket research facilities, atomic energy research facilities, in the sale and field installation of gasoline, diesel, and gas turbine equipment, and in technical sales generally. The graduates technical knowledge and design background is quite diverse lending itself to many openings in hydraulics and pneumatic power, the design of machine elements, heating and ventilating fields, vibration analysis, noise computer language in design computations. Fluidic logic circuits are dealt with in considerable detail for design in low cost automation. Further work possibilities may be found in instrumentation, food processing, plastics, and in the gas and oil industry.
PRODUCTION TECHNOLOGY

Entrance Requirements
As outlined for Mechanical Technology Department courses (page 209).

Course Outline
First Year
As outlined for Mechanical Technology Department courses (page 209).

Course Outline
TERM 3 Second Year

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>Course</th>
<th>HOURS / WEEK</th>
<th>CREDIT HOURS</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>LECT.</td>
<td>LAB.</td>
</tr>
<tr>
<td>RESC-303</td>
<td>Chemical Physics</td>
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<tr>
<td>MATH-306</td>
<td>Mathematics</td>
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<td>MECH-309</td>
<td>Work Study</td>
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<tr>
<td>MECH-321</td>
<td>Machine Design</td>
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<tr>
<td>PROD-302</td>
<td>Metallurgy</td>
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<td>PROD-312</td>
<td>Non-Destructive Testing</td>
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<tr>
<td>PROD-331</td>
<td>Tool Design</td>
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<tr>
<td>MATH-427</td>
<td>Statistics &amp; Quality Control</td>
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<tr>
<td>MECH-405</td>
<td>Automation</td>
<td>2</td>
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<tr>
<td>MECH-407</td>
<td>Technical Research &amp; Report</td>
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<tr>
<td>PROD-403</td>
<td>Advanced Manufacturing Processes</td>
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<tr>
<td>PROD-411</td>
<td>Production Planning &amp; Layout</td>
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<td>Accounting</td>
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Scope of Production Technology
Production technology is the science of planning and controlling the manufacture of consumer, industrial, military, and scientific products to required specifications at minimum cost. The relative efficiency of the production industry determines the standard of living of any nation and the development of a better manufacturing industry is being stressed by economists and government planners in Canada, and especially in Manitoba.
Employment Opportunities

The technologist in the production field has a comprehensive knowledge of business administration, report writing, industrial materials, mechanical design, automation, machinery, and manufacturing processes. Graduates have established themselves in nuclear power fields, radiography, sheet metals, product design, plant management, work study, production control, welding technology, industrial marketing, customer liaison and materials technology. The aerospace industry, the agricultural industry, and general manufacturing areas have all provided a wide spectrum of responsibilities for graduates.
Entrace Requirements
1. English 301 or 300, Mathematics 301 or 300, Physical Science 301 or (Physics 300 and Chemistry 300), plus any other electives to give a complete Manitoba grade 12 standing. Candidates who have a complete grade 12 but who do not have the required subjects indicated above are invited to apply to have their credentials reviewed by the admissions committee, or
2. Adult 11A in Adult Basic Education with demonstrated proficiency in English, Mathematics and Physical Science, or
3. Successful completion of the Pre-Technology Course.
4. Anyone not meeting the above requirements may apply as a mature student. A mature student is considered to be one who is at least twenty years of age on or before September 30 in the year of registration. Applicants may be required to write an entrance exam and/or appear for a personal interview. The admissions committee will consider each applicant on an individual basis.

Fees and Expenses
The tuition fee is $100 for each term. Other expenses include books, incidentals, board and lodging.

Duration of Course
One college year of ten months' duration with courses commencing in September of each year. Upon graduation, the Fourth Class Certificate is immediately obtainable following the successful completion of the Provincial Examinations.

Employment Opportunities
Power Engineers are responsible for the safe operation of mechanical equipment in industry, utilities, commercial buildings and institutions. They are examined and licensed under the Boiler Plant and Pressure Vessels Act.

Industry in Manitoba is diversified. A few examples of industries relying on power engineers' services are: meat packers, cold storage plants, laundry and dry cleaning plants, dairies, food processing plants, breweries, hospitals, and large public buildings. In these plants power engineers are responsible for the operation of steam boilers, refrigeration compressors, air compressors and air conditioning systems, and the associated distribution systems for each.

Opportunities for advancement are always open. Usually, after one to two years of experience, the Fourth Class Certificate holder can qualify to write the Third Class Examinations. Success in this brings added responsibility and remuneration. The requirements increase for qualification to write the Second Class, and ultimately the First Class Examinations. The responsibility that a power engineer is allowed to assume increases with each classification. Many hours of home study and conscientious working effort are required to obtain the higher certificates, but the financial reward and the increased stature provide ample compensation.
Course Outline

TERM 1

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT</th>
<th>HOURS / WEEK</th>
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<tbody>
<tr>
<td>ENGL-101</td>
<td>Communications</td>
<td>3</td>
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<tr>
<td>MATH-104</td>
<td>Mathematics</td>
<td>3</td>
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<tr>
<td>RESC-105</td>
<td>Elementary Thermal Studies</td>
<td>1</td>
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<tr>
<td>RESC-106</td>
<td>Chemistry</td>
<td>2</td>
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<tr>
<td>OPER-101</td>
<td>Power Plant Theory &amp; Practice</td>
<td>6</td>
</tr>
<tr>
<td>OPER-102</td>
<td>Electricity</td>
<td>2</td>
</tr>
<tr>
<td>OPER-103</td>
<td>Instruments &amp; Controls</td>
<td>2</td>
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<tr>
<td>OPER-108</td>
<td>Drafting</td>
<td>0</td>
</tr>
<tr>
<td>OPER-111</td>
<td>Refrigeration</td>
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CREDIT HOURS: 25

TERM 2

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<th>HOURS / WEEK</th>
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<tr>
<td>ENGL-201</td>
<td>Report Writing</td>
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<td>MATH-204</td>
<td>Mathematics</td>
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<tr>
<td>RESC-205</td>
<td>Mechanics</td>
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<tr>
<td>RESC-206</td>
<td>Applied Chemistry</td>
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<tr>
<td>OPER-201</td>
<td>Power Plant Theory &amp; Practice</td>
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<tr>
<td>OPER-202</td>
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<tr>
<td>OPER-203</td>
<td>Instruments &amp; Controls</td>
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<td>OPER-208</td>
<td>Drafting</td>
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<tr>
<td>OPER-211</td>
<td>Refrigeration</td>
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<tr>
<td>OPER-210</td>
<td>Welding (Practical)</td>
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<th>HOURS</th>
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CREDIT HOURS: 25
METALS DEPARTMENT
MACHINE SHOP PRACTICE

Entrance Requirements
Grade 10 or Adult 10 in Adult Basic Education.
Anyone who does not meet the above prerequisites may submit an application. The admissions committee will review the applications on an individual basis.

Duration of Course
Approximately ten months. Successful completion of this course qualifies the graduate for a certificate of attainment.
This course is divided into two parts of five months each. To continue into Term 2 the student must successfully complete Term 1.

Fees and Expenses
The tuition fee is $7 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $65.

Employment Opportunities
A student may, on successful completion of Term 1 of this course, continue into Term 2 or proceed to the labor market as a machine tool operator, a machinist’s helper, or a machine shop inspector.
A student who successfully completes Term 2 of this course may obtain employment in industry as a more advanced machine tool operator or machinist apprentice.
This course also provides basic knowledge and skill valuable to other occupations such as mechanical draftsman, technician, estimator or salesman.

Course Outline
TERM 1

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT</th>
<th>CREDIT HOURS</th>
<th>HOURS</th>
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<tr>
<td>MATH-509</td>
<td>Mathematics</td>
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<tr>
<td>RESC-516</td>
<td>Science</td>
<td>1</td>
<td>40</td>
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<tr>
<td>DRAF-504</td>
<td>Sketching &amp; Blueprint Reading</td>
<td>2</td>
<td>60</td>
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<tr>
<td>SHOP-101</td>
<td>Bench Work</td>
<td>5</td>
<td>150</td>
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<tr>
<td>SHOP-102</td>
<td>General Operation and Control of Machine Tools</td>
<td>16</td>
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217
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<td>ENGL-501</td>
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<td>MATH-509</td>
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<tr>
<td>RESC-516</td>
<td>Science</td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>DRAF-504</td>
<td>Sketching &amp; Blueprint Reading</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>WELD-506</td>
<td>Welding</td>
<td></td>
<td>60</td>
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<tr>
<td>SHOP-201</td>
<td>Measuring Devices</td>
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<tr>
<td>SHOP-202</td>
<td>Power Saws</td>
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<tr>
<td>SHOP-203</td>
<td>Lathe Operation</td>
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<td>200</td>
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<tr>
<td>SHOP-204</td>
<td>Milling Machine Operation</td>
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<td>110</td>
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<tr>
<td>SHOP-206</td>
<td>Horizontal Boring Mills</td>
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<td>SHOP-207</td>
<td>Grinding Machine Operation</td>
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<tr>
<td>SHOP-208</td>
<td>Heat Treatment</td>
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<td>25</td>
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**Total**  
660  25

**NOTE:** Approximately 30% of time allotted to classroom and shop lectures.
Entrance Requirements
Grade 10 or Adult 10 in Adult Basic Education...

Anyone who does not meet the above prerequisites may submit an application. The admissions committee will review the applications on an individual basis.

Duration of Course
Approximately five months. Successful completion of this course qualifies the graduate for a certificate of attainment.

Fees and Expenses
The tuition fee is $7 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $60.

Course Outline

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT</th>
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<td>ENGL-503</td>
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<tr>
<td>MATH-505</td>
<td>Mathematics</td>
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<tr>
<td>RESC-513</td>
<td>Science</td>
<td>60</td>
</tr>
<tr>
<td>DRAF-504</td>
<td>Sketching &amp; Blueprint Reading</td>
<td>70</td>
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<tr>
<td>SHOP-505</td>
<td>Machine Shop</td>
<td>40</td>
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<tr>
<td>WELD-506</td>
<td>Welding</td>
<td>40</td>
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<tr>
<td>SMET-101</td>
<td>Sheet Metal Hand Tools</td>
<td>80</td>
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<tr>
<td>SMET-102</td>
<td>Hand Operated Sheet Metal Machines</td>
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<td>SMET-103</td>
<td>Power Hand Tools</td>
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<td>SMET-104</td>
<td>Power Operated Machines</td>
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<tr>
<td>SMET-105</td>
<td>Sheet Metal Sciences &amp; Techniques</td>
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<tr>
<td>SMET-106</td>
<td>Soldering</td>
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<tr>
<td>SMET-107</td>
<td>Pattern Development</td>
<td>320</td>
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</tbody>
</table>

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Employment Opportunities
Sheet metal workers shear, form, weld, solder, and assemble items used in building construction, homes, and industry. They must be able to work from plans, blueprints, shop drawings, and verbal instructions. The sheet metal worker uses cold rolled steel, galvanized steel, tinplate, aluminum, copper stainless steel, plastics, fibreglass, etc., while working at his trade. A skilled sheet metal worker is one of the few remaining craftsman who still fabricates the finished product from flat sheets, using patterns which he develops himself. Employment opportunities are excellent due to lack of truly skilled, all-round mechanics, and include the following fields: sheet metal manufacturing; heating and ventilating; sheet metal contracting of a general nature; air conditioning air distribution; commercial
stainless steel work and kitchen equipment; sign work; aircraft fabrication — providing either or both indoor and outdoor work. For the ambitious sheet metal worker the opportunities are there, his own desire establishing the limit.
WATCH REPAIR

Entrance Requirements
Applicants for this course may be required to take a series of tests to determine their suitability for training. Characteristics for which applicants may be tested are mechanical aptitude, manual dexterity and an ability to benefit from the training offered.

Duration of Course
Approximately ten months. Successful completion of this course qualifies the graduate for a certificate of attainment.

Fees and Expenses
The tuition fee is $7 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $260 as follows: texts and supplies $30, basic tools $40 required to start the course, additional tools required each subsequent month approximately $19.

Course Outline

<table>
<thead>
<tr>
<th>SUBJECT NO.</th>
<th>SUBJECT</th>
<th>HOURS</th>
<th>CREDIT HOURS</th>
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<td>MATH-505</td>
<td>Mathematics</td>
<td>50</td>
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<tr>
<td>DRAF-504</td>
<td>Sketching &amp; Blueprint Reading</td>
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<tr>
<td>SHOP-505</td>
<td>Machine Shop</td>
<td>35</td>
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<tr>
<td>WACH-101</td>
<td>Basic-Exercises - Screwplates &amp; Lathe</td>
<td>260</td>
<td>12</td>
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<tr>
<td>WACH-102</td>
<td>Balance Wheels - Staking and Tuning</td>
<td>250</td>
<td>10</td>
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<tr>
<td>WACH-103</td>
<td>Hairspring - Preparation Blanks for Service</td>
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<tr>
<td>WACH-104</td>
<td>Fundamentals Construction of Watches</td>
<td>150</td>
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<tr>
<td>WACH-105</td>
<td>Repairing of Watches</td>
<td>555</td>
<td>20</td>
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</table>

Total: 1580 hours

Employment Opportunities
Students successfully completing the ten month course may enter the trade at the level of an improver. After working at the trade for twelve months they will be eligible to write the Canadian Jewellers Institute examination to qualify as a "Certified Watchmaker." This certificate is recognized by the Canadian Jewellers Association across Canada and in most states of the U.S.A. There are many employment opportunities for good watchmakers in the jewellery trade and in the instrument repair field.
ENTRANCE REQUIREMENTS

Grade 10 or Adult 10 in Adult Basic Education.

Anyone who does not meet the above prerequisites may submit an application. The admissions committee will review the applications on an individual basis.

Employment in this field requires vigorous good health, with good eyesight, particularly in respect to depth perception and color recognition. Applicants who wear glasses should check with their eye specialists before registering for this course.

DURATION OF COURSE

Approximately six months. Successful completion of this course qualifies the graduate for a certificate of attainment.

FEES AND EXPENSES

The tuition fee is $14 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $90.

COURSE OUTLINE

TERM 1

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<tr>
<td>ENGL-501</td>
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<tr>
<td>MATH-507</td>
<td>Mathematics</td>
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<tr>
<td>RESC-514</td>
<td>Science</td>
<td>16</td>
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<tr>
<td>WELD-101</td>
<td>General Principles of the Oxy-Acetylene Process</td>
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<tr>
<td>WELD-102</td>
<td>Oxy-Acetylene Cutting</td>
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<tr>
<td>WELD-103</td>
<td>Miscellaneous Application, Inspection and Management</td>
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<tr>
<td>WELD-151</td>
<td>Oxy-Acetylene Welding of Ferrous Alloys</td>
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TERM 2

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<td>Science</td>
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<td>1</td>
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<tr>
<td>DRAF-504</td>
<td>Sketching &amp; Blueprint Reading</td>
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<td>WELD-201</td>
<td>Safety Precautions in Arc Welding</td>
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<td>WELD-202</td>
<td>Arc Welding Theory</td>
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<td>WELD-205</td>
<td>Miscellaneous Welding Theory</td>
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<td>WELD-251</td>
<td>Basic Welding Procedures</td>
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<td>WELD-252</td>
<td>General Arc Welding Techniques</td>
<td>250</td>
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<td>WELD-253</td>
<td>Light Gauge (Sheet Metal) Welding</td>
<td>20</td>
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<td>WELD-254</td>
<td>Semi-Automatic (M.I.G.) Welding</td>
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<td>WELD-255</td>
<td>Miscellaneous Welding &amp; Application</td>
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Employment Opportunities

Students who successfully complete this course may find employment in the fields of:

1. Heavy equipment maintenance and repair.
2. Steel fabrication industry.
3. Steel erection.
4. Industrial maintenance.
5. Heavy construction industry such as: hydro-electric construction, pipeline construction (maintenance), and highway construction.

In general, an increased demand for welders due to new manufacturing methods and expanding economic conditions, provides satisfactory employment prospects for welding course graduates.
APPRENTICESHIP

An apprentice is a person at least 16 years of age who enters into a written agreement to learn a skilled trade. The apprenticeship provides for a coordinated program of practical experience and related technical instructions.

In all trades but one, at least a complete grade 9 is required, the exception being the electrical construction trade where a minimum of grade 10 is necessary.

Annual training courses for indentured apprentices in the designated trade are offered in full-time day classes at the Red River Community College Industrial and Technology Division, as outlined in the attached schedule of classes.

All apprentices will be notified in writing by the Director of Apprenticeship when they will attend for their meeting.

These courses are at graduated 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 planned to make an apprentice a fully competent journeyman.

The apprentice agrees to attend regularly at his place of employment to serve his employer faithfully, honestly and diligently and to make an honest effort to learn his trade. He 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. He agrees to keep the apprentice employed so long as work is available and also to cooperate with the Apprentice Training Division to ensure that his apprentice attends trade courses regularly.

A person who successfully completes an apprenticeship is granted a certificate of qualifications in his trade. This certification identifies the holder as a journeyman and he is recognized by employers and the public as a trained and competent tradesman. In several trades the certificates are officially recognized across Canada.
## Apprenticeship Courses

*(Offered in Cooperation with the Department of Labour)*

<table>
<thead>
<tr>
<th>DESIGNATED TRADE</th>
<th>NO. OF YEARS</th>
<th>LENGTH OF COURSE (IN WEEKS)</th>
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<tr>
<td>RED RIVER COMMUNITY COLLEGE, WINNIPEG</td>
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<td>Motor Vehicle Repair (Paint Section)</td>
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<tr>
<td>Motor Vehicle Repair (Metal Section)</td>
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<td>Motor Vehicle Repair (Paint &amp; Metal Section)</td>
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<tr>
<td>Motor Vehicle Mechanical Repair</td>
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<td>6</td>
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<tr>
<td>Bricklaying</td>
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<tr>
<td>Carpentry</td>
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<td>Construction Electrical</td>
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<td>Electrical Motor Winding</td>
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<td>Lathing</td>
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<td>Machinist</td>
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<tr>
<td>Painting &amp; Decorating</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Plumbing</td>
<td>5</td>
<td>10</td>
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<tr>
<td>Refrigeration &amp; Air Conditioning</td>
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<td>8</td>
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<td>Sheet Metal</td>
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<td>6</td>
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<tr>
<td>Steamfitting</td>
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<td>ASSINIBOINE COMMUNITY COLLEGE, BRANDON</td>
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<td>Heavy Duty Repair</td>
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<td>KEEWATIN COMMUNITY COLLEGE, THE PAS</td>
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<td>Industrial Electrical</td>
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<td>Industrial Mechanical</td>
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<td>Industrial Welding</td>
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</table>

Prerequisites: Minimum age 16 years and approval of the Director of Apprenticeship, Department of Labour.
For further information contact directly:

Department of Labour
Room 609, Norquay Building,
Winnipeg, Manitoba
R3C 0P8
Telephone 946-7551

The Department of Labour
Room 4, 110 Tenth Street
Brandon, Manitoba
R7A 4E6
Telephone: 727-6467

The Department of Labour
Provincial Building
The Pas, Manitoba
Telephone: MA 3-3522

"SKILL FOR SECURITY"
AART-101
\textbf{Introduction to Advertising}

This course is designed to develop an awareness of the advertising business. Special emphasis is on the purposes and kinds of advertising, as well as on the relationship of copy to art.

AART-103
\textbf{Mechanical Drawing}

An introduction to the fundamentals of drafting, commencing with good drafting-room procedure and the use of equipment. Visualization and representation of three-dimensional objects in space. Methods of plotting perspectives, shades and shadows. The practical work consists of drafting exercises in pencil, and in pen and ink.

AART-104
\textbf{Fundamentals of Drawing}

An introduction to the five elements of form through analysis and drawing. The coordination of the elements for pictorial imagery and the investigation and application of the media and materials employed by the artist. Subject matter will be life studies and still life.

AART-105
\textbf{Fundamentals of Design}

A study of the elements of design, control of point, line, plane, color, value, texture, surface and space investigation. An introduction to the various materials and media available to the designer. A study of the properties of various media through explanatory exercises and discussions.

AART-106
\textbf{Fundamentals of Photography}

Introduction to the fundamentals of photography. Simple object recording. Photograms, contact printing, development, lighting, light meter and camera usage. Tone, texture, viewpoint, depth of field scale.

AART-108
\textbf{Introduction to Art}

An introductory investigation into the nature of fine arts, primarily painting, drawing, sculpture and the related visual areas. Emphasis will be placed upon the elements within a work of art, the creative process and the sociological importance of art throughout the History of Man.

AART-201
\textbf{Introduction to Advertising}

This course continues the general survey of the advertising business. Students will study the relative merits of the various advertising media. Prerequisite AART-101.

AART-203
\textbf{Mechanical Drawing}

Problems involving the application of the fundamentals covered in course AART-103. Photo retouching, mechanical illustration, etc. Prerequisite AART-103.

AART-204
\textbf{Drawing}

Fundamentals of drawing as it relates to product illustration, fashion, figure, animation, still life, and environment. Students are exposed to various attitudes and disciplines, both as to medium and concept. This subject is primarily concerned with illustration for the print media. Prerequisite AART-104.

AART-205
\textbf{Fundamentals of Design}

The elements of design as related to problems in two and three dimensional applications. A practical study of proper layout design and technique to enable the student to express and render his or her ideas visually. A further study in the use of media and materials as related to artists and designers. This would entail practical explanations of rendering and reproduction techniques. Prerequisite AART-105.

AART-206
\textbf{Fundamentals of Photography}

Application of photographic principles. Reflection, distortion, multiple images, lighting control, motion studies, etc. Recording and interpretation of complex objects. Additional dark-room techniques including enlarging. Introduction to various camera formats. Photography as an artist's tool. Prerequisite AART-106.
AART-207
Reproduction Methods and Materials
A comprehensive look at photomechanical and direct printing procedures. Photo engraving, letterpress, offset lithography, screen process, flexography, rotogravure, composition, three and four color process, binding, job estimating, paper problems.

AART-208
Introduction to Art
A further look into the fine arts as seen by the art historian. A descriptive analysis of art from pre-historic to contemporary times, with emphasis on the influences and style of the artist. Instruction will be primarily lecture and audio-visual presentation. Prerequisite AART-108

AART-304
Drawing
Continuation of AART-204 with more stress on finished drawings as applied to both the illustrator and designer. The program will include experimental approaches as well as current techniques of the industry, as used in print media and TV graphics. Prerequisite AART-204.

AART-305
Design & Illustration
Introduction to visual communication, layout, merchandising and research problems. Development of an idea from comprehension through finished art for print reproduction. Some assignments will be done in conjunction with students in Creative Communication, Photographic Technician and Graphic Arts to simulate the commercial situation as closely as possible. Prerequisite AART-205.

AART-310
Visual Exploration
An extended analysis of the visual fields through photography. The program will be handled in a seminar manner and will be aimed specifically at the designer and the illustrator. Prerequisite AART-206.

AART-316
Photography
Problems related to photographing people, places and products. Using photography to help solve design and illustration problems. The course will attempt to show exactly what a designer can expect from a commercial photographer.

AART-317
Production Art
This course deals with the techniques of preparing art work and photography for camera, along with consideration of typography, copy-fitting and other production problems.

AART-405
Advanced Illustration
Illustration problems involving a variety of advertising products and services. Editorial illustration in black and white and full or limited color, problems in illustrating clothes and accessories for fashion and advertising promotions. Working to advertising design, fashion and editorial layouts in conjunction with communication design majors. Stress on reproduction requirements; black and white; one, two and full color handling in line, tone and mass. Prerequisite AART-304 and AART-305.

AART-408
Commercial Problems
Creative use of type, letterforms and symbols. Stress on graphic thinking integrating layouts with photography and illustration working with majors in these fields. Black and white and limited color assignments for magazine advertising, brochures, newspaper, direct mail and television graphics, etc. Prerequisite AART-308.

AART-410
Visual Exploration
A continuation of AART-310 with special emphasis on pictorial and aesthetic presentation through documentation of the visual image. The seminar approach will dominate and art and photography will be the directives. Prerequisite AART-310.

AART-416
Photography
A continuation of AART-316, using photography as an important part of design. Experimenting with the camera and processing for purposes of communicating a unified visual message.

ABOD-101
Oxy-Acetylene Welding and Cutting
Equipment, fusion welding, braze welding, cutting, both practical and theory. Safety.

ABOD-102
Hand Tools, Power Grinders, Vibrators, Sanding Discs
Glossary of terms, tools and their uses.
care and maintenance of tools, methods of using types of discs, production paper, wet and dry sandpaper.

ABOD-103
Basic Metal Working and Soldering
Roughing out, hammering on and off, dolly, forging, shrinking, picking and filing. Patching, shaping of flanges, crowns, flat metal panels, body construction, tinning and torch soldering.

ABOD-104
Hydraulic Power Equipment and Alignment of Automobile Bodies
Method of using hydraulic equipment and attachments. Method of alignment of bodies, doors, fenders and component parts.

ABOD-201
Hardware Trim and Glass
Door assemblies, windows, headlinings, upholstery, mouldings, seats, etc.

ABOD-202
Alignment of Frame and Body Components.
Frames, doors, trunk lids, hoods, bumpers and mouldings, etc.

ABOD-204
Spray Painting Equipment
Equipment: painting equipment, guns, transformers, hoses, compressors, booths and infra-red. Method of using equipment and adjustments.

ABOD-205
Paint Products and Their Application
Primers, lacquers, enamels, acrylic lacquers, thinners, reducers, etc. Methods of using these products.

ABOD-206
Refinishing Vehicles
Cleaning, sanding, masking, priming, glazing and actual refinishing of customers' cars. Pre-delivery cleaning of cars after painting.

ABOD-207
Collision Damage Estimating
Flat rate, time allowance, forms and method of filing, percentages and sublets.

ABOD-253
Repairing Damaged Vehicles
Actual repair of body damage on customer's cars.

ACNT-160
Accounting
A thorough working knowledge of double entry bookkeeping; adjustments and work sheet for preparation of financial statements; financial statements pertaining to sole proprietorship, special journals; subsidiary ledgers and controlling accounts; inventories, basic accounting principles.

ACNT-162 & 262
Business Communications
Review of functional principles of word usage that are used in speaking and in writing; sentence variety; synonyms, antonyms, homonyms; punctuation; capitalization; use of figures; laboratory work in vocabulary and reading development.

Introduction involving psychological approach to business communications; emphasis is placed on the writing of various types of business letters; writing of research papers and reports that involve other subject areas will provide maximum carry-over through practical assignments and inter-subject integration; preparing the student for effective speaking in various on-the-job situations. Prerequisite ACNT-162

ACNT-164
Business Mathematics
Review of basic fundamentals; application of percentage; profit and loss; trade discounts; retail selling; mark up; inventory turnover; banking; discounting notes; collection charges; cheques; installment buying; partnership; compound interest; statistics and graphs; annuities; amortization; custom duty; sales tax; insurance and finance.

ACNT-168
Basic Typewriting
Basic Typewriting 1: The basic fundamentals and techniques are stressed. Instruction is given in letter styles, addressing envelopes, tabulating, preparing of manuscripts, and the care of typewriter. Speed range 25-35 w.p.m.

ACNT-169
Office Procedures
A comprehensive review of filing systems and procedures, modern communication systems, postal services, transportation of goods, sources of appropriate business information, an examination of human relations concepts as applied to the business office, developing grooming and good work habits and application for work and interviews. The course assumes no knowledge of typing.
ACNT-260
Accounting
The application of accounting procedures, methods, and techniques as they apply to fixed assets; partnerships; formation of limited companies; share capital and retained earnings; flow of funds, payrolls; basic auditing principles and techniques. Prerequisite ACNT-160.

ACNT-261
Cost Accounting
An introduction to the procedures and techniques utilized in accounting for a manufacturing concern. Areas covered include financial statement preparation; job order cost accounting system; process cost accounting system; control of material, labour and overhead costs; analysis of cost variances; by-products; joint products and financial budgets. Prerequisite ACNT-160.

ACNT-265
Principles of Organization & Management
Functions of the Canadian economy; forms of Canadian business organization; the role of Government in Canadian business; the finance activity; employment training, labor relations; production cycle; purchasing; inventory control; marketing; administrative organization; office procedures; data collection and processing methods.

ACNT-266
Introduction to Computers
This course includes an introduction to punched card data processing, computers, flow charting and programming using FORTRAN IV. Examples will consist mainly of applications of computer processing in business problems.

ADMN-101
Accounting
Double entry bookkeeping routine; adjustments and work sheet for preparation of financial statements; financial statements pertaining to sole proprietorship; special journals; subsidiary ledgers and control accounts; inventories; basic accounting principles.

ADMN-102
Economic Principles
An introduction to the basic principles of economics including the basic aims of economic activity, the basic forms of economic systems, the basic forms of business organization, the theory of prices and output under various degrees of competition and application of these theories; monopoly and its control; principles of income determination.

ADMN-103 & 203
Marketing
A study of industrial and consumer marketing with emphasis on marketing institutions and principles including trade channels, packaging, branding, pricing, product planning and the integration of these activities into the marketing system as a whole. Prerequisite ADMN-103.

ADMN-106
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.

ADMN-109
Introduction to Business
A comparative study of ownership, organizations, capital structure, location, and work force of the various forms of business organizations in Manitoba and Canada.

ADMN-110
Financial Mathematics
The application of mathematics to practical business problems dealing with: simple interest; compound interest; installment payments; annuities; sinking funds; depreciation and present values; evaluation of stocks and bonds.

ADMN-111
Economic Principles
This course is an introduction to the principles of micro-economics including production possibility analysis, theory of the market and price determination, supply and demand analysis, and theory of the firm.

ADMN-116
Special Mathematics
An upgrading course in Mathematics to provide the necessary foundation for the courses Mathematics of Finance and Statistics, where this background of the student is considered deficient.

ADMN-201
Accounting
The application of accounting procedures, methods, and techniques as they apply to fixed assets; partnerships; formation of limited companies; share capi-
ital and surplus; payroll; departmental operations; long term liabilities and investments. Prerequisite ADMN-101.

ADMN-202 Economic Principles
This is a continuation of course ADMN-102, including the theory of National Income determination, Money and Banking, Economic Stabilization policy, Limits to Growth, Resource Management, and Environmental Protection.

ADMN-205 Statistics
This course is an introduction to economic and business statistics. Topics of study include: initiating a statistical investigation; design of samples; tabulation of data; interpretation of data; measures of location and variation; index numbers; time series.

ADMN-208 Accounting
The application of accounting procedures as they apply to fixed assets, partnerships, limited companies, share capital and surplus, departmental operations and manufacturing concerns. Prerequisite ADMN-101.

ADMN-211 Economic Principles
This is a continuation of ADMN-111 including the theory of wage determination, rent, interest, and profit. Macroeconomics including monetary and fiscal policies, national income and product, theory of economic stabilization. Prerequisite ADMN-111.

ADMN-217 Introduction to Computers
This course includes an introduction to punch card data processing, computers, flow charting and programming using Fortran IV. Examples will consist mainly of applications of computer processing in business problems.

ADMN-221 Economic Principles
This course is a continuation of ADMN-111 but this time taking a macroeconomic or national outlook. Topics include national income determination, public and private spending, money and banking, and monetary and fiscal theory and policy.

ADMN-302 International Economics and Trade
A continuation of ADMN-202 with particular attention paid to specific areas such as the U.K., Western Europe and Japan and the implication with respect to Canadian Economics; a compact summary of the principal issues facing the Canadian firm in a foreign field when exporting and/or importing.

ADMN-304 Labor Economics and 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 employment. The course examines the history and development of Canadian unions with particular emphasis on current problems.

ADMN-305 Statistical Analysis
Areas of study include: probability and expectation; sampling and statistical inference; quality control; inventory control; statistical simulation; techniques in the effective application of statistical program. Prerequisite ADMN-205.

ADMN-312 Business Finance
A course to develop skill in planning and controlling the investment in each of the asset accounts. Particular emphasis will be placed on the analysis and interpretation of financial data.

ADMN-313 Personnel
A study of work environment, motivation and morale and their influence on productivity. An examination of procedures for employee recruitment, selection, placement, and training, job evaluation, merit rating, wage structure and employee communications. Case studies allow the students to gain a familiarity with contemporary personnel programs, policies and procedures.

ADMN-314 Selling & Advertising
The function of advertising in the marketing mix; analyzing and translating the needs of the market into buying appeals, selection of advertising and marketing media; the selling process; planning the sales story. Prerequisite ADMN-203.

ADMN-318 Intermediate Accounting-A
A review of accounting procedures and
systems - income determination, closing procedures, basis of income measurement, the nature of revenues and costs, accounting principles; Balance sheet - limitations, forms and presentation, standards of disclosure; Revising statements and error corrections - Analysis of the effect of errors, analysis of error working papers, corrections; reconstructing statements from incomplete data and supporting computations; working capital items - Cash and secondary cash resources, receivables, current liabilities, budgeting, controlling cash, bad debts, long term liabilities - bonds, mortgages, long term leases; inventory - cost basis of valuation, cost or market replacement basis problems of valuation. Prerequisite ADMN-201.

ADMN-321
Managerial Accounting-A
A review of accounting procedures and systems; ledger account analysis and organization; a study of accounting principles and income determination; accounting principles and their effect on the balance sheet; valuation of current assets and capitalization of costs; long term liabilities and equities; error analysis and correcting financial statements; limitations of accounting principles in reporting financial data; financial statement analysis. Prerequisite ADMN-201.

ADMN-322
Computer Applications in Business
An introduction to computer systems analysis and design and their business applications, accounts receivable, payroll accounts payable, wholesale and retail impact, merchandise information systems, marketing research and information systems. Prerequisite ADMN-217.

ADMN-323
Contemporary Economic Issues
This course allows the student to use acquired economic tools to study and analyze important current events with economic and political implications as there are: the urban crisis, inflation and unemployment, income distribution, the energy crisis and pollution, and others.

ADMN-402
Systems in Business
A study of the latest methods and techniques in the field of systems that can be effectively utilized by management. The course is divided into lectures and practical work so that the student will understand how management can operate with greater efficiency, economy, and control.

ADMN-403
Cost Accounting
This course is an introduction to the problems involved in accounting for a manufacturing concern. Areas covered are: reporting and the analytical function for planning and control; cost information system and accumulation procedures for a manufacturing concern consisting of job order costing, process costing, with reference to direct labour, direct material and overhead; analysis of cost variances; budgeting for labour, material, overhead and cash; setting of standards and variance analysis of same. Topics are developed through lecture, classroom discussion, field trips, and problem solving. Prerequisite ADMN-201.

ADMN-407
Production Management and Work Study
An introduction to the concepts and methods of production management to the level of useful application. Types of production; plant layout; product design; planning, costing, and technology selection for maximum utilization of inputs; production standards and work study; analysis of investments in equipment; quality control; PERT/CPM.

ADMN-409
Retail Accounting and Financial Management
Mathematics and accounting for retail operations: financial statement analysis; accounting for the management of departmental, branch and agency operations; consolidations; accounting for receivables and inventories; equipment; and property lease financing; internal auditing programs.

ADMN-410
Merchandising
A study of merchandising methods of retail organization; how to establish pricing policies; calculating markup required; controlling markdowns; controlling stock shortages; evaluating inventory by cost and retail method; measuring stock turnover; analyzing sales and stock records; planning sales and expenses; factors in profit and loss; retail advertising and sales promotion.

ADMN-411
Public Finance
Study of governmental activities - the
theory and structure of taxation. Taxes on income, goods sold and 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.

ADMN-412
Finance and Financial Intermediaries
This course is designed to introduce the student to the role or function of financial institutions and markets in the allocation of capital among alternative uses. The second half of the course is a practical approach to the art and science of investment analysis and portfolio management.

ADMN-415
Business Management
The objective of this course is to give the student practice in integrating and applying the knowledge gained in previous courses towards the recognition and solution of business problems. 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, Blake and Reddin. The case studies used assume a previous knowledge of break-even analysis, financial statement analysis, report writing statistics and the management applications of computer systems.

ADMN-418
Intermediate Accounting-B
Investments in stocks, bonds, funds, and miscellaneous items; plant and equipment - acquisition, use, retirement, depreciation, depletion, revaluations; intangible assets; share capital at time of organization, subsequent changes in capital; retained earnings - distribution, appropriations, retained earnings statement; financial statement analysis - use of comparative data, special ratios and measurements; statement of source and application of funds. Prerequisite ADMN-318.

ADMN-419
Business Seminar
A study of the administrative process itself; the formulation of business policy and the translation of policy into action. Students, in management size groups will be required to submit a comprehensive report outlining the formation of a company of their choice. The appointment of senior officers and the choice of product will be made by the group. Typical functional areas will be investigated and included if applicable to the operation of the company chosen. The Business Seminar should allow students to draw on information and knowledge acquired to date, thereby integrating all courses in the entire Business Administration Course.

ADMN-420
Risk and Insurance
The purpose of this course is to give the student an understanding of the nature of risk and a general introduction to elements and types of insurance. The types of insurance include property, liability, automobile, consequential loss, life, Workman's Compensation, and Unemployment Insurance.

ADMN-421
Marketing Research
A one term course in Marketing Research for advanced undergraduate students in Business Administration. The course emphasizes the use of information in the management of marketing functions.

Considerable attention will be focused on the identification and solution of marketing problems through the systematic collection, analysis, and interpretation of data.

The course will consist of two parts: the first part will be lectures and case discussion. In the second part, an actual comprehensive research project will be undertaken. Prerequisite ADMN-203 & 305.

ADMN-422
Computer Programming
This is a study of the COBOL programming language. Students are required to develop several business oriented programs in COBOL. One of the programs will deal specifically with one of the other options the student is taking. Tape and disc concepts will be studied. Prerequisite ADMN-217.

ADMN-423
Quantitative Methods for Management
This course builds on 2nd and 3rd term Statistics courses and provides an in-depth examination of various statistical tools of management decision making. Considerable emphasis is placed on fore-
casting and scheduling methods. Specific topics covered include linear programming simplex method, P.I.R.T. and Critical Path. This course will be of particular interest and use to those who intend to pursue a professional accounting designation. Prerequisite ADM-205 and ADMN-305.

ADMN-424
Canadian Real Estate
This course explores all aspects of real estate as an investment with particular emphasis on the Manitoba situation. As well as private home purchasing interest is focused on commercial properties, revenue properties and land speculation. The course integrates the student's knowledge gained in law, economics, business finance and accounting. No prerequisites.

ADMN-426
Managerial Accounting B
Reconstructing statements from incomplete data; the concept of funds flow and cash flow; preparing funds flow statements and cash flow statements; their uses and misuses; cost accounting: an overall view; management control systems and techniques; analysis of costs; cost-volume analysis; techniques of cost analysis; cash budgets and capital budgets; performance analysis; alternative choice analysis. Prerequisite ADMN-318.

ADMN-427
Business Law 2
This course will constitute a study and application of business law in the areas of insurance, guarantee, bailment, principal of agent, contract of employment, and acquaint the student with the law respecting interests and transfer of real property, the landlord and tenant's act, real property mortgages, partnerships, corporations and creditors rights. Prerequisite ADMN-106, Business Law 1.

ADMN-425
Essentials of Management
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 computer students will be covered.

ADRA-101
Fundamentals of Delineation
Practice in the use of architectural and engineering scales, basic letter form, material symbols, architectural conventions and techniques, orthographic and pictorial drawing.

ADRA-102
Applied (Arch) Drafting I
A study of common building practices, and the production of working drawings for residential dwellings, and industrial, commercial and institutional buildings. Included is the interpretation and application of simple structural steel frame design & detailing according to the C.I.S.C. practices.

ADRA-103
Calculation Machine Operation
Practice in using the divisumma 24 calculator when making quantity estimates.

ADRA-104
Surveying & Topographical Drawing
Practice in the use of the transit and level, the plotting of cuts and contours, and the techniques of topographical drawing.

ADRA-105
Specifications
Interpretation of tendering procedures, division of trades and responsibilities, local and national building codes.

ADRA-112
Applied (Arch) Drafting II
A study of residential and commercial building construction practices and the production of working drawings for the same.

AIRC-100
Hand Tools, Precision Instruments
Basic hand tools and uses, threading, tapping, reaming, precision instruments and introduction to workshop manuals.

AIRC-105
Metallurgy
Metal properties, ferrous and non-ferrous characteristics, aluminum identification, heat treating. Non-destructive testing, corrosion, inspection and appreciation of welding techniques.

AIRC-110
Approved Parts, Aerodynamics
AN, MS, NAS parts systems; metric, British, and Unified threads; code structures; stores, quarantine and bonded.
Relative motion, stability, fluid-flow, lift/drag, air viscosity, level flight, stalling.
landing speeds, trimming systems, controls, high and anti-lift devices, speed of sound.

AIRC-115  
Sheet Metal, Structures 
Fittings and fabrication, bending/forming machines, cutting machines, stressed skin structural repair, special fasteners, rivets.

AIRC-120  
Plastics 
Materials, composition, and uses; glass; acrylics and repairs; fiberglass and honeycomb; resins.

AIRC-125  
Engines 
Energy, cycle diagrams, two and four stroke cycles, piston engine classification, gas turbines, dynamometers, engine components, overhaul procedures.

AIRC-130  
Aircraft Systems 
Hydraulic power, air conditioning, fuel, ice and rain protection, fire protection, emergency systems.

AIRC-135  
Aircraft Plumbing 
Tube fabrication, rigid/flexible hoses, fittings, pressure tubing, inspection.

AIRC-140  
Carburetion and Valve Timing 
Principles, float types, pressure injection types, fuel injection systems, valve timing.

AIRC-145  
Ignition Systems and Timing 
Magneto, ignition harness, spark plugs, ignition timing, trouble shooting.

AIRC-150  
Landing Gear 
Types, shock absorbers, shimmy dampers, wheels, brakes, inspection and servicing, anti-skid systems, power systems, emergency operation, trouble shooting.

AIRC-200  
Controls & Rigging 
Types; system layouts; rigging of controls, floats, skis; wire types; cables; knot tying; slinging.

AIRC-205  
Cooling, Lub. Supercharging 
Oil, air, effect of temperature, classification of lubricants, functions of oils, greases, supercharging, turbocharging, oil dilution, etc.

AIRC-210  
Installing, etc. Engines 
Procedures, running-in, trouble-shooting, engine testing, system isolation, engine inhibiting, common failures.

AIRC-215  
Electrical Power & Systems 
Basic electricity, batteries, circuits and trouble shooting, circuit protection, logic circuits, AC and DC generators and motors, heater systems, alternators.

AIRC-220  
Electronics & Associated Systems 
Safety precautions, transformers and rectifiers, inverters and converters, electron tubes, resistors, oscilloscopes, solid state, transistors.

AIRC-225  
Turbine Engines 
Terminology, related maths and physics, thrust, engine efficiencies, components.

AIRC-230  
Propellors 
Theory, fixed and adjustable pitch, controllable pitch, constant speed propellers, synchronization, inspection, maintenance, repair, emergency systems, feathering.

AIRC-235  
Instruments and Systems 
Engine instruments, flight instruments, electrical instruments.

AIRC-240  
Rotary Wing Aircraft 
Theory of flight, gearboxes, clutches and free wheeling, rotor heads and blades, controls and rigging. Tail rotor drive systems, ground running, inspection and servicing.

AIRC-245  
Fabric and Wood Surfaces 
Materials, fabric testing, hand stitching, cloth and wood patch repairs, wood and uses, resins, glues, nails, bonding.

AIRC-250  
Maintenance Procedures & Regulations 
Inspection, air regulations and navigation orders, engineering and inspection man-
uals, weighing of aircraft, center of gravity, aircraft flight loading, emergency equipment, ground handling, type certificates, technical report writing, blueprint reading.

APPL-101
Elementary Circuitry
Theory and practice of circuits containing switches, relays, pilot devices, etc.

APPL-102
Fundamentals of Electricity
Voltage-current relation in an electric circuit. Magnetism and effects of the changing magnetic field, measuring instruments, pilot devices.

APPL-103
A.C. Fundamentals
Voltage-current relation in A.C. circuits containing resistance, inductance, capacitance.

APPL-104
A.C. Motors
Single-phase, construction, operating principles and characteristics.

APPL-105
Electrical Code
Application of the Canadian Electrical Code in the appliance field leading to a limited license.

APPL-106
Electric Ranges
Disassembling, testing and replacing parts, checking out circuits, diagnosing faults, emphasis on circuitry.

APPL-107
Electric Dryers
As above plus servicing the air circulating system.

APPL-108
Automatic Washing Machines
Disassembling, testing and replacing parts, checking out circuits, diagnosing faults. Emphasis is on the mechanics of the machine.

APPL-109
Refrigeration (Household)
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.)

AUTO-101
Shop Practice
Use of hand tools, measuring instruments, Use of special equipment - hoists, jacks and stands, safety, chassis, lubrication, and servicing. Uses of special lubricants, Light servicing, Tire repair.

AUTO-102
Engines I & II
Fundamental operating, construction and design features and characteristics of two stroke and four stroke cycle internal combustion engines.

AUTO-103
Electrical Systems
Wiring diagrams and circuits, generators, regulators, cranking motors, solenoids and switches, gauges, ignition systems, etc.

AUTO-104
Fuel Systems & Emission Controls
Carburetors, fuel pumps, filters, gas lines, fuel tank ventilation, exhaust emission controls and air cleaners.

AUTO-105
Tune-Up
Tune-up machines, compression and vacuum gauges, ignition circuits, carburetor adjustments, gas analysis, engine performance, testing and operation.

AUTO-106
Transmissions
Clutch and pressure plate assemblies, three and four speed synchromesh transmissions, simple planetary gears and overdrive, construction, operating and service fundamentals.

AUTO-107
Rear Axles and Drive Lines
Gears and bearings, tooth patterns, universal joints, posiontraction and limited slip differentials, transaxles, axle shafts, etc.

AUTO-108
Brakes
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.
AUTO-109  
**Steering and Suspension**  
Springs, shocks, wheel balance, steering geometry, steering gears, steering alignment, etc.

AUTO-110  
**Automatic Transmissions**  
Fluid couplings and torque converters, compound planetary gears, clutches, bands, servos and hydraulic system, construction, operating and service fundamentals.

AUTO-252  
**Engines Overhauling**  
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 breaking is also included. All work is performed on vehicles in daily use.

AUTO-253  
**Electrical - Repairs & Adjusting**  
Diagnosing wiring circuit problems, repairing and calibrating electrical components, such as instruments, starter motors, solenoids, relays, A/C generators and regulators, etc.

AUTO-254  
**Fuel System - Repairs & Adjusting**  
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.

AUTO-255  
**Tune-up Dyna Testing**  
Diagnosing and testing of all engine, fuel, ignition and electrical systems. Calibrating to specifications necessary to produce maximum engine efficiency.

AUTO-256  
**Transmission - Standard**  
Proper procedures will be emphasized for the removal, disassembly, cleaning, inspection and repair of clutches and three speed and four speed synchromesh transmissions. Problem diagnosis and adjustment of these units will also be included. All work will be performed on units in daily use.

AUTO-257  
**Rear Axle & Drive Lines**  
This unit deals with the construction, operation and service procedures for the various types of rear axle assemblies and their related parts. This includes housings, (integral, removable carriers, 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 special friction-positrack, equal-lock, limited slip, no-slip, power lock, and sure-grip design); bearings (friction and anti-friction loads), axle mountings (dead and live full-floating, 3/4 floating and semi-floating). Seals (dynamic & static), drive line (torque tube, hutchkin). Universal joints (ball and trunnion, cross and roller, constant velocity).

AUTO-258  
**Brakes - Hydraulic, Disc Power**  
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, machining, drums & rotors cam grinding, shoes, servicing the hydraulic units (master cyl, wheel cyl, 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 wheel bearing service.

AUTO-259  
**Steering Repairs**  
This course is intended to give the student an insight into the construction, operation, and service features of present suspension systems (mono-beam, twin I 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.

AUTO-260  
**Transmission - Automatic**  
This will cover the removal, disassembly, cleaning, inspection and measuring of all transmission parts to determine their serviceability. Also included is the cor-
rect procedure for reassembly, adjustment, installation, and testing of automatic transmission, as well as problem diagnosis and troubleshooting.

AUTO-261
Air-Conditioning
An introduction into automotive air-conditioning operating principles and competent part functions. Safety procedures when using refrigerant gases. Practical application of discharging, evacuation, charging and testing the system for leaks.

AUTO-262
Basic Oscilloscope & Dynamometer
Oscilloscope - to perform a complete electronic engine diagnosis to find defects in the following areas: ignition, compression, alternator, regulator, starter and carburetion. Dynamometer to perform vehicle tests while under load to determine engine performance.

BAKE-102
Breads, Rolls, Sweet Doughs
BAKE-103
Plain and Sweet Pastry
BAKE-104
Danish and Puff Pastry
BAKE-105
Cake Making
BAKE-108
Basics of Baking
Sanitation, safety, measuring foods, recipes, costing, quality control and salesmanship.

BAKE-110
Cookies & Short Breads
BAKE-111
Practical Baking
BARB-101
Health and Sanitation
Personal hygiene; public hygiene; mental hygiene; cleanliness; posture; good health habits. Classification of bacteria; three general forms of bacteria; groupings of bacteria; six disease producing bacteria; bacterial growth and reproduction; infection. Methods of sterilization; antisepsis and disinfectants; wet sterilizer; dry sterilizer; proportions for making percentage solutions; safety precautions; sterilization rules. Board of Health; barber examining board; duties of barbering inspector; importance of sanitation; sanitary rules.

BARB-102
Barbering Implements, Honing, Stropping
Straight razors; regular shears; tapering shears; clippers; hones; strops; accessory implements. Purpose of honing; preparation for honing; how to hold razor and hone; how to stroke razor; testing razor edge; care of hones. Purpose of stropping; technique of stropping; testing razor edge; care of strops.

BARB-103
Face Shaving
Fundamentals of face shaving; four standard positions and strokes; preparing a customer for a shave; preparing the face for shaving; positions and strokes in shaving the neck shave; accidental cuts in shaving; why a customer may find fault with a shave; shaving the mustache; styles of mustaches; shaving the beard; styles of beards; special problems in shaving.

BARB-104
Men’s Haircutting

BARB-105
Men’s Hairstyling

BARB-106
Current Trends in Barbering
Hairpieces for men. Hair relaxing and processing. Ladies’ haircutting.

BARB-107
Anatomy and Physiology
Tissues; organs; systems; and skeleton system; bones of the head, face and neck; the muscular system; muscles of the head, face and neck; the nervous system; nerves of the head, face and neck; the circulatory system; blood vessels of the head, face and neck; histology - the microscopic study of the skin and hair.
BARB-108
Disorders of the Scalp, Skin and Hair

Justification for study; primary lesions of the skin; secondary lesions of the skin; definitions of disease terms; diseases of the oil glands; diseases of the sweat glands; dandruff; skin inflammations; dermatitis; exzema; types of alopecia; parasitic affections; non-contagious hair affections; skin pigmentation; skin growths; the control of venereal diseases.

BARB-109
Shampoos, Hair Treatments, Facials

Preparation of supplies; preparing a customer; step-by-step procedure for a plain shampoo; inclining method; massage manipulations during a shampoo; common faults in shampooing; special shampoos, shampooing as part of hairstyling, haircoloring and scalp and hair treatments. Composition of hair tonics; when to use hair tonics; how to apply a professional scalp tonic (scalp steam), benefits of hair tonics. Theory of massage; benefits of scalp massage; step-by-step procedure for a scalp massage; when to recommend scalp treatments; general scalp treatment; special problems dry scalp treatment; dandruff treatment; alopecia treatment. Benefits of facial treatments; equipment needed; rolling cream massage (plain massage); points to remember in facial massage; facial massage movements using hands; using vibrator; rules to follow in using hands or vibrator; special problems dry skin facial; oily skin facial; clay pack facial; acne facial.

BARB-110
Light Therapy Applied; Cosmetic Products.

How electricity is produced; forms of electricity; types of electrical circuits; safety practices; high-frequency current; methods of using tesla current; methods of using vibrator; light therapy; composition of light; how light rays are reproduced; how to use ultra-violet and infra-red rays in the shop; benefits of ultra-violet and infra-red rays. Chemistry of water; United States Pharmacopeia; classification of cosmetics for scalp, skin and hair.

BARB-111
Shop Management and General Aspects

Ethics applied in the barber shop; good ethics in the barber shop; bad ethics in the barber shop. Functions performed by a barber shop; types of ownership; selecting the right location; equipping the barber shop; advertising the barber shop; salesmanship in the barber shop; records in the shop; operating expenses; first aid; things to consider when going into business; business law. Origin of the barber; superstitions in barbering; Greek and Roman influence in barbering; rise and fall of barber surgeons; modern trends in barbering. The need for barbering regulations; how barbering regulations are legislated; how barbering legislations are enforced; point by point review of regulations under the barber's act.

BARB-112
Modern Men's Haircoloring

Reasons for learning men's haircoloring; preparation of supplies; use of hydrogen peroxide; purpose of bleaching; the three layers of hair and their relation to haircoloring; formulas for bleaching and coloring; procedure for doing a virgin bleach; swatch experiments in bleaching; purpose of the patch test in haircoloring; procedure for doing temporary colors including sprays; working with semi-permanent colors; working with permanent colors.

BCHM-304
Organic Chemistry

Similar to CHEM-304 with the omission of the laboratory section. Prerequisite CHEM-204.

BCHM-305 & BCHM-405
Instrumental Biochemical Analysis

Similar to CHEM-305 and CHEM-405, but modified to meet the requirements of Biochemical Technology. Prerequisite ERON-204, CHEM-203, CHEM-204, CHEM-207, Concurrently BCHM-314.

BCHM-306 and BCHM-406
Biophysical Chemistry

Course deals with the physical principles, concepts and techniques important in biochemistry. Topics covered are ideal and non-ideal gas behavior, laws of thermodynamics and their application, thermochemistry, liquid and solution properties, biochemical reactions, polymer and colloid chemistry, examination of molecular structure, photochemistry, radiochemistry. Experiments are designed to meet the need of the Biochemical Technology Course. Prerequisite MATH-207, CHEM-101. Concurrently BCHM-314 for BCHM-306.
BCFM-307 & BCFM-407
Biochemistry

BCFM-314 & BCFM-414
Biochemistry
The study of the chemistry and metabolism of amino acids, proteins, enzymes, carbohydrates, lipids, and nucleic acids. The cell and its components will be included, as well as a discussion on body fluids, hormones and vitamins. The laboratory session includes studies on basic biochemical compounds and modern biochemical techniques. Prerequisite CHEM-204 for BCFM-314.

BCFM-315 and BCFM-415
Microbiology
This course deals with microorganisms with respect to physiology, nutrition, growth, death, environmental effect, culturing, identification, location and application in industry. The laboratory session includes studies on the microscope, preparation, evaluation of culture, etc. using modern techniques. Prerequisite CHEM-204 for BCFM-315.

BCFM-410
Biochemical Project
Similar to CHEM-410. Dept. Head approval and concurrently BCFM-405.

BIOL-102
General Chemistry
Similar to CHEM-101 with reduction in content in sections such as crystal structure, electronic configuration.

BIOL-103
Analytical Chemistry I
Similar to CHEM-103 excluding the Stiochiometric section.

BIOL-105
Zoology
This course will introduce concepts of Zoology and its subsciences, basic metabolism and physiology, and principles of taxonomy. The emphasis will be upon the vertebrate life organization considering representative fish, amphibians, reptiles, birds and mammals.

BIOL-106
Botany
An introductory course in plant biology. Topics include: a systematic overview of representative members of the major divisions of the plant kingdom, cell structure and specialization, economic botany and plant anatomy. Examples of local flora will be examined.

BIOL-203
Analytical Chemistry II
Similar to CHEM-203 with reduction in subject content and laboratory time. Prerequisite BIOL-103.

BIOL-204
Organic Chemistry
Similar to CHEM-204 and CHEM-304 but condensed and modified to meet the requirements of the Biological Technology. Prerequisite BIOL-102.

BIOL-205
Ecology
A course dealing with principles of ecology. Topics will include evolution, structural and physiological adaptation; energy flow and food chains; communities, biomes and life zones; and man as relates to nature. Prerequisite BIOL-105 BIOL-106.

BIOL-206
Entomology and Parasitology
Deals with the recognition, biology, and control of insects and invertebrate parasites. Also a study of general morphology and physiology will be included. The laboratory exercises will primarily involve taxonomic and biological studies. Prerequisite BIOL-105, BIOL-106.

BIOL-208
Optics and Radiation Biology
Applied optics deals with the general principles of reflection, refraction, and dispersion of light. Also included are studies involving the use of optical instruments pertinent to biology. The radiation biology segment of the course involves the fundamentals of atomic and nuclear physics as well as the biological aspects of ionizing radiation and radioactivity. Prerequisite CHEM-108.

BIOL-211
Biological Data Handling
This course deals with the application of
statistical techniques to problems of biological origin using the Digital PDP-8e computer to make the necessary calculations.

The topics are: programming with the BASIC language, central tendency, dispersion probability, hypothesis testing using the t, F and Chi square test, Analysis of Variance, regression, and proper experimental design. Prerequisite MATH-107.

**BIOL-305**

**Instrumental Methods of Analysis**

Theory and instrumentation usage encountered in the chemical or biochemical field. Instrumentation includes ultraviolet, visible and infra-red spectrophotometers; fluorometer, turbidimeter, nephelometer, gas detector and gas chromatography types, potentiometric titrators, pH meters, conductometer, polarography and electrophoresis.

**BIOL-313**

**Anatomy and Physiology**

A course dealing with mammalian anatomy and physiology. Topics to include the organization of the animal; the various systems such as respiratory, digestive, circulatory, nervous etc.; and control systems. Prerequisite BIOL-105.

**BIOL-314**

**Biochemistry**

Designed to cover the basic biochemistry of proteins, nucleic acids, carbohydrates, lipids, enzymology, metabolism and vitamins. The lab will consist of techniques of separation, analysis, and identification of the above compounds. Prerequisite BIOL-204, BIOL-205.

**BIOL-315 and BIOL-415**

**Microbiology**

These two courses are designed to introduce the student to the subject matter of microbiology. The topics to be covered include: taxonomy; bacterial morphology, anatomy and physiology; bacterial metabolism; principles of disinfection and sterilization; bacterial genetics; industrial microbiology; immunology and methods of safely handling transferring and storing bacteria. Prerequisite BIOL-204 for BIOL-315.

**BIOL-316**

**Microtechnique**

A course in the theoretical and practical aspects of preparing biological material for light microscopy. It involves use and care of necessary equipment, as well as procedures for fixing, staining and mounting specimens; or preparing them in a variety of other ways for observation. Prerequisite BIOL-106, BIOL-205.

**BIOL-318**

**Plant Pathology**

An introduction to plant disease and methods of control. This course includes a general consideration of plant disease, the disease cycle and pathogenicity. Examples of diseases caused by both biotic and abiotic factors are included. Laboratory exercises include techniques of isolating, culturing and inoculating viral, bacterial and fungus pathogens on healthy plants. Prerequisite BIOL-206, concurrently BIOL-316.

**BIOL-410**

**Biological Projects**

Similar to Chem-410. Dept. Head approval.

**BIOL-414**

**Biochemistry**

Designed to cover physiological biochemistry including biochemistry of organelles such as chloroplasts, mitochondria, lysosomes, etc., biochemistry of organs such as liver, kidney, brain etc., nutrition of animals in terms of digestion, absorption and essential nutrients.

The lab will consist of techniques of removal, extraction and purification of biochemical materials and analysis of biochemical processes.

**BIOL-418**

**Animal Pathology**

An introduction to the general mechanisms and language of disease and the pathology specific diseases of animals. Laboratory sessions include ante and post mortem techniques and on site observing of facilities for animal care and experimentation.

**BIOL-419**

**Genetics and Breeding**

This course outlines the nature and function of genetic material. It deals with the fundamental genetic principles applicable to plants and animals. Manipulation of genetic variability in breeding populations and the role of genetic factors in some diseases.

**BIOL-420**

**Nutrition and Animal Care**

This course deals with the general prin-
Principles of nutrition and their use experimentally. Also included is a study of the practices used in the care and maintenance of laboratory animals. Experimental procedures such as injection, blood withdrawal, anesthesia, euthanasia are included.

**BIOL-421**

Hygiene and Sanitation
A study of general causes and prevention of infection of various foods including methods of food processing. Sanitation of the environment in which food products are stored, handled and produced, as well as personal hygiene of food handlers included. Water treatment practices, waste disposal and handling methods are included.

**BLDG-302**

Building Construction
The manufacture, testing, properties, types, uses, storage, site handling, inspection, equipment and the methods and procedures of application of ready-mixed concrete, concrete systems, forming systems, steel and masonry block construction.

The laboratory portion of this course is to make available all construction materials so the students can build typical structural and architectural systems and test these systems under loads of environmental conditions. Prerequisite CIVL-205.

**BLDG-306**

Concrete Construction
Review and design of beams, one-way floor slabs, columns and footings. Introduction and applications of prestressed concrete design. Application, construction and design of reinforced concrete footings. Complete design and working drawings of a reinforced concrete project. Prerequisite CIVL-202, CIVL-205, MATH-209.

**BLDG-402**

Building Construction
The manufacture, testing, properties, types, uses, storage, site handling, inspection, equipment and the methods and procedures applied to brick, stone and wood. Site and building layout, excavation procedures and equipment. Labs to consist of tours to manufacturing plants and construction sites. Prerequisite NGL-206.

**BLDG-403**

Construction Administration
Construction company management and control, both in Head Office and field. Relationship between owners, designers, company personnel, public bodies, contractors and sub-contractors. Canadian construction contract law including formation of contract, breach of contract, mechanics liens etc. Prerequisite ENGL-206.

**BLDG-407**

Building Services and Specifications

**BLDG-410**

Foundations
Stress distribution beneath loaded areas, bearing capacity evaluation; design of footings (square, rectangular, combined) and raft foundations. End bearing and friction pile design. Evaluation of lateral pressure, analysis of retaining walls, sheet piling and anchor blocks. Methods of dewatering excavations, Foundation layout. Prerequisite STRL-317.

**BLDG-411**

Code Interpretation and Safety
Zoning and building by-laws, regulations and laws relating to building premises, Department of Labour, Workmen's Compensation Act, electrical, heating and ventilating, airconditioning and plumbing.

**BLDG-412**

Estimating
Pre-tendering investigation; specification, working and shop drawing interpretation; quantity take off; direct and indirect costing; cost accounting cycles and keys. Contract Management; analysis of actual to estimated costs; subtrade bidding and tendering practices. Filing and information retrieval systems.

**BLDG-413**

Structural Steel Design
Design of the individual components of buildings based on CSA Standard S16 using the C.I.S.C. handbook. To include design of tension members, columns, column base plate, simple beams, laterally unsupported beams, bolted and welded building connections. Prerequisite STRL-308.
A review of accounting procedures and Programming in COBOL. The application of accounting principles and income determination; accounting principles and their effect on the balance sheet; valuation of current assets and capitalization of costs; long term liabilities and equities; error analysis and correcting financial statements; limitations of accounting principles in reporting financial data; financial statement analysis. Reconstructing statements from incomplete data; the concept of funds flow and cash flow; preparing funds flow statements and cash flow statements; their uses and misuses; cost accounting—an overall view, management control systems and techniques; analysis of costs; cost-volume analysis; techniques of cost analysis; cash budgets and capital budgets; performance analysis; alternative choice analysis.

BUTE-108 & BUTE-223
Business Law I & II
Business Law as it relates to business transactions and the legal rights and obligations of individuals. A detailed study of the principles and applications of the topics, contracts, agency, sale of goods, negotiable instruments, bailments, real property, partnerships, corporations, insurance copyrights, patents and trademarks, and wills and inheritances. Students will prepare a casebook for use in teaching High School Business Law.

BUTE-109
Communication Skills
Involves reading, writing, listening and speaking. Students are presented with both theoretical and practical concepts, emphasis being placed on their application within the educational structure.

BUTE-110
Introductory Psychology
The adjustment concept, understanding the individual's behavior, personal problems, personality development, group dynamics, psychological aspects of labour unions and automation in business and industry.

BUTE-111
Data Processing I
The basic concepts of data processing, punched cards, flowcharting, programming in Fortran IV and electronic computers.

BUTE-112
Data Processing II
Programming in COBOL. The application
of data processing to accounting.

BUTE-201
Shorthand Transcription and Typewriting
Emphasis on efficient techniques of taking dictation, proper methods of transcribing, and business vocabularies. Speed range 100-120 w.p.m.

BUTE-202
Office Practice
A review of the various office tasks. Discussion and review of the different topics in the high school office practice courses. Assessment of resources and techniques to present office practice to high school students.

BUTE-204 and BUTE-222
Economics Principles I & II
An introduction to the basic principles of economics including production, consumption, price determination, money and banking, government finance, national income, economic stability, business and labour organizations, comparative economic systems, and an analysis of the economy of Manitoba.

BUTE-205 & BUTE-207
Marketing I & II
An introduction to the field of marketing concerned with a survey of the process required to transfer goods from the producer to the consumer, determination of market prices, middlemen, warehouse systems, and problems of the manufacturer, wholesaler, and retailer.

The second half of the course will be an intensive study of selling, advertising, and retailing.

BUTE-208
Methods of Teaching Shorthand
The preparation for the prospective teacher to instruct effectively in the skill development in shorthand.

BUTE-209
Methods of Teaching Basic Business and Accounting
Preparation to teach basic business and economics subjects, accounting and business mathematics. Evaluation of various methods, resources, aids and objectives in teaching the basic business and accounting subjects.

BUTE-210
Principles of Business Education

BUTE-211
Course Construction in Business 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.

BUTE-212
Student Teaching
A period of student involvement in actual classroom practice. Student will be assigned to an experienced teacher in the public school to observe and participate in teaching activities. Informative lectures and conferences will be arranged to prepare, support, and evaluate the student in his student teaching period.

BUTE-213
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.

BUTE-216
Methods of Teaching Typewriting
Preparation to instruct in typewriting. Examination and evaluation of methods, resources, aids and evaluation in the teaching of typewriting.

BUTE-217
Business Organization and Management
A comparative study of ownership, organizations, capital structure, location and work force of the various forms of business organization in Manitoba and Canada. Financing various types of business.

BUTE-218
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.
BUTE-221
Office Practice
The various aspects of the Office Practice courses taught at the high school and vocational school levels are reviewed and discussed. Activities to make the teaching of these courses more meaningful are planned and assessed. Simulated office situations and their application to the classroom are considered.

BUTE-113
Accounting Principles
An examination of accounting principles and practices as they relate to sole proprietorship, partnership and corporation. Basic procedures in journalizing, posting, statement preparation and special reports are mastered.

BUTE-206
Organizing Cooperative Work Education
Planning, organizing, implementing and evaluating co-operative work education, studying the problems of work education, guidance, selection and placement of students in work stations, assisting with job adjustments, and developing the training program.

BUTE-214
Methods of Teaching Marketing Education
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.

BUTE-103
Basic Typewriting
Students learn the fundamental typing and production techniques related to straight copy and production tasks.

CBOM-140
Accounting
Fundamental elements of double-entry bookkeeping; use of accounts; analyzing business transactions; recording changes in asset, liability and capital accounts of a non-trading organization. Completion of bookkeeping cycle; adjustments; work sheets; financial statements and year end closing. Introduction to control accounts; payroll and banking. Practice work sets are assigned in this course.

CBOM-142 and 242
Business Machines
Functions of calculating machines; application to business problems; use of ten-key adding-listing machines; ten-key printing calculators, key-driven calculators, and manual, semi-automatic, fully automatic rotary calculators; ten-key and full-keyboard bookkeeping and accounting machines for accounts receivable, accounts payable, payroll and distribution.

CBOM-144 and 244
Business Mathematics
The fundamentals of arithmetic as applied to business calculations; aliquot parts; percentage; trade discounts; retail selling; payroll; interest; bank discount; mathematics applied to business problems to prepare students for further application to bookkeeping and business machine problems. Prerequisite CBOM-144.

CBOM-240
Accounting I
Bookkeeping for trading organizations with financial statements; expansion of purchase journal and sales journal; accounts receivable and accounts payable. Practice Set I - complete bookkeeping cycle for trading organizations with simple special journals. Prerequisite CBOM-140.

CBOM-241
Accounting II
Bookkeeping for trade organizations with financial statements; expansion of purchase journal and sales journal; accounts receivable and accounts payable. Practice Set I - complete bookkeeping cycle for trade organizations with simple special journals. Includes above and, end of period adjustments; accruals; expansion of cash receipt and cash payment journals; synoptic journal; voucher system; departmental accounting; Practice Set 2 - complete bookkeeping cycle for trading organization using special columnar journals.

Note: If students elect both CBOM-240 and CBOM-241, they will include these additional topics: partnerships; introduction to corporations. Practice Set 3 - complete bookkeeping cycle for a partnership trading organization, including payroll. Prerequisite CBOM-140.

CBOM-243
Data Processing
Data processing cycle; the tabulating and
electronic computer systems; functions of commonly used machines; input media; punched cards, punched paper tape, magnetic tape and magnetic ink characters; card planning and layout; codes, introduction to electronic data processing; terminology; methods of computer programming.

CCSC-247
Consumer Education
Contracts and credit: the use and source of credit, interest and costs, pitfalls of credit, credit unions; elements of contracts and legal protection available; schemes and fraud: types; legislation protecting consumers; organizations available for consumer protection. Money management: budgeting; savings; stock and bonds with relation to corporations; mutual funds; buying a home; buying a car; income tax; pensions. Insurance: types; rates; comparisons; Canada Pension Plan. Employment opportunities: pyramid selling; bait and switch; unions; misleading newspaper advertising; wages and working conditions. Debates. Panel discussions, guest speakers, dramatization and role playing: projects, written and oral reports. Displays and exhibits.

CCSC-102
Child Care Forum and Field Placement I
To provide a methodology for observation and participation in the pre-school setting. To integrate the theoretical with the practical aspects to child care by relating the principles of child development to actual care procedures according to the philosophy of programs studied. Students will spend one morning per week in various child care centres observing.

CCSC-106
Child Behavior and Development
This course explores the various aspects of child development, possible reasons behind children's behavior and the implications a child's development and needs have for his behavior. Topics include an overview of human life and growth, prenatal development, early infancy, pre-school and the pre-school child and the school age child.

CCSC-107
Philosophies of Child Care
To introduce the student to child care services as they exist in Canadian society, to study the methods and theories of preschool education which have influenced the development of child care in Canada and to determine the trends in early childhood education and child care services today. Among philosophies surveyed will be Montessori, informal, and compensatory.

CCSC-108
Creativity and Children
Study of how to foster creativity in children through provision of self-expressive activities in art. Experience with the materials of art.

CCSC-205
Forum and Field Placement II
To develop basic skills for working with pre-school children. Exploration of the value of play for children. To investigate the roles of the teacher aide, teacher and program in relation to the needs of the child. The students will spend one day a week in a pre-school setting.

CCSC-206
Physical Care of the Child
This course will provide the student with an understanding of the basic principles of health and health promotion and the physical care that is required during early childhood.

Topics will include recognition of specific health problems, interim measures, hygiene, safety, allergies, communicable diseases, etc.

CCSC-207
Family Influences on the Child
The effect on the child of child-rearing practices, poverty, a single parent, sibling and minority status. The dynamics of family relations in which the child develops his personality.

CCSC-208
Self Expression in Art
Appreciation for the value of art in the pre-school through experience with creative materials.

CCSC-301
Curriculum Planning
Various options for organizing a preschool, curriculum clarification by the student of her philosophy and learning to plan a day and then a week which will meet the needs of the child.

CCSC-303
Movement Education
Particular stress on the movement needs.
of children and integration of physical activities in the pre-school. Proper equipment for physical activities.

CCSC-305
Community and Social Service Resources
To make the student aware of the resources available in the community and to indicate to the student how to use these resources to the best advantage for the children who will come under her care.

CCSC-306
Family Systems
A study of the family interaction with the society, the various ways families organize themselves and the problems they are facing. The aim is an understanding of situations which the students may meet in their work.

CCSC-402
Forum and Field Placement IV
Students will spend one day a week plus four full weeks in a pre-school centre under supervision refining perceptiveness to children's needs. Discussion of the teacher's role in fostering full development of the child.

CCSC-403
Developmental Drama
Developing the ability to allow the child's imagination to express itself in drama. A brief introduction to the theatre arts.

CCSC-404
Child Care Services Implementation
Study of the various components of a child care centre; integrating services to the child's total needs. The operation of a child care centre.

CCSC-405
Issues in Child Development and Child Care
In-depth research of problem areas, development of a questioning attitude.

CCSC-407
Basic Accounting
Keeping records of income and expenses, practice for imaginary child care centre.

CHEF-303
Patisserie

CHEF-304
Practical Work
Preparing, planning, writing of menus, foods and managing a kitchen.

CHEM-101
General Chemistry
Atomic structure; energy levels and the periodic table; chemical bond; stoichiometry; the gaseous state; properties of liquids; types of solids, changes of state; solutions, colloids; chemical equilibrium; electrochemistry.

CHEM-102
Descriptive Inorganic Chemistry
Atomic theory and periodic classification of the elements. Properties of the elements and their respective compounds. Processes involved in their manufacture, etc.

CHEM-103
Inorganic Qualitative Analysis
Chemical equilibria; ionization; solubility; product; complex ions; and other topics pertinent to a study of qualitative analysis; laboratory practice in separation and identification of cations and anions. Stoichiometry is also included in this section.

CHEM-107
Mechanics & Heat
Statics; kinematics; dynamics; energy; rotary motion; hydrostatics; elasticity; temperature; thermal expansion; radiation, conduction and convection; thermodynamics.

CHEM-108
Mechanics, Heat & Electricity
Statics; kinematics; dynamics; energy; rotary motion; hydrostatics; elasticity; temperature; thermal expansion; radiation, conduction and convection; thermodynamics; basic electricity, Kinkeff Laws, electrical currents, electric fields and magnetism.

CHEM-203
Inorganic Quantitative Analysis
The theory behind classical quantitative analysis as used in industry. Practical work involves mainly gravimetric and volumetric quantitative analysis. Prerequisite CHEM-102 and CHEM-103.
CHEM-204
Organic Chemistry
A study of aliphatic organic chemistry and related topics including discussion on the characterization of organic reactions. Laboratory: development of basic laboratory techniques and preparation of representative organic compounds related to the theoretical study, including industrially important substances. Prerequisite CHEM-101.

CHEM-207
Optics & Nuclear Chemistry
Light - reflection, refraction, dispersion; interference and diffraction; lenses optical instruments; polarization; relativity; atomic physics; nuclear and nuclear energy; nuclear reactions. Prerequisite CHEM-107.

CHEM-304
Organic Chemistry
Aromatic organic chemistry to include: structure and nomenclature, preparations and properties; functional group reactions; methods of identification and commercial uses of important members; aliphatic and aromatic hydrocarbons and their derivatives halogen, nitrogen, sulfur, mono and di-carboxlic acids; esters and fats; proteins; carbohydrates; amino compounds; polynuclear hydrocarbons; etc. The fundamentals of stereosemistry; geometrical and optical isomerism; tautomerism, resonance, simple reaction mechanism.

The laboratory will dwell on the techniques of organic chemistry and experiments related to the above topics, including chromatography, electrophoresis, vacuum distillation, carbon-hydrogen trains, etc. Prerequisite CHEM-204.

CHEM-305 & CHEM-405
Instrumental Chemical Analysis
Discussion of errors; theory and instrumentation of visible and photoelectric colorimetry; fluorimetry; turbidimetry and nephelometry; spectrophotometry (ultra-violet, visible and infrared); spectrographic analysis (emission and emission spectra); flame photometry; gas detection and gas chromatography; radiochemistry; potentiometric titration and pH measurements, aquametry; electrodeposition and polarography; coulometry and amperometry; conductometry; chemical microscopy; spectroscopic analysis by comparison; ion exchange mass spectrometry; atomic absorption; spectrophotometry; electronic instrumentation related to chemical instruments. Prerequisite ERON-204, CHEM-203, CHEM-204, CHEM-207.

CHEM-306 & CHEM-406
Physical Chemistry
Ideal and non-ideal gas behavior; the solid state; the three laws of thermodynamics and their applications; general characteristics of liquids and solutions; colligative properties; thermochemistry (heat of reaction, heat of combustion, etc); chemical equilibria; electrochemistry; electrical conductance; phase diagrams; chemical kinetics; surface chemistry and catalysis; colloids (sedimentation osmotic pressure, emulsions, etc.) Laboratory experiments include X-ray diffraction, DTA, TGA, bomb calorimetry, surface tension measurement, molecular weight determination by a variety of methods, viscosity, etc. Prerequisite MATH-207, CHEM-101, concurrently MATH-307 for CHEM-306.

CHEM-307 & CHEM-407
Laboratory Techniques
Theoretical and practical glassblowing techniques; repair of chemical glassware and construction of simple apparatus. Design and fabrication of apparatus for chemical laboratory use; consideration of problem, choice of materials, design of fittings, vacuum techniques. Fractional distillation. Prerequisite CHEM-107 for CHEM-307.

CHEM-309
Industrial Chemistry
Raw material requirements, production and chemical control methods in Canadian industry; industrial water supply and water control methods; energy sources; petroleum, rubber and plastic, paints; lacquers and protective coatings; agri-chemicals; pulp and paper; industrial electrochemistry; organic and inorganic chemicals; industrial hazards and practices; etc. Prerequisite CHEM-204, MATH-207.

CHEM-410
Chemical Projects
A project is required to be satisfactorily completed by all graduating students. This project is to include: (a) literature search and feasibility, (b) practical laboratory work, (c) written report. Concurrently CHEM-405. Dept. Head approval and concurrently CHEM-405.

CHEM-411
Chemical Data Handling
Course deals with the methods for col-
lecting, analyzing and summarizing analytical chemical data, by correlating the quantitative values and by calculating reliability factors for the summaries. Experimental variables, instrumentation error analysis, factors, sequencing, design and control of bias will be considered. Computations will include the computer with FORTRAN IV LANGUAGE. Prerequisite MATH-307, MATH-312.

CHEM-412
Economics and Industrial Relations
The economic section will acquaint the student with modern economic theory and its practical applications to the chemical industry and the national economy. Topics will include business organization, theory of price, national income and income distribution, public finance, money and banking, international trade, etc.

The Industrial Relations portion will deal with human relations and its effects on morale and work production; selecting, inducting, training, and promoting employees; merit rating, labor relations; public relations of the chemical business as an industry in the community. Prerequisite Dept. Head approval.

CHEM-413
Industrial Chemistry
Raw material requirements, production and chemical control methods in Canadian industry; industrial water supply and control methods; energy sources; petroleum, rubber and plastics; paints; lacquers and protective coatings; agri-chemicals; pulp and paper; industrial electrochemistry; organic and inorganic chemicals; industrial hazards and practices; etc. Prerequisite Dept. Head approval.

CHEM-414
Pollution and its Control
A seminar course, 3 hours per week for one term, designed to study many of the physical and social aspects of pollution. Does adequate environmental maintenance require a drastic change in social-economic thinking? Topics discussed include - a historical development, water pollution, air pollution, solid wastes, pesticides, power generation, noise pollution, population pollution, personal pollution, pollution and education, etc. Prerequisite Dept. Head approval.

CIVL-102
Mechanics
The basic concepts of statics as applied in the analysis of structures. Forces, moments, free body diagrams, trusses, frames, centres of gravity, centroids and moments in inertia for simple areas. Parallel axis theorem.

CIVL-103
Surveying

CIVL-105
Strength of Material
Stress, strain, temperature stress, Poisson's ratio, bolted and welded connections, thin walled pressure vessels, torsion; shear force and bending moment.

CIVL-106
Drafting
Principles of engineering drawing based on Canadian Standards Association series in the field of drawing practice, instruments and their use, applied geometry, lettering, orthographic drawing and sketching, pictorial drawing and sketching, dimensioning, sections and conventions, intersections and developments: applied descriptive geometry, timber structures.

CIVL-202
Mechanics

CIVL-203
Surveying
Topographic mapping and determination of volumes using the polar planimeter, cross-section and calculation of areas.
Theory and use of simple, spiral and vertical curves. Special curve problems, moving the back tangent, moving the forward tangent, inaccessible PI's & intersection of a simple curve and straight line. Methods of stadia. Grade staking and slope staking. Prerequisite CIVL-103, MATH-109.

CIVL-205
Strength of Material
Shear force and bending moment diagrams, points of inflection, maximum shear and moment for moving loads. Flexure formula, general shear equation, steel and timber beam design, combined stresses, Mohr's circle, the three moment equation. Prerequisite CIVL-102, CIVL-105.

CIVL-206
Drafting
Detailing of steel, concrete and timber structures, commercial building project, underground services project; street and highway project. Prerequisite CIVL-106.

CIVL-312
Hydraulics

CIVL-316
Photogrammetry

CIVL-317
Soil Mechanics

CIVL-320
Structural Design
Steel - Analysis and design of tension members, columns and beams.
Timber - Design of sawn and glulam beams.
Concrete - Basic reinforced concrete theory; analysis and design of simple beams and slabs; design of columns. Prerequisite CIVL-205.

CIVL-321
Street & Highway Design
Preliminary, location and construction survey requirements. Design factors for street and highway design - projected traffic volumes, speed, curvature, super-elevation, sight distances, grades, drainage, culvert design, right of way width. Design of rural and urban roadway sections including cross sections, quantities, mass diagram; profiles, plans, cost estimates required for tendering. Soil considerations including, sub-grade, subbase, base course and load carrying capacity of various pavements. Construction methods. Prerequisite CIVL-203, CIVL-206.

CIVL-413
Job Control and Costing
Critical path method of planning and scheduling; network theory; project scheduling; resource allocation; costing and manpower allocation. Applied industrial psychology.

CIVL-418
Pavement Mix Design

CIVL-419
Terrain Classification
Air photo recognition of the major land forms of the following origins - glacial, fluvial, colluvial, marine, lacustrine and aeolian. Background data on the major rock types, igneous, sedimentary and metamorphic, the work of water, wind and glaciation. The formation of organic and permafrosted organic land forms. Recognition of the more common types of softwoods and hardwoods, found on the Canadian shield.

CIVL-423
Water Supply and Waste Disposal

CIVL-424
Hydrology
Hydrologic cycle; Hydrologic Equation; Conversion factors; Precipitation - types, measurement, presentation of data; frequency data as a basis of design; Stream gaging; discharge measurements; velocity measurements; rating. Measurements: rating curves, mass curves, Hydrographs; snow melt. Prerequisite MATH-309, CIVL-312.

CIVL-425
Stabilization
Mechanical Stabilization - description, suitable soils, mixing, compacting. Mechanical Stabilization with commercial stabilizing agents - Stabilization with lime; description and use, suitable soils, types of lime, lime content, Strength requirements, construction procedures. Stabilization with Portland cement; types of cement treatment, cement content, construction procedures. Suitability of combination of lime and cement. Stabilization with bitumen; types, uses, suitable soils, types of bitumens, bitumen content, strength, moisture content, construction procedures. Various other chemical stabilizers. Prerequisite CIVL-317.

CLRK-100
Typewriting
A course designed to permit the achievement of typewriting skill with an understanding of business correspondence, reports, tables, forms, and manuscripts, and the building of speed skills.

CLRK-101
Business Communications
Basic sentence faults; grammar; punctuation; capitalization; sentence structure; spelling.

CLRK-102
Business Mathematics
The fundamentals of arithmetic as applied to business calculations: aliquot parts; percentage; trade discounts; retail selling; payroll; interest; mathematics applied to business problems to prepare students for a better understanding of other business subjects and the use of business machines.

CLRK-104
Recordkeeping
A brief overview of a one-write accounting system including accounts receivable and payable, handling of cheques, cash, invoices and related documents.

CLRK-105
Business Machines
Covers the operation of the automatic rotary calculator or printing calculator and their applications in business. Students who progress at an accelerated rate may elect additional training in machine transcription, other calculating machines, the key punch.

COMP-209
Introductory Computer Topics
Boolean Algebra, switching theory, and assembler language programming (PAL-III).

COMP-307
Control Systems
Introduction to linear control systems;
frequency response; feedback concepts; Laplace transforms; transfer functions; Bode diagrams; stability; block diagram algebra; control system components; transient response; derivative and integral compensation; example systems. Prerequisite MATH-308.

COMP-309
Logic Circuits and Programming
Basic logic gate circuits; more advanced circuits such as counters, shift registers, A/D and D/A circuits; a continuation of assembly language programming. Prerequisite COMP-209, corequisite COMP-311.

COMP-311
Pulse Circuits
A) General circuit analysis including: Kirchhoff voltage and current laws leading to intro-differential equation analysis using nodal and loop methods, Thevenin theorem, and Superposition theorem. Determinant and Matrix solutions.
B) Digital circuit analysis including: Waveform analysis, switching characteristics of transistors, clipping circuits, clamping circuits, AND/OR gates, and multivibrators. Prerequisite ERON-207, ERON-208, corequisite ERON-304.

COMP-404
Electronic Devices
Oscillator circuits, Tunnel diodes, unijunction transistors, Silicon Controlled Rectifiers, Optoelectronic devices, linear integrated circuits, digital integrated circuit families. Prerequisite ERON-304.

COMP-409
Computer Circuits
A continuation of the logic circuits presented in Term 3; computer circuits such as adders, subtractors, multipliers and dividers; core and monolithic memory systems and associated gating, etc. computer architecture of the minicomputer (including instruction decoding, etc.) Prerequisite COMP-309, COMP-311, corequisite COMP-404.

COMP-410
Computer Systems
Industrial process computer control; planning the project; installation and evaluation; control algorithms; conditioning, wiring practices; common mode problems; CMR: noise in analog subsystems; grounding; filtering; analog subsystems; ADC; multiplexers; executive software; data communications. Prerequisite COMP-309, COMP-307.

COMP-411
Computer Interfacing
Theory and practice of interfacing peripheral devices to a computer. Prerequisite COMP-309, COMP-311, corequisite COMP-404, COMP-409.

COMP-412
Computer Peripherals
In-depth study of peripheral devices available at RRCC; the RF/RS-08 1/4 M word dish, the TUSG DEC tape system and graphics systems. Prerequisite COMP-309, corequisite COMP-408, COMP-409.

COOK-102
Basic Cookery

COOK-201
Garde Manger

COOK-202
Pastry Shop

COOK-203
Restaurant Cooking

CRCO-101
Creative Writing Workshop
Introduction to and practice in a wide variety of writing formats and styles, including stories, opinion, poetry and promotional writing. Students will attempt through practice and self-criticism, to develop their writing strengths while discovering and correcting their writing weaknesses.

CRCO-102
Reporting Workshop
This course is designed to expose students to situations faced by working reporters, to train them in gathering facts for news stories, and to train them to write in acceptable style for newspapers, magazines and the broadcast media. The course consists largely of covering and writing news stories in a real life situation, rather than being limited to simulated situations.

CRCO-104
Advertising
Basic theory of advertising, oriented to answer the question "Why advertise?" Advertising is considered in relation to the overall marketing function, with emphasis on the kinds of advertising, organization of agencies and departments, procedure in producing an advertise-
ment; and principles of copywriting. Included is a full discussion of sales promotion techniques.

CRCO-105
Principles of Journalism
This is designed to instruct students in the mechanics and theories of news gathering, news writing, and production of a daily or weekly newspaper. Attention is given to the main objectives of a newspaper or newscast program, and to the philosophy behind news communication.

CRCO-107
Typewriting
A course designed to permit the achievement of typewriting skill with an understanding of manuscripts, and the building of speed skills.

CRCO-201
Creative Writing Workshop
Further development of creative and promotional writing, with intensive practice in researching and writing retail, national and vocational advertisements. A considerable amount of writing will be done for radio and TV. Prerequisite CRCO-101.

CRCO-202
Reporting Workshop
Further development of reporting skills. In addition to newspapering and reporting, students will compare their writing with published news stories by professionals covering the same or comparable events. Students are encouraged to write news stories on any events which they personally attend or in which they are interested. Prerequisite CRCO-102.

CRCO-203
Radio-TV Lab.
Working with the College's closed circuit TV facilities and tape recorders, students will be trained in the fundamentals of radio and TV production. This training will be closely linked with script-writing done in CRCO-201 and 202. Students will also utilize those skills learned in Oral Communications.

CRCO-204
Advertising Media
A detailed study of the major advertising media, their strengths and limitations, their respective appropriateness for different kinds of products, and a comprehensive explanation of the technical aspects of these media as they relate to the copywriter. Prerequisite CRCO-104.

CRCO-205
Editing
Principles of copy editing and headline writing, including techniques of improving copy, proofreader's symbols, how to use the style book, development of headline vocabulary, photo editing and the duties of the copy editor in the various media. Prerequisite CRCO-105.

CRCO-207
Photography
Introduction to such fundamentals of photography as correct exposure, flash, and light meter, with concentration on composition of photos, including the posing of people and the taking of on-the-spot news shots. Particular attention will be given to the kind of pictures that should accompany articles and other kinds of writing.

CRCO-208
Design and Graphics
The main objective is to give the writing student a full appreciation of the design and production problems involved in displaying his message effectively. Principles of lay-out and typography are included along with the study of printing processes and the use of color.

CRCO-301
Copywriting Workshop
Major writing assignments will be undertaken in advertising copywriting. These assignments will involve original research, product analysis, media study, criticism, and designing a campaign. Some assignments will be coordinated with those of the Advertising Art course. Prerequisite CRCO-201 and CRCO-204.

CRCO-302
Journalism Workshop
Advanced writing techniques designed to aid the student in coping with complex reporting situations. Covers interpretive reporting, editorials, columns and reviews, as well as the study of magazine markets for freelance writers.

CRCO-303
TV-Radio Lab.
The techniques of electronic communications. Students will further develop their skills in writing news for radio and television broadcast, writing scripts to accompany video tape and film, and planning the production of commercials.
Creative Writing
This subject is primarily concerned with works of the imagination as represented by the short story, novel, poetry, satire, and dramatic writing for stage, radio, and TV. Great stress is placed on the student’s establishing a regular habit of writing; one assignment is expected each week. Prerequisite CRCO-201.

Public Relations
An introduction to the public relations profession, its purposes, its functions, its organization and its major goals. Students will consider the problems of industrial and commercial public relations, press information, establishment and publication of house organs. Prerequisites CRCO-202 and CRCO-204.

Writing Seminar
Discussion of cases and problems in both journalism and advertising writing, enhanced by guest speakers from advertising agencies, public relations offices, newspapers, TV stations and radio stations. Students will be able to compare experiences of dealing with their individual assignments. Prerequisites CRCO-301, CRCO-302, and CRCO-304.

Advanced Writing Project
Prior to fourth term, the student meets with the Creative Communications instructors to determine the specific field in which he will do his major work project. These projects are individual efforts, with one of the instructors acting as an advisor. The four general areas usually considered are journalism, advertising, creative writing and television, but any project connected with the course and approved by the department head may be carried out. Most students are encouraged to undertake projects requiring research. Prerequisites CRCO-301, 302, 303, 304, and 305.

Cultural History
A survey of the principle trends and developments in music, painting, architecture and other related arts. Through the use of slides, films and recordings, an examination will be made of the relationship between the arts and the society in which they exist. The aim of the course will be to provide students in Creative Communications with a general background in the arts to assist in their understanding of many of the forces influencing today’s world.

Special Problems in Advertising
Students will consider a broad range of management problems in advertising, including such topics as: media strategy, adjusting to trends in creative techniques, sales promotion, evaluating advertising effectiveness, retail advertising, international advertising, non-commercial advertising, government controls, and budgeting.

Interpretive Reporting
A practical course based on community and reading assignments aimed at identifying and interpreting the news. Coverage extends to politics and governmental activity, both civic and provincial, and to the specialized fields of international affairs, business, labor, science, sports, drama, film, music, art and book reviews. The course includes development of contacts and sources, methods of research, use of a newspaper library and morgue, and work in Winnipeg newsrooms.

Economics
A course designed to give the student the basic tools required to discuss contemporary economic problems in Canada. An understanding of these problems will help the student to evaluate the solutions that have been acted on and proposed by our political parties and other groups.

Freelance Writing
A course designed to emphasize the practical aspects of freelance writing or broadcasting. Particular attention will be given to exploring market requirements in fiction, magazine articles, trade magazine reports, school broadcasts and radio and TV editorials. Students will select a particular market and then devote considerable time to writing and preparing work for that market.

Copywriting and Copy Editing
Using the copywriting skills developed in the first three terms, the student will prepare a series of sample advertisements for suggested media and those will be included in a presentation portfolio. Students will also develop skills in edit-
ing copy by working with the Term 2 copywriting instructor and students.

CRCO-409
TV-Radio Lab
Students will learn more of the actual day-to-day operation of TV and radio stations. They will gain practical experience through first hand experience in Winnipeg stations where possible, and through further work in the college facilities. Some work will include cooperation with Term 2 students.

CRCO-410
Public Relations
Students will be placed in a public relations departmental and agency situation, both real and simulated, and will have opportunities to evolve and implement PR projects. Particular attention will be given to the role of research in PR practice.

CRCO-411
Mass Media and Society
A study of the mass media and their effects on society, with particular reference to the major mass media in Canada. This course will take a critical look at the media in relation to entertainment, persuasion, regulations, intellectual stimulation, social change, etc.

CRCO-412
Theatre Arts
An analysis of the ways in which the stage and film can be used for communication. Students will examine the use of stage and film in the development of an idea, reinforcing the idea through stage movement and design, and the special problems of various presentations.

CRCO-414
Theatre Production
Designed to make the student familiar with the ways in which director, actor and designer work together to create a production. The student will follow the production schedule through its three phases—planning, rehearsal and performance—by working on an actual play.

CRCO-415
Photo-Journalism
The importance of thinking in pictures is stressed in this course exploring how best to tell a story visually. Journalistic techniques as applied to photography and the history of photo-journalism are discussed. Laboratory assignments consist of individual news and feature pictures, picture stories and photo essays.

DED-205
Architectural Drafting
Study of styles and techniques for architectural proposal drawings, for a row housing development, complete with the design of individual units and their structural components.

DED-207
Mechanical Drafting
Screw threads, fasteners, keys, rivets, and springs; limits and precision welding drawings; design practices; power transmission. Prerequisite CIVL-106.

DED-208
Strength of Materials
Shear force and bending moment diagrams. Flexure formula, general shear equation, stresses in beams, beam design, combined stresses, Mohr's circle. Prerequisite CIVL-102, CIVL-105.

DED-210
Materials
An introduction to the physical and chemical properties of the commonly used construction materials including steels, non-ferrous metals, concrete, timber, plastics, adhesives, etc.

Introduction study of Workshop technology including metals, their alloys, treatments and their uses, machine tools, manufacturing processes and metal joining techniques.

DED-212
Theory of Systems
Light—Light Sources and their characteristics; light and illuminations.

Color—Basic principles and their application to simple color design in buildings.

Sound—Basic principles and characteristics of sound and its control.

Electricity—Basic principles; materials; wiring design; motor and generator fundamentals.

Psychrometry—Heat and change of state; Pressure-Volume-Temperature relationships; introduction to psychrometry and its practical applications.
DEDR-305  
Architectural Detailing & Design  
1. Basic architectural aesthetics  
2. Presentation drawing techniques  
3. Advanced architectural working drawings.  
4. Advanced structural drawings  
By the application of the above to the production of drawings for a student designed rural hotel, followed by the production of proposal presentation drawings for a student designed high rise urban apartment building. Included in these studies are the application of applicable building-by-laws and zoning by-laws, and the use of massing models in architectural design. Prerequisite DEDR-205, DEDR-208, DEDR-210, DEDR-312, concurrent DEDR-311, DEDR-322.

DEDR-308  
Structural Design  
The design of simple building foundations such as footings, cast in place concrete piles, spread footings and driven piles. Design of reinforced concrete building components using ultimate strength, simple and continuous beams and slabs, axially loaded columns, shear walls and retaining walls. Prerequisite DEDR-208, concurrent with DEDR-312.

DEDR-311  
Building Construction  
The study of building science principles including function of the building enclosure, water vapour and condensation, rain penetration and moisture removal, principles of enclosure design followed by application of design principles to walls, windows and roofs. The study of the methods of construction; qualitative aspects of structural design; and code engineering. Prerequisite DEDR-208.

DEDR-312  
Theory of Systems  
Structural loads and procedures, load analysis and transmission of structural loads, wall loads including shear, base ment and retaining walls, shear and bending moment review, concrete coefficients for beams and slabs. Prerequisite DEDR-208.

DEDR-321  
Mechanical Drafting  
Introduction to and practical design of manufactured machines and components, mechanisms, manufacturing controls, industrial processing plants, fluidics and control systems. Introduction to building science including relationship of internal and external environments on the building enclosure, comfort, air quality, air conditioning load analysis thermal and vapour gradients across building enclosures. Prerequisite DEDR-207, DEDR-212, DEDR-210, ENGL-201.

DEDR-322 & DEDR-422  
Materials & Specifications  
A detailed study of the physical and chemical properties of the commonly used engineering materials including steels, non-ferrous metals, concrete, timber, plastics, adhesives, building materials, etc. The following topics will be covered: engineering approach to material selection, material standards, specifications and codes, standardizing bodies and their jurisdiction, material testing and inspection, use of handbooks and catalogues, standard methods for specifying material, commercial sources of supply including stock sizes and grades, techniques of material estimating. Prerequisite ENGL-201, DEDR-212 for DEDR-422, DEDR-321, DEDR-312 for DEDR-421.

DEDR-405  
Architectural Detailing and Design  
Application of previously learned principles and techniques and the study of:  
1. Advanced architectural aesthetics.  
2. Basic building program analysis  
3. Advanced techniques in presentation drawings.  
4. Coordinated architectural working drawings.  
5. Complete structural drawing techniques using design techniques learned in structural design subjects.  
By the application of the above to the production of drawing for a student selected, student designed building project that serves a current public need. Prerequisite DEDR-305, DEDR-308, DEDR-311, DEDR-322.

DEDR-408  
Structural Design  
The design of individual steel components in accordance with CSA Standard S-16, such as tension members, compression members and base plates, flexural members, bearing plates bolted
and welded connections and trusses. Design of simple timber members such as sawn timber beams, built up beams and floor joists, glue laminated beams, plywood box beams and simple timber trusses. Prerequisite DEDR-308, concurrent with DEDR-412.

DEDR-412
Theory of Systems
Introduction to moment distribution, qualitative ILDs for static loading truss analysis and deflection calculations. Prerequisite DEDR-312.

DEDR-421
Mechanical Drafting
Introduction to and practical design of mechanical and electrical equipment and systems for buildings. The course includes: water sources and supply, design of building water distribution systems, waste treatment design of building waste and vent systems. Heating systems: hot water, steam forced air and electric; design of hot water systems; design of duct work for forced air heating system; design of electric heating system. Refrigeration and cooling systems: design of multizoned cooling system using central cooling equipment. Electric wiring and equipment - application of lighting design and building power distribution. Fire Protection - methods of alarm and sound systems, elevators, escalators, moving walks, etc. Prerequisites DEDR-321.

DEDR-424
Quantity Take-off
Methods of construction quantity estimating, and unit costing of foundations, concrete, steel, masonry, wood and finishes.

DENT-101
Life Sciences
Baseline information in basic sciences required by dental assistants. Includes an introduction to general anatomy, dental anatomy, microbiology (sterilization and disinfection), pharmacology, disease processes with relationships to the oral cavity and oral diseases, principles of psychology and dental office emergencies.

DENT-102
Clinical Sciences
A lecture/lab course divided into three parts: dental materials, chairside techniques and laboratory procedures. Dental materials includes surveys of properties and characteristics as well as manipulation of a broad spectrum of materials. Chairside techniques includes principles and practice in four-handed dentistry and instrument identification. Laboratory procedures which may be delegated to the dental assistant are included; selected procedures for demonstration and others are practiced by students.

DENT-103
Supervised Clinical Practice
Presently five weeks spent at the Faculty of Dentistry, University of Manitoba, allowing the student to develop skills in dental assisting.

DENT-104
Office Procedures
Includes basic typing techniques, principles of bookkeeping and dental office management such as reception duties, appointment control, supplies and inventory, financial arrangements, etc. A large portion is spent in learning techniques of dental recording.

DENT-105
Introduction to Dental Assisting
History of dentistry and dental assisting, role of professional organizations, principles of ethics, health and grooming, survey of employment and job demands, jurisprudence, human relations, dental health education.

DENT-106
Diet and Nutrition
Basic food classification, nutritional requirements in growth stages, relationships of diet to dental decay, periodontal disease and healing in general, cariogenicity of foods, diet recording and simple analysis, use of special diets in dentistry.

DESL-101
Running Gear I
Use of hand tools, measuring instruments, special equipment, fastening devices, bearings, gears, drive lines, clutches, steering and suspension.

DESL-102
Standard Transmissions
Construction, principle of operation; synchronizers, splitters and air shift; variable speed diesels; 4 wheel drive transfer case; farm tractor transmission; reversing transmissions, transmission overhaul.

DESL-103
Rear Axles
Types and principle of operation; single
speed H.D. Eaton rear axles; traction equalizers; power dividers; electric and air shift systems; overhaul.

DESL-104
Brake Systems
Operation, repair and adjustments of hydraulic, manual and power brakes; air brake repairs, adjustments and maintenance; lubrication of diesel powered equipment.

DESL-105
Automatic and Power Shift Transmission
The repair and overhaul of automatic and powershift transmissions.

DESL-106
Power Train
Repair overhaul of crawler undercarriages and rear end assemblies; loader repairs.

DESL-107
Engine Overhaul I
Engine cycles, types, components, lubrication and cooling systems.

DESL-108
Engine Overhaul II
Service cylinder block assembly, cylinder head and valve train.

DESL-109
Engine Testing
Mechanical tune-up, electrical tune-up, trouble shooting, dynamometer testing, overhaul and servicing.

DESL-110
Hydraulics Lab
Operation and repair of the more common mobile hydraulic systems.

DESL-111
Electrical Lab
Storage, testing, charging and care of batteries; DC and AC generators and regulators, ignition systems, transistor units.

DESL-112
Fuel Systems Lab
Carburetion, types and methods of supercharging, principles of compression ignition engine, and inspection and complete servicing of pumps and nozzles.

DNUR-101
Anatomy and Physiology
Study of the structure and function of the human body.

DNUR-102
Nursing Fundamentals
This subject presents the knowledge which is the basic groundwork for nursing all patients. The main emphasis is on the basic needs of patients and the nursing measures taken to meet these needs. Prerequisite or concurrent enrollment PSYC 111 Psychology, DNUR-101 Anatomy and Physiology, CHEM-115 Microbiology.

DNUR-103
Nursing Techniques
Included in this subject are the knowledge and experiences needed in providing both comfort measures for the patient and basic nursing procedures. Prerequisite or concurrent enrollment PSYC 111 Psychology, DNUR-101 Anatomy and Physiology, CHEM-115 Microbiology.

DNUR-201
Anatomy and Physiology
Continuation of DNUR-101, with increased emphasis on physiology and the pathological changes associated with illness and disease. Prerequisite DNUR-101 Anatomy and Physiology.

DNUR-202
The Growing Family
Understanding the health needs originating in the childbearing period of family life and how these needs are met within the family group, and the nursing actions which assist the family in so doing. Prerequisite DNUR-102 Nursing Fundamentals, DNUR-103 Nursing Techniques, Prerequisite or concurrent enrollment DNUR-201 Anatomy and Physiology, PSYC 212 Developmental Psychology, SOCL-103 Sociology.

DNUR-203
Introduction to Nursing Illness
This subject is concerned with general disturbances of normal homeostasis and the nursing actions which facilitate re-establishment of balance. Application of nursing actions is provided through experience in hospitals and visits by student groups to community health and welfare agencies who function to help patients maintain that balance while in the home setting. Prerequisite DNUR-102 Nursing Fundamentals, DNUR-103 Nursing Techniques, Prerequisite or concurrent enrollment DNUR-201 Anatomy and Physiology, PSYC-212 Developmental Psychology, SOCL-103 Sociology.
DNUR-411
Nursing of Adults and Children in Illness - Part C
This course is concerned with the nursing concepts related to illness originating from problems of elimination and sensory deprivation. Common clinical manifestations of the illnesses in both adults and children are presented, with incorporation of general and specific nursing actions, related technical skills, dietary modifications and drug therapy. Prerequisite DNUR-301 Nursing of Adults and Children in Illness - Part A, DNUR-302 Nursing of Adults and Children in Illness - Part B.

DNUR-407
Nursing Care Studies Seminar
This course is designed to promote self-study and research by the students in areas of interest. It consists of a series of case studies and discussions designed to expand the student’s knowledge in nursing care and treatment of patients.

DRAFT-504
Sketching & Blueprint Reading
Applied drafting and blueprint reading as applied to the trade.

DRAFT-504
Electronic Drafting
Drafting and circuit reading applied to industrial electronics.

DRAFT-504
Electronic Drafting
Drafting and circuit reading as applied to television.

ENGL-101
Communication
An essentially practical course designed to give technologists experience in preparing, writing and presenting technical documents of the types likely to be encountered in industry.

ENGL-102
Oral Communications
Designed to cover both theoretical and practical aspects of oral communication. Emphasis is placed on participation in assignment labs, each intended to allow the student to practise a specific skill, and to increase his self-knowledge and self-confidence as a public speaker.

ENGL-103
English and Composition
A refresher course in English grammar and effective organization of sentences and paragraphs. Much of the course will be conducted as a clinic in which individual composition problems may be dealt with.

ENGL-104
English
This course is designed to stimulate an active interest in modern literature and to encourage the student to participate intelligently in the cultural environment. Motion pictures based on the works will be used to supplement the texts. One third of the time available will be devoted to library research techniques and to practising basic writing skills.

ENGL-106
Modern Literature
A survey of the major literary figures from 1900 to World War II and evaluation of their influence on present-day writing. Representative works of some of the following authors will be studied: James, Forster, Joyce, Dreiser, Steinbeck, Faulkner, Hemingway, Lawrence, Shaw, and selected poets.

ENGL-107
Oral Communication (80 hours)
This course is basically concerned with types of oral communications emphasizing the fundamental principles of thought, content, organization and delivery; formal speeches, panel discussions, debates, conferences, and interviews. The course should permit the correction of speech peculiarities, pronunciation and reticence towards participation in conversation and group discussions.

ENGL-108
Study Skills (30 hours)
A thirty hour course in which individualized aid is given to students in the fully-equipped Study Skills Centre. The object is to increase reading speed and comprehension and to develop effective study habits.

ENGL-110
Business Communications
A course in the fundamentals of communication in business; techniques of business letters, collecting material and writing reports. Also an examination of the influence of effective communication upon business relations; persuasive writing, editing business news and feature articles for internal or external publication. Basic grammar will be incorporated.
to the depth indicated by the individual class.

**ENGL-112 & 215**  
*Children’s Literature I & II*  
To learn about and evaluate the variety of children’s literature and what its effect is on the child. Appropriate methods for presentation to the child. Other story-telling media such as television and film will be analyzed.

**ENGL-201, 401**  
*Report Writing*  
This course emphasizes formal report writing and oral presentation of technical information. Additional topics covered: illustrating reports; instruction and description writing; letter of application; employment interview. Prerequisite ENGL-101.

**ENGL-202**  
*Report Writing*  
A program similar to ENGL-201, but includes an additional 20 hours of industrial psychology. Prerequisite ENGL-101.

**ENGL-203**  
*Communication*  
The emphasis is on improving written and oral communication skills required in an industrial environment. Topics include writing instruction and information sheets, conducting technical briefings, giving oral instructions, interviewing, and writing letters of application. Prerequisite ENGL-101.

**ENGL-206**  
*Specifications and Reports*  
Communication topics emphasize formal report writing and oral presentation of technical information; also covers illustration of reports, letter of application, and employment interview. Specifications topics include interpretation of specifications and the preparation and writing of specifications, standard forms, requisitions, work orders, change orders, purchase orders, etc. Prerequisite ENGL-101.

**ENGL-207**  
*Contemporary Literature*  
Following up ENGL-106, this course will feature a study of the most important writing done since the Second World War. Such authors as Updike, Mailer, Barth, Baldwin and Cheever will figure prominently in the program. Prerequisite ENGL-106.

**ENGL-208**  
*Oral Communication* (40 hours)  
A program similar to that in ENGL-102, but taking 40 hours.

**ENGL-209**  
*Study Skills* (40 hours)  
A program similar to ENGL-108, but taking 40 hours.

**ENGL-211**  
*Written English Skills* (40 hours)  
A refresher course in the basics of grammar and composition. The student is given a rapid, practical review of the transition from word roots, through sentences and paragraphs, to full-length papers.

**ENGL-213**  
*Basic Business Communications*  
A 100 hour course in the fundamentals of effective communication in business. The written portion provides practice in the construction of typical business letters, memorandums, and short reports. The oral portion incorporates basic principles of effective speaking and applies them to situations such as interviewing, conferences, presentations of briefings, informal and formal speeches.

**ENGL-310**  
*Report Writing*  
This course examines in depth (40 hours) the total process of researching, preparing, writing and editing all types of business reports. Provision is made for oral presentations where business meetings and conference situations can be simulated.

**ENGL-413**  
*Business Communications*  
An advanced course in the effective use of language with special emphasis on the preparation, writing and editing of all types of business correspondence. A review of grammar and spelling is also incorporated.

**ENGL-501**  
*Communication for Trades* (20 hours)  
To provide the student with experience in areas of communication skills and to develop clarity of expression. Technical and related topics are considered material for written and oral communications. The course is tailored to fit the needs of the students and the requirements of the Advisory Boards.
ENGL-503  
**Communication** (40 hours)  
To provide the student with experience in communication skills and to develop clarity of expression, with an emphasis on written skills. Technical and related topics are used as vehicles for the practice of communication. The course is tailored to fit the needs of the students and the requirements of the Advisory Boards.

ENGL-507  
**Communication for Photo-technicians** (40 hours)  
This course is designed to teach and develop a facility with communications in the context of business and photography.

ENGL-613  
**Communications, Business writing.**  
Oral communication designed for increasing skills. Student is able to assess his own performance through video taping and playback on TV.

ENGL-614  
**Communications**  
Business writing, oral communication designed for increasing skills. Student is able to assess his own performance through video taping and playback on television.

ERIC-103  
**Basic Electrical Instruments**  
Units & prefixes; lab orientation; practical lab familiarization; care and use of instruments; theory and operation of DC meters - voltmeters, ammeters, ohmmeters, multimeters; loading effects; DC bridges; Basic AC meters; AC bridges and impedance measurements. Corequisite ERIC-107.

ERIC-107  
**Electric Circuits**  
Ohm's law; power and energy; series and parallel circuits; series-parallel circuits; DC network analysis; Introduction to AC concepts; impedance; series and parallel AC circuits; series-parallel AC circuits; AC network analysis. Prerequisite MATH-102.

ERIC-108  
**Electrical/Electronic Drafting**  
Techniques and lettering; pictorials; design symbols; production drawings; block diagrams, schematics; industrial control drawings; major project.

ERIC-205  
**Electrical Layout & Design**  
This course covers domestic, industrial, power diagrams and blueprint reading, design practices, graphs & charts, parts and specifications. Prerequisite ERIC-105.

ERIC-206  
**Materials**  
A study of the electrical and mechanical properties of materials: conductors, insulators, electrical breakdown, basic metallurgy, corrosion, strength properties, specifications, selection and use of materials.

ERIC-209  
**Computational Techniques**  
Hands on use of a computer as a problem solving tool. Students use a PDP-8 multi-user, interactive conversational system. Assignments are given to reinforce the material covered in other courses through the judicious selection of examples and problem assignments. Prerequisite MATH-102, ERIC-211.

ERIC-210  
**Basic Electrical Instruments**  
VTVM's, basic power meters, Watt-meters, Varmeters, Phase meters power factor measurement, measurements in single phase and three phase circuits, DC and AC bridges and potentiometers, oscilloscopes. Prerequisite ERIC-103, Corequisite ERIC-211.

ERIC-211  
**Electrical Circuits**  
AC Network analysis; Power in AC circuits; resonance; magnetic circuits; transformers. Prerequisite ERIC-107, Corequisite MATH-202.

ERIC-304  
**Electrical Circuits**  
Circuit concepts are developed with the aid of mathematical tools to provide a more illuminating understanding of electrical networks and devices; matrix methods of analysis; application of the Laplace transform method to the solution
of transient problems; computer solutions. Balanced and unbalanced three phase circuits. Prerequisite ERIC-211, corequisite MATH-303.

ERIC-305
Electrical Machines
Fundamentals of the energy conversion process, simple AC generator, commutation, electrical and mechanical features of DC motors and generators. Introduction to the per unit concept for machines, Compound DC machines. Voltage and speed control; volt-ampere and torque-speed characteristics. Prerequisite ERIC-211, ERIC-210, MATH-102, RESC-103.

ERIC-306
Digital & Computer Control Techniques
Binary numbering system; logical algebra; logic operations; AND, OR, NOT, NAND, NOR; truth tables; static control system examples.
Computers in Control Systems - concept of a digital computer; characteristics of a real-time system; A/D and D/A conversion; Data acquisition, graphic display and computer control. Prerequisite MATH-202, ERIC-211, ERON-208.

ERIC-308
Industrial Electronics
A comprehensive course on electronic amplifiers which discusses preamplifiers, power amplifiers and operational amplifiers. The use of amplifiers is illustrated with specific applications from electrical technology. Prerequisite ERIC-211, ERON-208, ERIC-210.

ERIC-313
Electrical Measurements
Wave forms and AC meters - periodic wave-forms; form factor; rectifier instruments; thermocouple instruments; electrostatic voltmeter.
Power and Energy - Hall effect wattmeter; Thermal converter; polyphase power measurements; power factor meters; Instrument transformers-current transformers; potential transformers; standard burdens; accuracy classes; effect of C.T.'s and P.T.'s on metering. Prerequisite ERIC-210, Corequisite MATH-303, ERIC-304.

ERIC-317
Electrical Practices and Design
Underwriters, CSA, and Canadian Electric Code; resistance and wire tables; basic circuits and devices; overcurrent devices; conductor selection; grounding; wiring methods and materials; motor conductor sizing and control.
Electrical design and layouts; wiring in hazardous locations; auxiliary systems; main distribution design. Prerequisite MATH-102, ERIC-211, corequisite ERIC-205.

ERIC-405
Electrical Machines

ERIC-406
Control Systems
Computer control of industrial processes; programming and documentation; operation of the computer system; interfacing the computer to the control environment; program overlays; control algorithms; application examples. Prerequisites MATH-303, ERIC-304, ERIC-305.

ERIC-408
Industrial Electronics
Various rectifier and filter circuits for single and three phase; AC to DC and DC to AC conversion by means of SCR and saturable reactor circuits; SCR power control circuits with application to motor speed control and welder control; digital circuits; and discussion of several special devices. Prerequisite ERIC-305, ERIC-306, ERIC-308, ERIC-304, ERIC-209.

ERIC-412
Electrical Transmission and Measurements
Transformer concepts - equivalent circuits; polarity testing; exciting and inrush current; harmonics in three phase banks; parallel operation of transformers; auto transformers.
Transmission line topics: analog tele-
ERON-104

Basic Electronics
Safety; soldering techniques; physical characteristics of components; factors affecting resistance; temperature effects; wire tables; capacitors; types and color coding; tolerances; dielectric strength; wiring and fabrication techniques; vacuum tubes; diodes, triodes; basic amplifiers; biasing techniques. Corequisite ERIC-107.

ERON-204
Electronics
Amplification by vacuum tubes and transistors; amplifier circuits; oscillators; comparison measurement; operational amplifiers for measurement and control; electronic switching and counting circuits. Prerequisite ERON-104.

ERON-207
Electric Circuits
AC Network analysis; Power in AC circuits; Resonance; Magnetic circuits; Transformers. Prerequisite MATH-102, ERIC-107.

ERON-208
Basic Electronics
Semiconductor characteristics: transistor biasing; transistor circuit configurations; D.C. analysis; graphical analysis. Prerequisite MATH-102, ERIC-107, ERON-108.

ERON-209
Logic & Computations
Introduction to number systems, codes and Boolean Algebra. Computer logic and gates, counters and registers. Application of time-shared computer system to mathematical computations.

ERON-210
Basic Electronic Instruments
Application of basic test equipment including VTVM, oscilloscopes, AF and RF signal generators. Prerequisite ERIC-103, ERIC-107, MATH-102, ERON-108, Corequisite ERON-207.

ERON-211
Manufacturing Techniques

ERON-303
Electronic Circuits
Analysis of communication circuits using transform techniques. Prerequisite MATH-202, ERON-207, Corequisite MATH-302.

ERON-304
Electronic Devices
Semiconductor characteristics, amplifiers bias techniques, small signal equivalent circuit analysis, analysis of small signal amplifiers, power amplifiers. Cascade amplifiers, oscillator circuits. Prerequisite ERON-207, ERON-208.

ERON-306
Electronic Measurements
Electronic measuring instruments; AF, RF, and UHF measuring techniques. Prerequisite ERON-207, ERON-210.
ERON-307
Control Systems
Analog Control - system terminology and example, block diagram reduction, system equations, system components, frequency response analysis, stability criteria. Digital Control - logic gates, digital arithmetic, flip-flops, counters, shift registers, logic applications, system design problems.

ERON-311
Communication Theory
Resonant Circuits
RF Amplifiers
RF Oscillators
Amplitude Modulation
Frequency Modulation
Single Sideband
Pulse Modulation
Multiplex Transmissions
Prerequisite ERON-306.

ERON-403
Electronic Circuits and Fields
Transmission lines: parameters and equations; high frequency and applications of transmission lines; guided electromagnetic waves; selected types in microwave antennas and propagation. Prerequisite ERON-303, MATH-302.

ERON-404
Electronic Devices
Tunnel diodes, unijunction transistors, Silicon Controlled Rectifiers, Optoelectronic devices, linear integrated circuits, digital integrated circuit families. Prerequisite ERON-303, ERON-304.

ERON-405
Radio Systems

ERON-406
Microwave Systems
Functional and schematic diagrams of a RCA 3102 dual microwave system covering multiplex, receiver, transmitter, antenna feeders and branching networks. Microwave terminology, maintenance performance testing and evaluation of a systems. Prerequisite ERON-303, ERON-306.

ERON-407
Control Systems

ERON-408
Integrated Circuits
Monolithic and Film Technology, Linear Circuits (OP amps, Comparators, Voltage Regulator, Multipliers, modes). Digital Circuits (Flip-Flops, Counters, Shift Registers, Parity Checkers), Optical Display (7-segment, 5 x 7 matrix), A/D and D/A Converters, ROM, RAM, PROM circuits, MSI & LSI Circuits. Prerequisite ERON-309, ERON-304.

ERON-409
Electronic Projects
Inseslig-alion ol approved topic. Construction and testing of the system in consideration, followed by submission of a formal report. Prerequisite Complete Term 3.

ERON-410
Business Topics
Study in business management, financing, selling advertising and personnel.

ERON-412
T.V. Theory & Servicing

ERON-413
Audio Systems
Design of preamplifiers, power amplifiers, mixers and equalizers. Analysis of tuners, tape recorder, turntables, microphones, cartridges. Design of speakers and enclosures acoustics.

ERON-414
Manufacturing Techniques

ERON-415
Radar Systems
Subsystems - receiver, transmitter, an-
tenna: types of radar - search, tracking, fire control, early warning, weather, air traffic control. Design, testing of a specific application reception, noise, propagation, sensitivity, noise figure. Prerequisite ERON-303, ERON-306.

FOTO-100

Monochrome Materials and Processes

The manufacturing of black and white emulsions and the steps involved are covered in detail. The advantages of special coatings on modern day films and the quality control methods used as well as the optical and physical requirements of the film base are discussed. The latent image, the exposure mechanism of the silver halide grain, and the brightness range of emulsions also are included. The skills needed to operate various instruments in order to obtain data for plotting, graphing, and interpreting the densitometric characteristics of the modern day black and white films are gained.

FOTO-101

Principles of Light and Optics

The student examines light as applied to photography. Basic light principles are studied, these being applied to image formation by the lens. The study of the lens, and derivative lens types, the application of the diaphragm, and geometric optics, introduce optical calculations. Angle of view and perspective are followed by a study of lens aberrations, and specialty lens types. Distortion in the image is examined with a series of practical assignments in the commercial, portrait, and architectural areas. The function of lenses in the enlarger applies optics at the printing stage.

FOTO-102, FOTO-202

Related Sciences (Physics)

Properties of matter, definitions of units of measurement: Metric, British, U.S. weights and measures.


Related Sciences (Chemistry)


FOTO-105

Camera Design & Application

Examination of the features of camera design as applied to the various formats available to the professional photographer; sheet, roll and miniature formats are explored in depth. Included are lens and film interchangeability, shutter speed and aperture considerations, camera movements and factors governing format, lens and material selection for specific assignments.

FOTO-106

Laboratory Techniques - Film Processing and Retouching

The theory and practice of film processing and negative evaluation are accompanied by photographic chemistry. The important area of negative problems and faults, enable the student to recognise the needs for retouching as a remedial or enhancement technique. Negative treatment in the form of reduction, intensification, dye, lead, knitting, and brush techniques are thoroughly practised. Particular stress is laid on quality control in the finished product.

FOTO-107

Laboratory Techniques - Printing and Presentation

Practical experience in the production of photographic prints by contact and projection using a variety of equipment and methods. Included is experience in all formats (35mm, roll and sheet film), paper types and application for control of mood, print control methods, and specialized techniques (e.g. toning, multiple printing, print matching, etc.) Mounting and presentation methods will also be explored.

FOTO-108

Basic Studio Techniques

A practical course in the use of various cameras, lighting and material to fulfil specific assignment requirements. Included is experience in the use of all camera formats, basic lighting for form, texture and separation, flood and spotlight tungsten illumination, manipulation of mood and tone by light and filters, and copying of line and tone originals.

FOTO-200

Colour Photography Materials and Processes

The theory of the Integral Tri-Pack processes of negative and positive materials are dealt with extensively. Types of modern colour materials, storage and care of colour materials is covered. The
colour temperature and balance of light sources is explored. Colour negative assessment and the importance of quality control is stressed.

FOTO-201
Historical and Experimental Processes
A lecture course exploring the development of photography from its earliest beginnings to the present with special emphasis placed on the processes and techniques and their foremost practitioners. Areas of exploration include daguerreotype, calotype, collodion, tintype, and dry plate processes; and the experimental techniques of solarization, posterization, multiple images, collage and negative images.

FOTO-203
Related Business Studies
This subject deals with basic business practices and concepts. On completion of this subject, the student should be more effective in his role as either a proprietor of a small business or in his contribution to successful operation of a company or business.

FOTO-204
Graphic Arts

FOTO-205
Advanced Large Format Techniques
The technical camera is applied to technical and commercial problems. The uses of swings and tilts are examined in relationship to everyday problems in the studio, workshop, and outdoors. Application of the camera to advertising and commercial photography enable the student to obtain a well rounded approach to problems in these areas.

FOTO-206
Advanced Small Format Techniques
A practical examination of the specialized techniques for handling, processing and printing roll and 35mm films for maximum possible quality. Particular emphasis is placed on the problem of accurate exposure as related to the sensitometric characteristics of the material in relation to H & D curves for the material. Special purpose developer characteristics in terms of acutance, grain structure, and tonal range as applied to various commonly used negative emulsion constitute the major area of practical work.

FOTO-207
Negative-Positive Colour Techniques
The practical experiences of using the highly sophisticated equipment for processing and printing the colour negative. The highest standards of technical excellence are stressed in the mechanics of processing and printing to produce professional quality prints. These areas are covered by demonstration-lecture, and much practical application.

FOTO-208
Transparency Colour Techniques
The processing of transparency materials, 35mm, roll film and 4 x 5 sheet film are covered. The differences between E-3 and E-4 chemistry and special handling for over or under exposure of film are covered. With the use of the electronic densitometer, quality control of these processes is maintained. Techniques in making black and white internegatives from colour transparencies and methods of mounting and presentation of slides and slide shows is also explored.

FOTO-209
Photographic Display and Presentation (Portfolio)
Techniques of public display for photo studios and galleries and advanced mounting and matting constitute the major portion of this course. The production of a professional-type portfolio to be used for job interviews and which displays the student's competence is the practical assignment.

FRIG-101
Safety and Fundamentals
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.

FRIG-102
Basic Refrigeration Systems
The refrigeration cycle. Compressors, condensers, refrigerant metering devices, evaporators, refrigerants, oils, temperature controls, charging and testing systems.
FRIG-103
Commercial Systems
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.

FRIG-104
Calculations
Compressor capacities, speed ratios, evaporator capacity, pipe sizing and component selection.

FRIG-105
Basic Air Conditioning Systems
Direct expansion, water chiller, single, multiple, air and its properties. Types of compressors used. Fans, filters, and air distribution systems.

FRIG-106
Refrigeration Electrical
Electrical circuits, magnetism, motors, relays, controls and control systems. Electrical code as pertaining to refrigeration equipment.

GART-100
English
Vocabulary development; spelling; punctuation; review of grammar and composition; word-division and proof-reading.

GART-101
Typewriting
This course is designed to provide the Graphic Arts student with basic skill in touch typewriting, and an understanding of its application in the preparation of copy for offset reproduction.

GART-103
Design and Layout
Principles of design, balance form and proportion. Introduction into the use of black/white and color in design and layout. An investigation into the use of various type styles. Creative use of typography, exploring its potential in communications design. The production of finished working layouts as applied to newspapers and print.

GART-104
Hand Composition
Cycle of basic typesetting operations; principles and practices in composition; machines in the composing room; general mechanical principles in machine-casting type and materials; accessory mechanisms for typesetting machines.

GART-105
Machine Composition
Principles in slug-cast composition; the variables for different kinds of composition, straight matter composition, tabular composition; kinds and purposes of machine models; routine maintenance of machines and equipment; teletype-setter operation.

GART-106
Type Imposition
Forms of imposition - signature schemes; sheetwise; work and twist; work and turn; work and tumble, bleed forms; collating marks; problems of imposition; trim; margins; shingling.

GART-107
Platen and Cylinder Press
Mechanism of presses; make-ready; underlay; overlay; operating adjustments; anti-offset sprays; inks, characteristics of paper.

GART-108
Paste Make-up
Hot type conversion; cold type composition; layout and keylining; ruling; mechanical art; color break; proofing.

GART-109
Camera and Darkroom
Light and illumination; refraction and lenses; types of copy; densitometry; photo-materials and their properties; contacting; half-tones; introduction to color.

GART-110
Imposition & Platemaking
Imposition layouts; negative and positive stripping; screen tints; step and repeat forms; scribing negatives; chemistry of plate-making; types of press plates.

GART-111
Offset Press
Types of feeders; guides; grippers; insertion devices; printing impression unit; inking systems; delivery mechanism; lith-
GART-112  
**Bindery Operations**  
Specification of paper; cutting; folding; binding; basic bindery operations.

**HAIR-125**  
**Shop Department**  
An introduction to the physical and structural environment of the hairdressing department, emphasizing business management. It also stresses the hygienic standards expected within the beauty industry.

**HAIR-126**  
**Bacteriology, Sterilization, Sanitation.**  
A 35 hour course in the fundamentals and importance of practising hygienic standards in the beauty salon.

**HAIR-127**  
**Anatomy and Physiology**  
This area of the hairdressing program is comprised of 20 hours of theory. It is incorporated into the program to enable students to understand the structure and functions of the human body for proper application of cosmetic and hair treatments.

**HAIR-128**  
**Shampoos**  
Designed to prepare the students to meet the needs of general hair care. This course examines in depth (105 hours) the chemistry of hair, types of shampoos, purpose of shampoos, procedure of shampoos, and massage techniques.

**HAIR-129**  
**Hair and Scalp**  
A 70 hour study of the composition of hair and its growth enabling the student to analyze and treat individual needs. Topics include hair structure, chemistry, disorders and diseases, reconditioning treatments and scalp manipulations.

**HAIR-130**  
**Hairstyling**  
Hairstyling consists of 100 theory hours and 320 practical hours of training. It includes roller placement, blowaving, curling iron technique, fingerwavng, pin-curving, back-combing, backbrushing, face shapes, curvature design, wigs, hair-pieces, and competition styling. Emphasis is placed on the latest styling techniques and trends.

**HAIR-131**  
**Hairshaping**  
Hairshaping consists of 30 theory hours and 180 practical hours of training. It includes all the latest hair and wig cutting techniques.

**HAIR-132**  
**Cold Waving**  
A 140 hour course in all phases of chemically curling hair through exposure to the many types and techniques developed in this field. Topics include hair analysis, blocking, shampooing, wrapping, processing, testing, neutralizing.

**HAIR-133**  
**Manicuring**  
Basically, this course is designed to teach the fundamentals of manicuring. It consists of 70 hours emphasizing the nail structure, diseases and disorders of the nail, manicuring and pedicuring.

**HAIR-134**  
**Tinting and Bleaching**  
A program (175 hours) designed to give the student a thorough knowledge in haircoloring enabling him to utilize various products. Topics included are chemistry, effects of light, hair pigmentation, artificial hair coloring, bleaching and toners.

**HAIR-135**  
**Skin and Facials**  
This course examines in depth (70 hours) the skin, its diseases and disorders and various treatments.

**HAIR-137**  
**Personal Charm and Poise**  
This program is divided into 20 hours of theory and 25 hours of practical training. It includes skin care, make-up application, visual poise, wardrobe, planning, personality development and job success.

**IEPR-310**  
**Instrumentation and Controls**  
Basic instruments and their uses for measurement and indication of temperature, pressure, flow and speed; primary element, transformation and amplification of signals; indicators, recorders and controllers as applied to pneumatic, hydraulic, electrical and electronics con-
HEPR-311
Fluid Power
Introduction to oil hydraulics; principles of power hydraulics; hydraulic fluids; hydraulic piping and sealing, reservoirs and fluid conditioners; hydraulic actuators; directional controls; directional controls; servo valves; pressure controls; volume controls; pumps, accessories; and industrial hydraulic circuits. Prerequisite MATH-106, MECH-209.

HEPR-313
Heating and Ventilation
Introduction to and use of ASHRAE Guide and Data Book. Heat and change of state; heat transfer; properties of air psychrometry; psychrometric chart; comfort heating and cooling; air conditioning load analysis; load calculations; heating systems. Prerequisite MECH-104, HEPR-326.

HEPR-326
Thermodynamics
The study of the conversion of heat and energy; thermodynamic laws and processes; heat engines and their cycles; gases, vapors, and mixtures. Prerequisite MATH-206, MECH-209.

HEPR-327
Library Research
Supervised technical research with current periodicals. This includes work on air conditioning, refrigeration, machine design, I.C. engines, etc.

HEPR-407
Human Relations and Technical Report
The human relations portions involves case study for understanding people, selection and induction, training employees, developing and maintaining morale, effective communications, appraising employee performance, discipline and corrective action. The technical report portion is designed to make use of the technical theory and practice gained throughout the four terms. The data required for the compilation of a major technical report is to be obtained from work conducted on the shop equipment. Prerequisite ENGL-201.

HEPR-412
Mechanical Equipment for Buildings
A general study of the mechanical and electrical services for buildings. Valves and piping, plumbing, sprinkler systems, feed water treatment, pumps, fans, electrical controls and lighting. Prerequisite MECH-102, HEPR-310, HEPR-413.

HEPR-413
Heating and Ventilation
A continuation of Course HEPR-313 with air duct design; equipment selection; air conditioning systems; control systems; air distribution; hand tools in sheet metal; metal allowances; types of seams; dampers; grilles; fans. Prerequisite HEPR-313.

HEPR-414
Refrigeration
Simple refrigeration cycles; refrigerants and their properties; compressors; condensers; expansion valves; evaporators; auxiliary equipment. Prerequisite HEPR-326.

HEPR-415
Internal Combustion Engines
A course covering the operation of spark ignition and compression ignition engines including; engine components; air cycle approximation; fuel-air cycle approximation (using charts); actual engine cycle; engine friction; detonation; air capacity; carburetors. Prerequisite HEPR-326.

HEPR-421
Machine Design
A continuation of course MECH-321 for bearings; screw fastenings; springs; spur gears; helical gears. Prerequisite MECH-321.

HEPR-426
Thermodynamics
A continuation of course HEPR-326 including analysis of vapor and gas power cycles; performances of steam turbines; I.C. engines and steam generators; refrigeration; nozzle theory; introduction of heat transfer.

HOTL-102
Sanitation, Safety, Housekeeping.
A study of the fundamentals of good health, hygiene, sanitary food handling, food poisoning. Safety rules, legal regulations, fire prevention and first aid. Guest room care and maintenance linen

HOTL-103
Typewriting and Business Machines
Introductory basic typewriting to approximately 30 w.p.m. and the use of
general business office machines.

HOTL-104
Accounting and Introduction to Business
Double entry bookkeeping routines, special journals; subsidiary ledgers and control accounts; adjustments for the preparation of financial statements; financial statements for proprietorship and partnerships; inventories; accounting principles.

To acquaint the student with business vocabulary, business activity, ownership, organization, purchasing, production, marketing, finance, managerial problems, personnel problems, business regulation and taxation.

HOTL-105
Mathematics
Review of business Mathematics; basic arithmetical calculations; fractions; decimals; percentages; ratio and proportion; the metric system; weights and measures.

HOTL-107
Introduction to Business
To acquaint the student with business vocabulary, business activity, ownership, organization, purchasing, production, marketing, finance, managerial problems, business regulation and taxation.

HOTL-202
Building and Equipment Maintenance
Fundamentals of the physical environment; heating, air conditioning, lighting, acoustics, electrical systems, plumbing, fire prevention and protection, swimming pools, local by-laws; provincial and federal regulations. Contract maintenance, maintenance records, equipment preventive maintenance.

HOTL-203
Front Office Procedures
The organization of the front office, basic functions; materials; equipment and supplies. Techniques of handling registrations, and reservations for individuals and groups. Handling of cash and credit; sales and accounting records, telephone switchboard, and daily records and reports; practice with modern accounting and posting machines.

HOTL-204
Cost Controls
This course is an introduction to solving problems involved in cost controls for hospitality firms and institutions. Areas covered are financial statement prepara-

HOTL-206
Special Catering; Waitress Service
Basic principles for the organization and service requirements for receptions, buffets, luncheons and banquets. The principal types of waitress service; customer service and techniques; the attitudes and responsibilities, grooming and hygiene. Side Work. Wine service.

HOTL-301
Food Service Operations
This course examines individual types of food service operation; profit operations including hotels, motels, restaurants and catering companies; non-profit operations including industry and business staff feeding, and institutions such as hospitals, schools and others.

HOTL-303
Management Accounting
A study of accounting designed for management in hospitality firms and institutions. Departmentalization of beverage, food and room sales and costs; budgeting; branch accounts; control of accounts receivable and accounts payable. Hotel statistics. Prerequisite HOTL-204.

HOTL-305
Advertising and Marketing Research
The purpose of the course is to teach the student how to make the most effective use of marketing research available, research organizations and agencies. As well, students will perform market research and analysis projects and consider planning for relevant forms of sales promotion.

HOTL-308
Physical Facilities, Layout and Equipment
A basic study of commercial buildings; their design, layout, specifications as related to usage in the hospitality industry. Working drawings and blue print reading. Equipment and furnishings from the point of view of economy, design and practical requirements.
students in the materials management aspect of Hotel Restaurant Administration. It develops the techniques of planning, execution and control of all materials required in the hospitality industry. This would include purchasing, transportation, storage, requisitions and inventory control.

HOTL-310
Food and Beverage Service.
Planning menus, purchasing, preparing and serving complete meals and beverages using specialized facilities.

HOLT-311
Personnel
A study of work environment, motivation and morale, and their influence on productivity. An examination of procedures for employee recruitment, selection, placement, and training, job evaluation, merit rating, wage structure, and employee renumeration. Case studies allow the student to gain familiarity with contemporary programs, policies and procedures.

HOTL-401
Advanced Foods
The objective of this course is to enable the student to enrich his knowledge and skills in regard to the preparation and serving of foods including nutrition, convenience, and ethnic and gourmet foods, as well as to gain additional experience and ability in solving some of the problems encountered within the food service industry. Prerequisite HOTL-310.

HOTL-402
Specialty, Group and Resource Management.
This course is designed to provide the student with practical knowledge in managing various specialized operations in the hospitality industry.

HOTL-403
In-Service Training
As an option to HOTL-401 students may elect to take In-Service Training with various firms and institutions in the hospitality industry serving the community.

HOTL-404
Human Relations Hospitality Industry.
The objective of this course is to train the student to become proficient in various aspects of human relations and organizational effectiveness as these qualities pertain to the hospitality industry.

HOTL-312
Introduction to Computers
This course is an introduction to the basic concepts of punched card and electronic data processing. Punched card data processing includes input media, unit record devices and output media. Electronic data processing includes storage concepts and devices, data representation, flow chart and programming concepts.

HOTL-406
Other Elective
Students may elect another subject of their own choice with equivalent or more credit hours offered within the College provided suitable scheduling can be arranged.

HOTL-414
Food and Beverage Control
This course is designed to train students in the principles and techniques of purchasing food and beverage in quantity. The focus in the course is on selection and specification requirements for purchasing in the food service industry. Recognized purchase criteria is presented and examined and the student develops purchasing skills by applying this criteria in simulated purchasing situations.

HOTL-408
Seminar and Field Work
An opportunity to visit, observe, investigate and report on all types and sizes of food service operations. The seminar should allow the students to draw on information and knowledge acquired to date thereby integrating all the subjects in the program.

HOTL-409
Beverage Management
Introduction to beverage control in hotels, motel and restaurants. The purpose of this course is to present the basic principles and procedures of effective beverage cost control and sufficient information to enable the student to gain a firm understanding of these principles so he can adapt them to any beverage operation. This course has been limited to the essential principles and procedures of effective beverage control.
HOTL-413  
**Law and Public Relations**
Basic principles of law relating to contracts, negotiable instruments, partnerships, liens and evictions and bylaws together with special acts pertaining to the activities and operations of firms in the hospitality industry.

HOTL-411  
**Financial Management**
This course is designed to introduce the student in Hotel, Motel and Restaurant Management to the art of managing the investments and the sources of funds of the firm. This course emphasizes the dynamic funds flow approach to financial management.

HOTL-412  
**Public Relations & Promotion**
An introductory course designed to give the student an understanding and appreciation of the role of public relations and related promotion in the hospitality industry. Public Relations recognizes the mutual dependance of people and business, government and social organizations. Promotion deals with persuasive communication through selling, advertising, and sales promotion. Because of their essential relationship in the hospitality industry, this course examines the basic techniques and skills involved.

IATE-101  
**Drafting and Design**
Drafting and design is a course on how to draw. Drafting is approached as (1) a language whereby technical ideas and information are developed and communicated, and (2) as a means of solving technical problems. Course content will cover such areas as solving drafting problems, technical sketching, graphics — the geometry of technical drawing, design theory, development of ideas and product planning. In addition, problems and projects requiring knowledge in these areas will give the student controlled experiences in drafting practice and theory.

IATE-102  
**Metalwork**

IATE-103  
**Graphic Arts**
Exploring the processes and methods used in graphic communication. Areas studied relate to general layout, relief printing, gravure printing, screen printing, lithography, basic photography, and bookbinding as applied to the teaching of graphic arts related to industrial arts education.

IATE-104  
**Woodwork**
General woodwork processes and their application to industrial arts and education, use and care of woodworking tools and machines. Design, construction, and finishing of wood projects of instructional value. A study of industrial processing of wood products and production methods, wood technology, technical reports and field trips.

IATE-105  
**Methods of Teaching Industrial Subjects**

IATE-109  
**Communication Skills**
This course involves reading, writing, listening and speaking. The 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 theoretical and practical concepts, emphasis being placed on their application within the education structure.
IATE-112
Audio-Visual Education
Communication principles related to the application of audio-visual media to education. Audio-visual materials and equipment; their selection, preparation, utilization, and evaluation in industrial education.

IATE-201
Plastics
A study of the properties and uses of common plastics, including thermoplastic and thermosetting types. Industrial fabrication processes. Use of resins, fibre-glass and related materials in the construction of projects incorporating good design. Technical reports.

IATE-202
Electricity and Electronics
Study of the basic principles of electricity and electronics. Investigations of the generation of electricity, electrical circuits, transmission and utilization of electricity. Characteristics and applications of vacuum tubes, semi-conductors, transistors and electronic devices. Use of electrical tools, equipment, materials, and components.

IATE-203
Power Technology
The basic sources of energy, their transformation into useful power and application of this power to do useful work. Theory and application of internal and external combustion engines, turbines, reaction engines, direct energy converters as well as the basic principles of transmitting power by mechanical, fluid and electrical systems are investigated in a manner that is designed to provide the student with an over-all concept of energy, power and its application and control.

IATE-211
Course Construction 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.

IATE-212
Student Teaching
A period of student involvement in actual classroom practice. Student will be assigned to an experienced teacher in the public school to observe and participate in teaching activities. Informative lectures and conferences will be arranged to prepare, support, and evaluate the student in his student teaching period.
IATE-214
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.

INST-203
Basic Instrumentation
Basic Electronic measuring instrument theory including correct usage of V.T.V.M., T.V.M., oscilloscope. Basic pneumatic principles including nozzle flapper mechanism, relay amplification, force balance and motion balance mechanisms, applications of the same in indicators, transmitters, etc. Background and correct usage of related pneumatic test equipment. Precision, potentiometric measurement techniques. Prerequisite ERIC-103. Corequisite INST-207.

INST-204
Instrumentation Layout and Design
Graphic symbols plus Piping Systems, Industrial Electrical, Pneumatic control, Electronics, Hydraulics and control panels, printed circuit boards and blueprint reading. Standards will be used throughout. Prerequisite ERIC-108.

INST-207
Electric Circuits
AC circuit analysis, power in AC circuits; magnetism; transformers; charging and discharging of RC and RL circuits; 3 phase circuits. Prerequisite ERIC-107. Corequisite MATH-202.

INST-209
Computational Techniques
(Same as ERIC-209). Prerequisite MATH-102. Corequisite INST-207.

INST-301
Fluid Mechanics
Properties of fluids; conversion of units; physical properties of gases; manometers; buoyancy and flotation; fundamentals of fluid flow; fluid flow in pipes; properties of steam; head flow meters - orifice, venturi, flow nozzle; calculations for sizing head flow meters; variable area flow meters; meters for measuring differential pressure; turbine flow meter; magnetic flow meter; positive displacement meters. Prerequisite RESC-103, RESC-204.

INST-302
Process Measurements
Art and science of measurements - calibration, accuracy, errors, instrument flow plan symbols, control instrument mechanism, motion balance, force balance. Pressure measurement - mechanical pressure elements, strain gage pressure transducers, electrical pressure transducers, high vacuum measurement. Level measurement - float type mechanisms, force balance diaphragm systems, sonic level detectors, solids level detectors, density measurement. Prerequisite RESC-103, RESC-104, INST-203.

INST-305
Industrial Hydraulics
Hydraulic symbols; fluid power pumps and motors; hydraulic cylinders and rams; accumulators; reservoirs; filtration of hydraulic fluids; pressure control valves; flow control valves; directional control valves; electrical devices for hydraulic circuits; servo systems; industrial hydraulic circuits, pneumatics, electropneumatics relay logic, fluidics, fluidic devices (analog and digital), basic fluidic design, fluid control systems.

INST-306
Digital and Computer Control Techniques

INST-308
Electrical Practices
Single phase circuits, three phase circuits, loading techniques, conductors, insulation, wiring methods, fuses, breakers, grounding, motors, various connections, DC and AC motors, controllers, insulation specifications and testing. Prerequisite ERIC-203, ERIC-207, MATH-102.
INST-309
Industrial Electronics
A comprehensive course on electronic amplifiers which discusses preamplifiers, power amplifiers and operational amplifiers. An insight into amplifier operation is gained by discussion of several instrumentation measurement problems. Prerequisite INST-207, ERON-208.

INST-402
Process Measurement
Temperature measurement, theory and practice of thermocouples, theory of null balancing systems, theory and practice of resistance thermometry, theory and practice of thermistors, filled systems, radiation pyrometry, optical pyrometry, typical applications for temperature measurement and control. Moisture and humidity measurement, psychrometric properties of air, dry wet bulb humidity measurement. Industrial weighers, viscosity and consistency measurements, velocity and acceleration sensors. Prerequisite INST-302.

INST-403
Industrial Control Applications
Control valves, control valve bodies, plug characteristics, actuators, positioners, control valve sizing for fluid steam. Electrical power control systems, controllers, applications relating to pulp and paper processing, mineral processing, water treatment, turbo-compressor, surge controls, etc. Prerequisite INST-301, INST-302, corequisite INST-405.

INST-404
Chemical Instrumentation
Introduction to qualitative and quantitative measurements in analysis. Features of continuous analysis and control. Divisions of analysis, gravimetric, volumetric, optical and electrical. Physical properties useful in continuous analysis. Electrochemical; optical and X-ray; thermal and nuclear and radio-chemical methods. Instrumentation and application are introduced and studied in laboratory concurrently with the theory. Prerequisite RESC-203.

INST-405
Process Analysis
Control, criteria of good control, pneumatic control mechanisms, control modes, proportional, reset, rate, resistance, capacitance, dead time, self regulation, process characteristics, transient response, system frequencies, controller adjustments, cascade control, ratio control, selective control systems, feed forward control systems. Prerequisite MATH-305, corequisites INST-402, INST-403.

INST-406
Control Systems
Computer control of industrial processes, programming and documentation, operation of the computer system, interfacing the computer to the control environment, program overlays, control algorithms, application examples. Prerequisite MATH-305, INST-207, INST-209, INST-308, INST-309.

INST-409
Industrial Electronics
The following topics are discussed; DC power supplies; SCR control; oscillators; inverters; wave shaping; logic and counting circuits; electrical noise in circuits; transducers; electronic instruments and signal conditioners. Prerequisite INST-309, MATH-305.

IRON-109
Direct Current Fundamentals
Structure of the atom, conductors, insulators, electric charges, units of measurement, ohms law, circuit measurements and calculations, magnetism, capacity, inductance, time constants.

IRON-110
Alternating Current Fundamentals
Sine waves, frequency spectrum, reactance, impedance, calculations, resonance, phase relationships, practical considerations.

IRON-111
Test Equipment
VOM, VTVM, TVM, oscilloscopes, sine and square wave generators, tube and transistor testers.

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IRON-112
Transistors and Tubes
Tube structure, characteristics, operating parameters, semiconductor physics, alpha and beta gain, types of transistors, handling techniques.

IRON-113
Power Supplies
Transformer, half and full wave rectifiers, voltage doublers, bridge rectifiers, filters, voltage regulation.

IRON-114
Amplifiers
Configurations, coupling methods, stage gain, negative feedback, differential and operational amplifiers.

IRON-115
Oscillators, Multivibrators and Flip-Flops
Requirements, common types of RC and LC oscillators, sine-wave and square wave oscillators.

IRON-116
Introduction to Logic and Switching
Logic functions, logic symbology, diode and transistor switching and gate circuits.

IRON-201
Timing Fundamentals
Review of RC time constants and sine wave values.

IRON-202
Gaseous Electron Tubes
The process of ionization, comparison with vacuum tubes, DC applications, rectifier applications, glow discharge tubes.

IRON-203
Phasor Circuits
Resistance, capacitance, inductance, phasor analysis. Types of phase shift circuits.

IRON-204
Electron Tube Time Delay Circuits
Vacuum and gaseous tube grid control time delays.

IRON-205
Semiconductors
Basic theory and structure, junction diodes, transistors, circuit configurations. Other semiconductor devices.

IRON-206
Photosensitive Devices
Light sensitive materials. Phototube construction and operation, DC circuit applications.

IRON-207
Relays
Basic theory and types of relays, DC circuit applications, AC circuit applications. Time-delay circuits.

IRON-208
Motor Control Circuits
DC motors, thyatron motor control, SCR motor control, commercial units.

IRON-209
Pulse and Gating Circuits
Analysis of solid state circuits using discrete and integrated circuit components.

IRON-210
Closed Circuit Television
Applications, block diagram of vidicon camera and slave receiver, standards for CCTV, CCTV systems, sync and deflection generators, lens systems, switches, remote controls, monitors, slave receivers sound systems.

LIBR-102
Library Organization and Administration
An introduction to the various types of libraries and the services they provide. Library standards, federal and provincial library legislation. Approaches to the principles of management, supervision and personnel work in libraries, including the place of the library technician. Emphasis is on public libraries.

LIBR-103
Cataloguing and Classification
The basic methods used in cataloguing
and classifying library books. Students study the format and preparation of the catalogue card, including sample descriptive cataloguing. They are introduced to the Dewey Decimal Classification system, subject headings, authority files, and the filing of catalogue cards.

**LIBR-105**
**Library Techniques and Routines**
Students are introduced to library routines with special emphasis on circulation systems, shelf work, periodicals, inter-library loan work and processing.

**LIBR-106**
**Typing**
This course is designed to prepare the students with adequate typing skill to meet the needs and requirements of general library work, which would include typing of cards, book lists, bibliographies, business letters, and duplicating masters.

**LIBR-107**
**Acquisitions of Library Materials**

**LIBR-201**
**Cataloguing and Classification**
Introduction to various classification systems with emphasis on the Library of Congress system; the cataloguing of non-book materials; commercial and cooperative cataloguing schemes; automated cataloguing techniques.

**LIBR-203**
**Special Libraries**
A more detailed study of the organization, materials and services of government, business, university, school, children’s and young people’s libraries.

**LIBR-206**
**Business Practices**
The purpose of this course is to provide training on basic business procedures which will prepare the students to perform office duties in a library with a minimum of instruction and supervision.

**LIBR-207**
**Introduction to Data Processing**
A survey of concepts, terminology and techniques. Current and further applications of manual, mechanical and electronic data processing to library problems will be discussed.

**LIBR-209**
**Audio-Visual Equipment Operation**
Care, basic maintenance and operation of slide, film, filmstrip, overhead and opaque projectors, audio and video recorders, and microform readers. Ordering and management of A-V equipment.

**LIBR-210**
**Audio-Visual Materials Production**
Basic illustrating and lettering techniques, mounting and laminating techniques, slide, filmstrip and transparency production. Storyboard scripting. Introd. to T.V. and 8 mm production. Sources of commercial A-V materials.

**MARK-504**
**Marketing**
The modern marketing concept, consumers, products, channels, of distribution, promotion, pricing, implementation of concepts.

**MATH-102**
**Algebra and Trigonometry**
Fundamental concepts, functions, graphs and trigonometry functions. Determinants, factors, quadratic. Logarithms and exponents, j-operator trigonometry graphs, identities and equations. Straight line and circle.

**MATH-104**
**Mathematics**
Intermediate algebra, variation, exponents, logarithms and slide rule studies. A heavy emphasis on application in pseudo-industrial problem solving. Some graphical work is included.

**MATH-106**
**Algebra and Trigonometry**
Fundamental concepts, slide rule, functions, graphs and trigonometry functions. Determinants, factors, quadratic. Logarithms and exponents, trigonometry graphs, identities and equations. Straight line and circle.

**MATH-107**
**Algebra and Trigonometry**
Elementary statistics, errors and uncertainties in computations with measured values; elementary algebra, slide rule, logarithms, trigonometric relations and identities, vectors; equations solution methods, determinants, introduction to matrices, quadratic and higher order equations, straight line circle, parabola, ellipse, polar co-ordinates.
MATII-109  
**Algebra and Trigonometry**  
Right angled triangle, trigonometric functions, $0^\circ$ to $360^\circ$ and radians, exponents and logarithms. Linear equations, algebraic products and factoring, quadratics, roots of equations. Statistics, errors and confidence. Trigonometric identities, Straight line and circles.

MATII-202  
**Calculus**  
Differentiation of powers, products, sums, trigonometry functions, logs and exponentials. Slope, velocity, maxima and minima. Integration, definite and indefinite, area under a curve. Prerequisite MATII-102.

MATII-204  
**Mathematics**  
Plane trigonometry at a basic yet applied level to slide rule accuracy. Plane and solid geometry as it is applied to work-related problems. Prerequisite MATII-104.

MATII-206  
**Calculus**  
Algebra, algebraic and trigonometric equations; curve plotting; conic sections; differentiation and integration. Prerequisite MATII-106.

MATII-207  
**Calculus**  
Differential calculus and limited applications, maxima-minima, rates, related rates, differentiation of algebraic and transcendental functions, integral calculus with limited applications, definite integral, area under a curve, methods of integration, algebraic substitutions, integration by parts, partial fractions, and the introduction to logarithms using the desk top computer. Prerequisite MATII-107.

MATII-209  
**Calculus**  

MATII-210  
**Mathematics**  

MASN-101  
**Introduction, Materials and Tools**  
History of trade, employment conditions and opportunities, objectives of course, masonry materials, concrete, tools, scaffolds and modern power equipment.

MASN-102  
**Masonry Bonds**  
American, Common, English 1/2 and 3/4 bat; Flemish 1/4 and 3/4 bat; Dutch; English Cross; Flemish Cross; Monk; Garden Wall; All Rowlock.

MASN-103  
**Definitions**  
Trade terms; area; accelerators; acoustic; adobe; abrasives; aggregate; anchor; angle iron; D.P.C.; asphalt; attic; basement; back filling etc., (over 300 in all).

MASN-104  
**Walls**  
Wall types, layout out procedures, blueprint reading, anchoring methods, control joints, joint finishing.

MASN-105  
**Estimating**  
Quantities of bricks and concrete blocks and all materials required on specific projects, including concrete.

MASN-106  
**Practical Work**  
Slaking lime, gauging materials, mixing mortar, adding additives, mortar boards, handling brick trowel and hand tools; slicing mortar, furrowing (with hand; against hand; overhand). 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. Tooothing. Racking back. Blocking, placing corner line blocks, line pins, stretching line, sighting line, setting trigs (twig), tingle brick, setting brick to line, perpends plumb. Chases and indents, anchoring techniques, offsets, corbels, setting frames, striking joints, tooling joints, sills, copings, lintels, cleaning masonry, clean work habits taught.
MATH-302
Calculus

MATH-303
Calculus
Fourier series, basic Laplace Transforms, basic series, matrices. Use of numerical methods and computer series and basic power series. Prerequisite MATH-202.

MATH-305
Calculus

MATH-306
Calculus
Differential and integral calculus; rates of change, maxima and minima; curve tracing; arc lengths, areas, volumes, centroids, moments of inertia. Use of computers and computer languages, P101 (Desk top), PDP8 (Basic/Focal), IBM 360 (Fortran). Prerequisite MATH-202.

MATH-307
Calculus
Applications of the calculus to chemical problems, rates, min-max, inflection, approximations, uncertainty, areas by Simpson’s rule, volumes of revolution, work, heat capacity, partial differentiation and applications to thermodynamics, McLaurin, Taylor and Fourier series, introduction to differential equations, matrix algebra and basic Fortran programming. Prerequisite MATH-207.

MATH-308
Calculus
Fourier series, basic Laplace transforms, matrices, power series. Use of Numerical methods and computer languages. Prerequisite MATH-202.

MATH-309
Mathematics
Statistics: (descriptive and deductive) Frequency distributions, measures of central tendency, measures of dispersion, the standard deviation, standard variables, standard scores, probability theory, binomial, poisson and normal distributions, sampling theory, statistical decision theory, null hypotheses and significance, the chi-square test, correlation and regression.

Calculus: differentiation of transidental functions, integration of same integration methods: algebraic substitution, trigonometric substitution, integration by parts, expansion of functions in series, first order linear differential equations and their application. Prerequisite MATH-209.

MATH-310
Mathematics
Derivatives, slopes, rates, maxima. Definite and indefinite integration, area. Spherical triangles, right angled, Napier’s analogies, oblique types sine law, cosine laws. Latitude and longitude as spherical co-ordinates. Position lines. Area of the spherical triangle. Full use will be made of calculators and computers. Prerequisite MATH-210, SURV-209.

MATH-312
Calculus
Applications of the calculus to chemical and biochemical problems, min-max, inflection, approximations, uncertainty, areas by Simpson’s rule, work, heat capacity, partial differentiation, differential equations applications to kinetics and rate processes and basic Fortran programming. Prerequisite MATH-207.

MATH-402
Numerical Methods with Fortran
Fortran IV and Subroutines. Multiple integration, Partial differentiation and indeterminant forms. Introduction to and use of statistics, and other selected topics. Prerequisite MATII-302.

MATH-408
Numerical Methods with Fortran
Laplace transforms - waveforms; complex numbers, arc lengths, volumes, attraction, multiple integration. Boolean algebra and sets, convergence of series. Analogue computer, binary arithmetic. FORTRAN IV programming. Prerequisite MATH-308.

MATH-427
Statistics and Quality Control
Introduction to statistics as related to quality control; history, definition, statistical quality control training programs; frequency distributions, graphs of frequency distributions, the calculations of range, arithmetic mean, median, mode, variance, and standard deviation; probability distributions; the binomial distribution, the Poisson distribution, and the normal distribution; curve fitting; the method of least squares, inferences based on the least-squares estimators.
Probability: introduction, definitions of probability, the addition and multiplication theorems. Permutations and combinations. Prerequisite MATH-306, or equivalent.

MATH 501
Mathematics
Four basic operations with whole numbers, common fractions, and decimal fractions. Different types of percent calculations as they apply to consumer mathematics.

MATH 503
Mathematics
As in MATH 501 and additional work with denominate numbers; direct and inverse ratio and proportion and the rules for the four basic operations with signed numbers. Also additional work with area of plane figures, including the circle. Volume and capacity of rectangular or cylindrical containers; conversions between the British and the metric system.

MATH 504
Mathematics
As in MATH 503 and applications of the right triangle calculations to trade problems.

MATH 505
Mathematics
As in MATH 504 and calculations with the sine, cosine and tangent ratios of an angle in a right triangle.

MATH 507
Mathematics
As in MATH 503 and rules of equations, exponents and solving square roots. Calculations are done using scientific notation and applying a knowledge of significant figures.

MATH 508
Mathematics
As in MATH 504 and equations, special products and factoring.

MATH 509
Mathematics
Applied algebra, slide rule calculations, trigonometry, vectors, and logarithms as they apply to A.C. theory.

MATH 513
Mathematics
As in MATH 509, arithmetic, measured data, algebra, trigonometry, vectors, slide rule, binary and logic. Logarithms and decibels; loss and gain calculations and simultaneous equations applied to circuit analysis (Kirchhoff's Laws) and vector algebra applied to A.C. circuits (j-operator).

MATH 613
Mathematics
A.C. circuit calculations, logarithms and decibels, binary arithmetic, logic, Boolean algebra.

MEAT 101
Shop Management

MEAT 102
Butchery of Meats, Fish & Poultry

MDRA 101
Fundamentals of Delineation
Practice in the use of architectural and engineers scales, types of measurement, basic letter form, geometric and orthographic construction, sectioning and pictorial drawing.

MDRA 102
Applied Drafting
Geometric construction; multiview projection; auxiliary projection; sectioning; axonometrics; dimensioning and tolerances; fastening devices; gears and cams, projects shop drawings; mechanical systems layouts; welding and fabrication shop drawings; sheet metal layout; engineering graphics. Also included is:
1) the interpretation and application of simple structural steel frame design and detailing according to the C.I.S.C. practices.
2) the physics of elementary machine design applied to practical projects.

MDRA 103
Calculating Machine Operation
Practice in using the divisumma 24 calculator when making material takeoffs.

MSRA 101
Mechanical Systems
A study of mechanical systems, i.e., plumbing, heating and air conditioning, as are commonly designed for residential, commercial and industrial building projects.

Included in design and building code interpretation, material take-off and estimating, specification writing and production of related schematics and layout drawings.
MECH-102  
**Electrical Fundamentals**  
An introductory course dealing with the fundamentals of electricity, basic electrical units, batteries, principles of Direct Current, circuits, magnetism.

MECH-103  
**Manufacturing Processes**  
Shaping and planning, milling, broaching, boring, sawing, filing, grinding, measurement and inspection, machine shop practice, forming and time standards.

MECH-104  
**Mechanical Drafting**  
Principles of engineering drawing based on Canadian standards; lettering; instruments and their use; blueprint reading; geometrical drawing; pictorial representation; orthographic projections; sectional views, auxiliary views; isometric and other forms of pictorial drawings; dimensioning; special projects.

MECH-105  
**Applied Mechanics**  
Statics; force and vectors, resolution of forces, free body diagram, equilibrium, simple frames, laws of dry friction, first and second moments of area.

MECH-106  
**Management Methods**  
A general study of the procedures of industrial management; economic geography; business organization; finances of government; introduction to work study; contract law: analysis of bids; introduction to accounting; contracting practice.

MECH-107  
**Industrial Materials**  
A general and detailed study of the properties of the materials of industry, including water and steam, industrial gases, ceramic and organic materials, steels, non-ferrous metals.

MECH-205  
**Applied Mechanics**  
Dynamics; rectilinear and circular motion, force, motion and mass moment of inertia, work, energy and momentum, mechanisms. Prerequisite MECH-105, MATH-106.

MECH-206  
**Industrial Electronics**  
Fundamentals of electronics including such topics as; vacuum tubes, power supplies, amplifiers, oscillators, relays, timers, electronic measurement, fundamentals of electronic control. Prerequisite MECH-102, MATH-106.

MECH-207  
**Production Welding**  
A study of the basic physics of the welding processes and influence of material properties on quality. The course emphasizes MIG, TIG, submerged arc, and resistance, welding methods, welding power supplies, the use of welding positioners, effects of different shielding gases, the effects of heat in the fusion zone, heat-treating, together with destructive and non-destructive testing methods, and metalurgical examination. Prerequisite MECH-107.

MECH-208  
**Stress Analysis**  
Poisson’s ratio, stress strain relationship; temperature stresses, pressure cylinders, torsion, welded joints, torque, shear and bending; simply supported beams, design of beams, columns, selection of suitable sections for beams and columns; tensile, fatigue, hardness, impact and experimental stress analysis. Prerequisite MECH-105, MECH-106.

MECH-209  
**Industrial Fluid Mechanics**  
Introductory concepts of fluid pressure, head, force, buoyancy, Bernoulli’s equation, offices, nozzle, hydro-dynamics, flow of fluid in pipes, Reynolds’ number, viscosity, fluids. Prerequisite MATH-106.

MECH-309  
**Work Study**  
Methods study, motion study, work sampling, work measurement, case studies, report writing, cost analysis, productivity, working conditions, network theory, project scheduling, job overlap, critical path, float, manpower allocation, schedule compression, advanced network techniques and project analysis. Prerequisite MECH-103, MATH-206.

MECH-321  
**Machine Design**  
Application of strength of materials to mechanical design; simple stress analysis; materials and their properties; variable loads and stress concentrations; couplings; brakes. Prerequisite MATH-206, MECH-205, MECH-208, MECH-104.
MECH-105
Automation
A course of study in the design of low-cost automation systems and simple logic devices using electrical, pneumatic, fluidic, and hydraulic components. The integration of material handling components into such systems is included, such as conveyors, sensors, feeders, and orienters. Prerequisite MECH-102, MECH-104, MECH-209.

MECH-407
Technical Research & Report
This course is designed to make use of the technical theory and practice gained throughout the four terms. The data required for the compilation of a major technical report is to be obtained from work conducted on the ship equipment. Prerequisite ENGL-201.

MEDL-101 & MEDL-201
Anatomy and Physiology
General knowledge of the anatomy and physiology of the body with special reference to the following: cell theory, transport mechanisms, circulatory system, digestive system, nervous system, excretory system (skin, respiratory and urinary systems), reproductive system and endocrine system.

MEDL-102 & MEDL-202
Clinical Microbiology and Immunology
Principles and practice of aseptic techniques; the isolation and identification of common bacteria, parasites and fungi. Preparation of stains, media and the operation of equipment used. Basic principles of immunology.

MEDL-103 & MEDL-203
Clinical Chemistry
Biochemical analyses of blood and other biological fluids related to diseases, e.g. kidney function and liver function tests, enzyme studies, body fluid electrolyte balance studies. Basic instrumentation - photoelectric colorimeters, spectrophotometers, autoanalyzer, flame photometer, pH meters, micropigosimeter, and analytical balances.

MEDL-104 & MEDL-204
Haematology
The science of the blood, its nature, functions and diseases. Origin, development and nomenclature of blood and marrow cells. Blood collection procedures; principles and techniques of blood examinations; blood coagulation; disorders of hemorrhage; recognition of blood disorders such as anemias and leukemias.

MEDL-105 & MEDL-205
Histology
Preparation of solutions and stains; basic principles of fixation, dehydration, clearing and embedding of tissue. Procedures for cutting and staining paraffin sections. Special staining procedures for connective tissue, elastic fibres, fat, microorganisms and haemosiderin.

MEDL-106 & MEDL-206
Blood Bank Serology

MEDR-109
Anatomy and Physiology
Classification of bones. Bone description of upper extremity - shoulder, arm, forearm, wrist, and hand; lower extremity - thigh, leg, foot, pelvic girdle; vertebrae, cervical, thoracic lumbar, sacral, coccygeal; ribs and sternum; skull and facial bones. Description of digestive system and accessory organs; respiratory system; circulatory system; genitourinary system; lymphatic system; nervous system; endocrine system. Short discussion of pathology most often occurring in each area.

MEDR-110
Radiographic Positioning

MEDR-111
Radiation Physics, Radiobiology and Protection
Discussion of electromagnetic spectrum x-rays, scattered radiation, detection of x-radiation, units of quantity, quality of x-ray beam. Absorption of radiation factors affecting

MEDR-112
Apparatus and Accessory Equipment
Distribution of electric power transformers, types of rectification, x-ray tube, history and development, focal spot size and cooling charts. Instruments for control of time, K.V.P. and M.A., grids, diaphragms, cones and collimators, viewing devices, filters, spot film devices, stereoscopy image amplification, photo fluorography, body section radiography.

MEDR-113
Basic Sciences
a) Physics of Electricity and Magnetism
Elementary theory of magnets, magnetic fields, inverse square law, electrification by friction, properties of conductors and insulators, electromagnets. Elementary discussion of atomic theory of matter. Electric currents and circuits, Ohm's Law, electromagnets, ammeters, voltmeters, fuses and circuit breakers, measurement of electric power, principles of transformers.

b) Bacteriology Topics
Cells, bacterial viruses, disease, infection, body defences.

c) Pharmacology Topics
Definitions, therapeutic methods for drugs, weights and measures for drugs; administration, action, dose and toxicology.

d) Contrast Media
Basic principles, indications for use and contraindications, hazards. Requirement for a satisfactory medium. Classes of contrast media.

e) Emergency First Aid
St. John's Ambulance.

MEDR-114
Image Recording in Radiography

The four basic factors in photographic effect. Technical terms used to describe the quality of radiographs and how they may be varied. Conditions influencing variation in exposure technique, identification systems.

MREC-102
Mathematics, Data Processing and Medical Statistics
The fundamentals of arithmetic as applied to business calculations is introduced. This is correlated with a business machines program which familiarizes students with the rotary calculator and printing calculator. Also a brief overview of accounting including accounts receivable and payable, petty cash, handling of cheques, payroll, invoices and related documents as given. A short introduction to data processing correlated with hospital statistics (formulae) and computer application of data is studied.

MREC-103
Medical Terminology I
An introduction to the technical language of medical science through the study of prefixes, roots, stems, suffixes, and abbreviations.

MREC-104
Computer Application To Medical Statistics
An introduction to the principles of data processing and its application to medical statistics and the medical record as a source document.

MREC-106
Typewriting
A refresher course in typewriting - reviews keyboard, develops students typing skill on both straight copy and production work to 45 - 55 wpm. Reviews set-up of business letters, manuscripts, reports, tables and business forms.

MREC-109 and MREC-209
Anatomy and Physiology
Classification of bones. Bone description of: upper extremity - shoulder, arm, forearm, wrist, and hand; lower extremity - thigh, leg, foot, pelvic girdle; vertebrae, cervical; thoracic lumbar, sacral coccygeal, ribs and sternum; skull and facial bones. Description of digestive system and accessory organs, respiratory system, circulatory system, urogenital system, lymphatic system; nervous system; endocrine system. Short discussion of pathology most often occurring in each area.
MREC-201
Legal Aspects of Medical 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.

MREC-202
Medical Records Science II
This consists of the fundamental standards for a medical record; numbering and filing systems in use, admission and discharge procedures; purposes and contents of medical records, quantitative analysis of medical records, microfilming, retention and retrieval considerations. A practicum experience of two weeks in a medical records office is also included.

MREC-203
Medical Terminology II
This involves the study of specific diseases relevant to the systems of the body (disease definitions, signs and symptom, treatment).

MREC-204
Medical Coding
A course designed to develop knowledge of the systems of classifying diseases and operations with specific emphasis on International Classification of Diseases, Adapted (ICDA); Standard Nomenclature of Diseases and Operations (SNDO); Systematized Nomenclature of Pathology (SNOP); and Systematized Nomenclature of Medicine (SNO-MED); value and contents of indexes and registers; hospital statistics (formulas); computer application on medical data.

MREC-205
Business Organization and Management
An introduction to the principles necessary for the role of the supervisor in management with emphasis on the hospital setting.

MREC-206
Medical Transcription
This course is designed to develop skill in transcription of medical and surgical reports.

NURS-101
Basic Nursing
This course enables the student to obtain knowledge and to develop skills essential for nursing activities. Areas covered include: organization and care of the patient's environment; meeting the basic and special needs of the patient, admission, discharge; and death of the patient, diagnostic procedures, therapeutic measures, aseptic technique, charting and recording.

NURS-102
Anatomy and Physiology
A study of the normal structure and function of the human body from conception of senescence. Areas covered include a study of the following systems: skeletal, muscular, nervous, circulatory, respiratory, digestive, excretory, glandular, endocrine, special senses and the skin.

NURS-103
Medical and Surgical Nursing
This course helps the student to understand how disease and illness affect the human body; and how drugs, diet, treatment and nursing care are used to prevent and cure disease; and to alleviate suffering. A study of drug therapy and microbiology is also included. Other topics include the surgical patient, the geriatric patient, rehabilitation and emergency nursing care.

NURS-104
Personal and Vocational Relationships
This course assists the student to adjust to her personal and vocational environment. Topics include history of nursing, personal and vocational relationships and responsibilities, human behavior, the hospital, and community health.

NURS-105
Mother, Newborn and Child
A study of the bearing and rearing of children. Topics include human reproduction, pregnancy - normal and abnormal, post-natal period, full term newborn, premature infant, normal growth and development, safety, and nursing the ill child.

NUTR-507
Nutrition
An introductory study of normal nutrition and health and the preservation of nutrients as it pertains to most phases in the preparation of commercial foods.

OPER-101
Power Plant Theory and Practice
(a) Section 1 – Steam Generation
Acts and codes; types of boiler; boiler and furnace construction; heat transfer; theory of combustions; draft, fuels and firing equipment, boiler fittings; pipes and pipe fittings, pumps and injectors.

(b) Section 2 — Steam Use
Heat of steam; use of steam tables. Simple steam engines and pumps. Turbine theory; types, and operation; condensers.

(c) Section 3 — Shop Practice
Students will undertake a project involving use of hand tools and an introduction to the operation, capabilities and care of machine tools.

OPER-102
Electricity
Electron theory; Ohm's Law; magnetism and induction; D.C. circuits; parallel and series; Lenz's Law; D.C. measuring instruments; D.C. motors and generators; principles of A.C. current; impedance; power factor.

OPER-103
Instruments and Controls
Fundamentals of temperature; pressure and flow measurement. Control valves; semi-automatic and programming flame failure protection systems; flame rod and photo electrical cell types and applications; self-actuating controls for refrigeration systems.

OPER-108
Drafting and Blueprint Reading
The language of drafting; use and care of instruments; pictorial representation; views; dimensions and tolerances; sections.

OPER-111
Refrigeration
Theory of mechanical compression refrigeration, cycle of refrigeration, types and characteristics of refrigerants, use of tables, details of system components, basic controls.

OPER-201
Power Plant Theory and Practice
(a) Section 1 — Steam Generation
Feedwater systems, feedwater treatment; lubrication, corrosion; mechanical power transmission; fans and air compressors; plant operation; safety; log keeping; cost and efficiency calculations.
(b) Section 2 — Steam Use
Heating systems, return systems; traps and air venting; heat exchangers; heating in air-conditioning systems. Engine management, operation and maintenance.
(c) Section 3 — Shop Practice
Additional operation with hand and power tools and typical plant equipment.

OPER-202
Electricity
Single and polyphase circuits. A.C. transformers, motors and generators; A.C. measuring instruments; switches, circuit breakers, motor starters. Preventive and running maintenance of plant electrical equipment; code; elementary electronics.

OPER-203
Instruments and Controls
Theory of on-off, proportional, reset, rate and floating control. Typical pneumatic and electrical boiler combustion control system; automatic draft regulation; electrical controls for refrigeration and air-conditioning systems.

OPER-208
Drafting
Shop sketching; orthographic, oblique and isometric sketching and drawing practice. Electrical and pipe-fitting symbols and layout drawings.

OPER-210
Welding
Students will be introduced to oxy-acetylene. The capabilities and the safe operation and proper care of welding equipment.

OPER-211
Refrigeration
Operation and maintenance of direct and indirect systems. Trouble shooting on basic systems. Theory of air conditioning, basic controls. The absorption system.

OSPR-506
Office Systems and Procedures
This course provides an introduction to various legal forms of business, government regulations and taxation, management and motivation of personnel, labour management relations and marketing in our economy.

PDEC-101
Introduction Safety, Study and History of Trade
Objective is to familiarize student with requirements for in-school training, conduct on job, and short history of trade.
I'DEC-102  
Basic Components of Paint  
Pigments, extenders, vehicles, binders, thickeners, driers, formulas.

I'DEC-103  
Preparation and Application of Coatings Interior - Exterior  
Prime coats, undercoats, finish coats.

I'DEC-104  
Tools, Equipment and Safety  
Care of brushes, rollers, spray equipment, ladders, trestles and scaffolds.

I'DEC-105  
Re-Painted Surfaces  
Plaster, wood, concrete, brick.

I'DEC-106  
Paint Failures, Causes, and Remedies  
Plaster surfaces, stone board, concrete, brick.

I'DEC-107  
Wood Finishing  
Hard wood, open grain, hard wood close grain, soft woods, oil stains, spirit stains, water stains, chemical stains.

I'DEC-108  
Basic Color Theory and Mixing  
Systems of color study, color pigments, classification of color pigments, color preparation, color retention, psychological effects and color styling.

I'DEC-109  
Paper Hanging and Wall Coverings  
Preparing surfaces, sizes, cutting and pasting, hanging, stair wells.

PLUM-101  
Introduction to Plumbing  
Type of work, tools, materials, equipment, safety.

PLUM-102  
Piping  
Cast iron, galvanized iron, copper, lead, plastic, glass, uses of each, methods of assembling, supporting, handling, storing, and types of tools used with each.

PLUM-103  
Regulations, Project Installations  
Interpretation of plumbing code, sizing of sewers, drains, stacks, vents, etc., drawing layouts and constructing actual installations from layouts and blueprints to simulate projects in industry and adhering to code regulations.

PLUM-104  
Sheet Lead  
Weights, methods of flashing roof terminals, making lead trays, lead burning and lead soldering.

PLUM-105  
Torches  
Gasoline, propane, acetylene and natural gas, repairing, storing, and safety precautions to be adhered at all times in handling same.

PLUM-106  
Pumps  
Types, sizing, installing and making minor repairs.

PLUM-107  
Builder’s Level  
Setting up, determining bench mark, elevations and grades.

PLUM-108  
Rigging and Signalling  
Types of knots used in hoisting materials, types of signals used in hoisting.

PROD-302  
Metallurgy  
Mechanical and non-destructive tests, macro examination of metals, micro examinations, solidification of metals, phase diagrams and their interpretation, iron and carbon steel, heat treatment of steel, alloy steels, cast iron, light alloys, miscellaneous non-ferrous alloys, corrosion phenomena, high temperature alloys, metallurgical aspects of metal joining. Prerequisite MECI-1207.

PROD-312  
Non-Destructive Testing  
 Licensing of NDT technicians, flaws and their detection, zero defect programs, photography and its principles, ultrasonic flaw detection by longitudinal, shear, and surface waves, calibration of ultrasonic transducer shoes, dye penetrants and leak testing, magnanlux, eddy current testing, theory and practice of radiography with tube and gamma camera. Prerequisite MECH-107, MECH-206, RESC-303.

PROD-331  
Tool Design  
Elastic and plastic bending, design for deformation in tooling, residual and
fatigue stress, die sets, punches, dies, strippers and accessories for piercing, blanking, and bending, stock material layouts for presswork, presses, tolerances. Prerequisite MECH-103, MECH-104, MECH-107, MECH-205.

PROD-403
Advanced Manufacturing Processes
Induction heating methods and design of induction heating coils, machineability and the freecutting metals, tooling and production in single and multiple spindle automatic lathes, precision grinding, distortion and distortion control in heat treating, metal cleaning, finishing, and plating, programming for numerically controlled machine tools using work address and tab sequential tape formats and APR language, optical comparator methods and surface roughness recording and analysis. Prerequisite PROD-331, MECH-321.

PROD-411
Production Planning and Layout
The shop and office organization of job and production work in manufacturing, including the principals and procedures of paper systems, material handling, equipment, inventory management and procurement, process planning, estimating, scheduling, plant loading, dispatching, controlling, design of unit loads, shipping and receiving, transportation, work station design, general plant layout material flow, packaging, analysis, special handling problems, cost analysis, learning curves, Organization charts, linear programming, and economic lot sizes. Prerequisite MECH-103, MECH-305.

PROD-429
Accounting
Double entry bookkeeping, adjustment of trial balances, preparation of financial and manufacturing statements. Cost accounting records; material control, labour and overhead distribution; job order, process and standard costs. Mathematics applied to business problems. Basic principles of economics including economic aims, the theory of prices and production output by business firms under various degrees of competition.

PROD-430
Management Studies
A study of industrial marketing and human relations in industry, including communication, motivation and labour relations.

PROG-101
Data Processing Programming I
An introduction to the basic concepts of data processing; punch card data processing, input media, data presentation, input devices, and various processing and output devices; electronic data processing, storage concepts and devices, data representation, flow charting and programming concepts.

Introductory concepts and operation of computers will be given using an IBM/360. Programming will be introduced by means of the IBM Basic Assembler Language.

PROG-110
Data Processing Mathematics I
The application of mathematics to practical business problems dealing with: simple interest, compound interest, installment payments; annuities, sinking funds; depreciation and present values; evaluation of stocks and bonds; number systems; and review of algebra.

PROG-201
Data Processing Programming II
A continuation of PROG-101. More advanced programs using the standard instruction set in the Assembler language will be given. The COBOL language will be studied in depth and programming techniques will be further developed. Introductory tape and disk concepts will be studied. Prerequisite PROG-101.

PROG-210
Data Processing Mathematics II
Set theory, decision making, permutations and combinations, probability, descriptive statistics, statistical inference, central tendency, variance, standard scores, hypothesis testing, confidence intervals, correlation and regression.

PROG-301
Data Processing Programming III
A continuation of PROG-201. The programming languages FORTRAN and RPG will be studied. Problems will be studied. Problems utilizing pertinent features of these two languages will be solved. Prerequisite PROG-201.

PROG-304
Operating Systems
Topics covered include: job control, sort/merge programs, utility programs, various operating systems. Prerequisite PROG-201
PROC-305 Systems Analysis and Design
The analysis and design of computer systems including the following topics: feasibility studies, documentation and analysis of existing systems, output specification, forms design, run breakdown, file organization and selection, input design, systems controls. Examples of specific systems will be covered including: accounts receivable, accounts payable, payroll, sales order processing, sales reporting, wholesale inventory control, retail inventory control.

PROC-310 Data Processing Mathematics III
Relationships, graphing, linear programming, vectors and matrices, algorithm design, differential and integral calculus as applied to business problems.

PROC-403 Computer Topics and Modern Concepts
Other manufacturers, other languages, data communications, real-time systems, time-sharing. Prerequisite PROC-301.

PROC-404 EDP Organization
Includes the following topics: organization of a computer department, job descriptions and responsibilities in a computer department, project management, project selection, standards, documentation, training, conversion, feasibility studies and effects of computers on the business organization.

PROC-410 Data Processing Mathematics IV
Linear programming, Simplex method, transportation method, calculus topics, Monte Carlo simulation, critical path, queuing theory, finite differences.

PROC-411 Computer Topics and Modern Concepts
Other manufacturers, other languages, data communications, real-time systems, time-sharing. Prerequisite PROC-301.

PROC-412 EDP Organization
Development of management information systems. The organization of the computer department. Conversion problems. Specifications of systems; acquisition and utilization standards and documentation; feasibility. Prerequisite PROC-301.

RADO-101 D.C. and A.C. Fundamentals
Electron theory, ohms laws, magnetism, DC and AC theory, motors and generators, primary and secondary cells.

RADO-102 Tubes and Transistors
Fundamentals of vacuum tubes, transistors, resistive, capacitive inductive circuits. Rectification, power supply, amplification.

RADO-103 Oscillators
Crystal, TPTG, electron coupled, RF, AF; relaxation.

RADO-104 Receivers
TRF, superhet, bandspeading, tracking, alignment, simple fault finding, RF, IF and AF amplifiers, detection, filters.

RADO-105 Test Equipment
Volt-OMH-milliampmeters, vacuum tube voltmeters, cathode ray oscillographs, signal generators, (RF and AF).

RADO-106 Communication Receivers (Marine)
Superhet, double conversion, bandswitching, variable selectivity, circuit reading and analysis, simple fault finding, frequency modulation.

RADO-107 Communication Transmitters (Marine)
Oscillators, power amplifiers, modulators, keying, parasitics, circuit reading, power supplies, FM transmission, SSB transmission.

RADO-108 Programmed Senders (Auto Key)
Circuit reading, mechanical and electrical operation, relay and switching sequence, power supply, muting systems.

RADO-109 Automatic Alarm Systems (Radio)
Circuit reading, mechanical and electrical operation, relay and alarm sequence, power supply.

RADO-110 Direction Finding Systems
Circuit reading, operation, theory, antenna patterns, installation, bearing calculation, power supply.
RADO-111
Emergency Equipment (Marine)
Circuit reading, operation, installation, receivers and transmitters.

RADO-112
Antenna and Propagation Fundamentals
Radiation, dipole antenna, Marconi antenna, antenna matching, beam antenna, simple radiation patterns, ground wave, sky wave and direct wave propagation.

RADO-113
Morse Code (Receiving and Sending)
Instruction and practice to enable the student to send and receive the international morse code at a rate of 20 words per minute in plain language and 16 groups per minute in cipher.

RADO-114
Normal Traffic Procedure
Commercial Procedures (International) designed to ensure message traffic can be passed between transmitting and receiving stations of any nation.

RADO-115
Special Service Procedure
For procedure or administrative message traffic.

RADO-116
Toll Procedure
Calculations of message charges (tolls) which are internationally standardized.

RADO-117
Typing and Teletype
Typing with speed and accuracy necessary for messages and reports, teletype practice sufficient to ensure correct message transmission.

RADO-217
Typing and Teletype
Typing with speed and accuracy necessary for messages and reports, teletype practice sufficient to ensure correct message transmission. Required speed, 40 wpm.

RESC-103
Physics
Physical quantities, units and standards; basic principles of electricity and magnetism; kinematics, particle dynamics, notational kinematics and dynamics, conservation of energy, conservation of momentum.

RESC-105
Elementary Thermal Studies
Work, energy and power. Calorimetry, thermal expansion, conduction, radiation, convection. The basic laws of thermodynamics. A quantitative approach with applicational variety.

RESC-106
Chemistry

RESC-203
Modern Physics
Propagation and properties of EM waves; atomic and molecular structure, brand theory of solids, electric, magnetic and optical properties of materials; physics of semiconductor devices; detection and measurement of nuclear radiation. Prerequisite RESC-103.

RESC-204
Instrumentation Physics
Atomic and molecular structure; stoichiometric analysis; electro-chemistry; corrosion; elastic properties of solids and liquids; fluid mechanics; heat transfer; laws of thermodynamics, and detection and measurement of nuclear radiation. Prerequisite RESC-103.

RESC-205
Mechanics

RESC-206
Applied Chemistry
RESC-303

Physics
Light characteristics and measurement, illumination levels, introduction to lighting design, fiber optics and applications, strain analysis using photoelastic effect and optical holography. Physics of the solid state - quantum effects, atomic theory, x-radiation, structure of matter. Nuclear and nuclear energy - properties of nuclei, binding energy, fission reactions, fusion reactions, study and comparison of various nuclear reactor concepts. Radioactivity - radioactive decay, terminology, industrial applications, detection and measurement, biological effects of radiation. Topics in chemistry - review of basic concepts (chemical equations, reactions, meaning of pH), galvanic corrosion.

RESC-510

Science for Cooking and Baking
Measuring devices, temperature and heat, ovens and heat transfer, density, acids, alkalis, and salts, low temperature, fermentation of foods, analysis of water.

RESC-511

Science
Basic molecular theory, properties of matter, paints and their composition, abrasives, color theory and color mixing, woods - classification and structure, solvents, glues, electrical safety.

RESC-512

Science
Color and spectrum, textiles - natural and manufactured fibers, poly foam, upholstery springs, cleaning fluids, water, soaps and detergents, stains and stain removal.

RESC-513

Science
Matter and energy, heat - measurement, transfer, conversion and heat loss calculations, ventilation - measurement of air flow, pressure losses in duct systems, properties of air.

RESC-514

Science
Basic principles of matter, properties of oxygen and acetylene, mechanical properties of metals, ferrous metals, nonferrous metals, basic metallurgy, heat expansion and transmission, annealing, tempering.

RESC-515

Science
Corrosion, abrasives - materials, bands, and grinding wheels, the oxyacetylene welding process, color and spectrum - pigments and pigment mixing, paint and lacquer, cleaning fluids, basic D.C. electricity and electrical wiring, heat - expansion and conduction.

RESC-516

Science
Thermal expansion, basic metallurgy, friction, abrasives, mechanics - forces, stress, moments, work, power, metric system, electrical safety.

RESC-517

Science
A study of wood - growth and structure, seasoning, defects, preservatives, bending and laminating, timber fasteners and withdrawal resistance; simple machines; abrasives; adhesives and glue joints; insulation - types, heat loss, condensation, ventilation; concrete - manufacture, placing, characteristics, additives, testing; basic electrical safety.

RESC-518

Science
Basic definitions; weights and measures; simple machines; atmospheric and liquid pressures; pump systems and system design; water treatment; corrosion.

RESC-519

Science
Basic electricity; fluids in motion; simple machines; simple and compound gear trains, gear ratios; fluids at rest; friction and braking efficiency; basic concepts of matter; heat and thermal energy.

RESC-520

Science
Hydraulics; carbon steels and steel alloys; torque and work; simple machines; basic electricity; gasolines and other fuels; measurements in MKS and FPS force, and motion; gear systems; properties of matter; lubricants and greases; heat energy and temperature; venturi, Bernoulli's Principle.

RESC-521

Science
Definitions pertaining to matter, energy, heat and refrigeration; temperature and thermal expansion, heat transfer, calorimetry; properties of gases; psychrometrics; psychrometric process; the Mol-
lier diagram; basic transistor theory and servicing.

RESC-522  
**Science**
Definitions of work and power, matter, gas pressures and heat; units of measurement, friction and lubricants; abrasives and abrasive products; strength of materials; water, solutions, and water treatment; heat; gases; air and its properties; fluids; refrigeration; corrosion; basic semiconductor theory; plastics and ceramics.

RESC-523  
**Science**
Structure of matter; electrical conduction in solids; electrostatics; magnetism; electromagnetic effects; motors; machines; semi-conductors; PN junction; applications of the junction diode; heat; light.

RESC-525  
**Science**
Structure of matter, electrical conduction in solids, electrostatics, magnetism, electromagneticism, semi-conductors, diodes, transistors, SCR's, integrated circuits, electromagnetic spectrum, heat and light.

SALE-101  
**Basic Salesmanship**
The purpose of the course is to give the student a broad picture of the vocational field of selling then to prepare him for selling by studying: consumer behaviour; pricing and credit practices; importance of knowledge of company, products and competitors; advertising and other promotional aids including use of telephone and direct mail. Liberal use is made of class discussions on concepts, problems and cases; also visiting speakers and tours of local businesses.

SALE-102  
**“In-Business” Training**
The objective of the “In-Business” Training is to help the student identify an industry or company in which he would like to work and make him more familiar with the business environment generally. In order to accomplish this there are two aspects to the program. First, two hours are scheduled each week for tours, guest speakers, films, etc. Second, the student spends one full week with a business firm of his own choice. During this week he participates in the application of sales, marketing and management principles by observing the company's approach to marketing and management processes. The application of the various skills learned in the program takes place through the “In-Business” Training course. The communication skills, for example, are used in planning, organizing and making contact with business. The same skills are used continuously on the job, and finally in developing a comprehensive report on the “In-Business” progress.

SALE-103  
**Basic 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 controllable and uncontrollable factors considered in developing the marketing mix.

SALE-104  
**Consumer Behaviour**
This course provides an introduction to the complexity of human behaviour, particularly buying behaviour. Material for the course is drawn from social sciences: psychology, sociology, social psychology and economics. The insight provided by these subjects leads the student to a better understanding of consumer behaviour in the market place.

SALE-105  
**Accounting**
A study of basic accounting principles to enable the student to interpret and use the information contained in financial statements. Also, by developing an understanding of some basic accounting principles, the future salesman will be able to produce better source documents for accounting, credit and related planning and control functions.

SALE-106  
**Business Mathematics**
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.

SALE-107  
**Structure & Organization of Business**
A comparative study of ownership, organizations, capital structure, location, and work force of the various forms of
Sales Communications
This course is designed to develop the potential salesman's communication skills. The specific skills emphasized are speaking, listening, reading and writing. The environment for development of these skills is a sales/marketing setting. Special programs, designed to develop these skills through practice and repetition, are an integrated part of the course. Material from other subjects in the sales course is utilized in the form of marketing cases, business organization reports and letters, sales presentations, etc.

Advanced Salesmanship
This course builds on the foundation of course SALE-101 with a thorough study of the sales process including planning and delivering the sales presentation, demonstrating, handling objections, closing the sales and building goodwill for continued business. Finally, an introductory study of sales management is also pursued (i.e., planning and controlling sales efforts, and selection and training of salesmen). Liberal use is made of class discussion of concepts, problems and cases; and speakers and tours of local businesses of all types. Prerequisite SALE-101.

Advanced "In-Business" Training
The program of "In-Business" Training in Term 2 is designed to further familiarize the student with the business environment, and maximize his opportunity for identifying potential areas of employment. During the four hours scheduled on a weekly basis, more time is available for tours of business and industry, guest speakers, films and tapes, projects, etc. This leads up the one week on the job, with the focus during this week on the actual sales role and the practicing of the skills acquired. Skills learned in other courses again play an important part so the integration of the various skills as applied in selling is emphasized. Prerequisite SALE-102.

Marketing
A managerial approach to basic marketing, this course treats marketing as a total system of business action. The emphasis is on management of marketing.
more advanced level. The four skills of speaking, listening, reading and writing are again emphasized, but the programs have more depth with respect to both theory and practice. Special programs are used to develop skills through practice. The use of the communication skills is also incorporated in the related sales courses, such as role play selling, case studies and group discussions.

SECR-106 and SECR-201
Secretarial Procedures and Business Mathematics
This course covers the application of mathematics to practical business problems dealing with simple interest, compound interest, installment payment, annuities, sinking funds, depreciation, evaluation of stocks and bonds etc. General office procedures portion of the course gives the student an indepth study of the role of an administrative secretary and how a business office functions. Topics covered are: public relations, mailing procedures, keeping diaries and calendars, filing systems, equipment and supplies.

SECR-102
Typewriting
This course is designed to provide an intensive course in touch typewriting skill with an elementary understanding of business correspondence, manuscripts, tabulation, and business forms. The desired goal is 45 wpm.

SECR-103
Basic Shorthand
This course covers the theory of Programme 21 shorthand (a Pitmanic shorthand system). Ninety percent accuracy in writing is required to pass this course.

SECR-104
Introduction to Business
To acquaint the student with business vocabulary, business activity, ownership, organization, purchasing, production, marketing, finance, managerial problems, personnel problems, business regulation, and taxation.

SECR-105
Statistics
An elementary study of statistics including statistical methods; nature and interpretation of data; measures of location and variation; index numbers; statistical investigation; sampling; tabular and graphic presentations.

SECR-202
Intermediate Typewriting
This course is designed to further students’ typewriting skills both on straight copy and production work. Speed goal is 50 - 55 wpm with three errors or less.

SECR-203
Shorthand Transcription
This course reviews the theory of Programme 21 shorthand covered in SECR-103 and develops speed in writing shorthand to 100 wpm on familiar material and 80 wpm on unfamiliar material. Typewritten transcription of shorthand notes is done at 15 - 20 wpm with 90 percent accuracy requirement.

SECR-301 & 401
Business Law
Summary of our laws of contract; guarantee and suretyship; agency, master and servant, mortgages, mechanics’ liens; personal property; sale of goods; conditional sales; interest; bailment; limitation of actions; bills of exchange.

SECR-302 & 402
Advanced Typewriting
This course is designed to further increase speeds to a desired goal of at least 65 wpm with a high degree of accuracy. Production work is similar to that encountered at an executive secretarial level with great emphasis on students planning and carrying out assignments on their own. Eighty percent accuracy required to pass. Prerequisite SECR-202.

SECR-303 & 403
Advanced Shorthand and Transcription
This course is designed to increase dictation speed to at least 140 wpm on familiar material and 120 wpm on unfamiliar material. Ninety percent transcription accuracy is required to pass. Prerequisite SECR-203.

SECR-307
Personal Finance
The objective is to increase the student’s skill in administering her own financial affairs. It will do this by increasing her awareness of the alternatives available to satisfy particular financial goals. Individual library research will play an important part in the method of instruction. Topics of study include budgeting, insurance, pensions, mortgages, investments, wills.
Secretarial Science and Personal Development

The training of an efficient secretary, her role in human and public relations; office procedures, protocol and responsibilities; reminder systems and calendars; letters that the secretary writes; helping the employer with speeches (briefing articles, maintaining an information file); arranging meetings and conferences; using reference sources; making travel arrangements; typing reports; dictation to and transcription from dictation machines.

Medical Terminology

This course is comprised of spelling of medical terms, tracing the meaning and origin of medical terms, and transcription of medical dictation from tapes on Philips transcribing machines.

Legal Office Procedures

This course prepares the student to become a legal secretary by familiarizing the student with our legal system, with legal office practices and procedures. Students learn the basic principles to be followed in completing legal forms, the meaning of legal terms, the principles usually followed in carrying out various legal formalities.

Business Mathematics

The application of mathematics to practical business problems dealing with simple interest, compound interest, installment payments, annuities, sinking funds, depreciation and present values, evaluation of stocks and bonds.

Bench Work

Measuring devices, layout hand tools, fitting and assembling.

General Operation and Control of Machine Tools

Care and maintenance and basic operation of the lathe, drill, shaper, planer, milling machine, grinders, and power saws.

Measuring Devices

Metrology devices such as surface roughness (Brush) indicators, optical comparators, optical flats, etc., dial indicators, garage blocks.

Power Saws

Contour sawing, band filing and band polishing, saw band welding, internal and external sawing.

Lathe Operation

Screw thread standards, calculating change gears, multiple thread cutting turret lathes and automatics, operating the geared head lathe.

Milling Machine Operation

Generation of contours, milling of special shapes, production of internal diameters, gear generation, gear formula, cam generation direct, plain and differential indexing, spiral milling.

Horizontal Boring Mills

Work holding methods, facing, drilling and reaming techniques, boring and threading practice, measuring devices.

Grinding Machine Operation

Belt grinding, honing machines, surface grinding, cylindrical grinding, cutter grinding.

Heat Treatment

Metallurgical physics, general procedures and equipment, hardening and tempering practice, surface hardening practice, annealing practice, techniques of hardness testing.

Machine Shop

Basic machine shop practice and theory on layout, bench work, hand tools, measuring tools, drill sizing and grinding, thread terminology, standards and forming as related to the trade.

Sheet Metal Hand Tools

Teaching lessons on recognition, use, care and adjustment of the many hand tools of the trade; practice to acquire skill in the use of these, and a clear understanding of where-to and where-not-to apply the tool use. Respect for one's own tools of the trade.
SMET-102
Hand Operated Sheet Metal Machines
There are many bench and floor machines falling in this category - they permit the many steps in the product. The student will be taught how to properly operate them, care for them, adjust them, to recognize their limitations if any, and to understand the many operations of each which will enable him to become proficient as a skilled mechanic.

SMET-103
Power Hand Tools
Advancing technology necessitates the continual addition of hand-held power tools; it is vitally important that the new mechanic understand thoroughly the advantages of these, and the definite need to be proficient in their use. Power cutting, nibbling, hammering, riveting, drilling, spot welding, are a few of the techniques to be mastered. The care and safety which must be exercised; the setting and adjusting, and various power supplies available will be thoroughly covered in this course.

SMET-104
Power Operated Machines
Like power hand equipment, power machinery is an essential part of today’s sheet metal practice. Recognition, use, care, adjustment, operation and other techniques applying to such machines as the hydraulic press brake, air operated gap shear, mass production metal cutting band saw, drill press, power operated punch, and etc. These machines encompass the practices of cutting, bending, forming, drilling and punching - all necessary skills required by the competent sheet metal mechanic. Well chosen projects fabricated throughout the duration of the course necessitate the repetitive and safe use of these machines, and all tools of the trade.

SMET-105
Sheet Metal Sciences and Techniques
In the early weeks of the course, the student will receive lectures and practice on linear measure and scale reading; micrometer reading; standard gauge practices; metals, (their coatings, properties, ductility strength, selection, storage); use of the protractor; figuring mitre rise; locks, seams and edges; riveting and other fasteners; soldering science, practice, selection of equipment, various fluxes; safety practices involved with all.

SMET-106
Soldering
An art still necessary for the skilled sheet metal worker. Recognition and reason for the several soldering copper shapes, the reason for these shapes; how to properly clean and tin the various faces; as well as knowing when it is necessary to tin only one or two faces. The practice of horizontal top side, horizontal under side and vertical soldering coupled with the knowledge of sweat soldering, button and stitch soldering. Recognition and uses of various fluxes and to what metals each one applies.

SMET-107
Pattern Development
An extremely important part of a skilled sheet metal mechanics’ talent. The subject is thoroughly covered through all phases; simple layout; parallel line development; radial line development; triangulation. During a large part of the course the student will be required to develop his own patterns and then to fabricate them in sheet metal - necessitating constant use of the drafting equipment, tools and machines.

SOSC-106 & 206
Self Understanding and Social Feeling
Sociology and psychology centered around the student understanding herself, why she may be this way, how she relates to others and how others relate to her. As much as possible the “whole” picture, with the student selecting and integrating viewpoints or interpretations best suited to her own needs.

SOSC-121
Human Behavior for Salesmen
A multidisciplinary approach to human behavior with particular focus on those aspects of behavior which are of primary interest to the salesman. Emphasis will be placed on social science techniques which can be used to solve sales problems. Some topics which will be dealt with in detail are human needs, power in social relations, attitude change, decision making, etc.

SOSC-131
Introduction to Social Sciences
The fundamentals of human behavior is examined on the basis of a multi-disciplinary approach, drawing relevant material from more than one of the social science disciplines. The objective of the course is to illustrate the roots of human
behavior from a psychosocial point of view. Topics include the self-concept, emotions, socialization, adaptive behavior, personality, frustration, conflict, motivation, maturation, role.

SOSC-221
Behavioral Science for Salesman
The objectives of this course will be to analyze the cultural and social factors which are critical to our contemporary society. The focus will be on those trends in the present which will provide a means of assessing future trends in Canadian society on both the macro and micro level. These forecast trends will be utilized to orient the student toward adapting to the accelerating changes inherent in our conglomerate society.

SOSC-231
Human Behavior in Organizations
The psychological principles and sociological concepts of human behavior in formal and informal organized groups. The emphasis of the course will be upon the main aspects of individual behavior and group behavior in the organized or purposeful group setting. Topics will include group relationships, types of groups, task orientation, group structure, communication, leadership, group performance, psychological climate, human needs in organizations, status, social roles.

SOSC-301
Exceptional Children
The description, reasons for, and treatment of exceptional children to prepare students to identify and refer them on the job. Particular attention to the emotionally disturbed child and working with a professional in choosing appropriate behavior to help the child.

SOSC-334
Political Science
The course will entail a general introduction to the processes and procedures of government at all levels, municipal, city, provincial, and national as they pertain to Canada. This will include an introduction to Canadian politics, authority, leadership, elites, ideologies. If time permits a special section will cover social movements and their influence on government policies. The emphasis will be on the Canadian scene.

SOSC-421
Exceptional Children
The description, reasons for, and treatment of exceptional children at a survey level to prepare students to identify and refer them when the students encounter exceptional children.

SOSC-431
Contemporary Issues in Canadian Society
The objective of this course is to gain insight into the most relevant or "critical" issues of contemporary Canadian society. Part of the instruction will be on a seminar-discussion basis and major topics will include issues of population, social environment, minority groups, biculturism, Canadian identity, justice, ecology, physical environment.

STNO-120
Shorthand Theory
Theory of Pitman shorthand; acquisition of basic principles of system; emphasis on accurate writing skill; speed-building on familiar and unfamiliar material from dictators and tape systems; ability to read and write with fluency.

STNO-122
Basic Typewriting
Topics studied are: parts of the typewriter, basic manipulation of the keyboard, horizontal and vertical centering, block and spread centering corrective techniques, ribbon changing, typewriter maintenance, skill building, block letters, semi-block letters, tables, one-page reports, enumerations, outlines, bibliography, correspondence and postal cards, envelopes, introduction to carbon copies, attention and subject lines, company signature, folding letters, inter-office memos, invoices, telegrams, rough drafts.

STNO-123 & 223
Business Communications
Study of the framework of effective communication involving grammar, sentence structure, punctuation, capitalization, abbreviations, the use of figures. Intensive study of vocabulary including the use of the dictionary, spelling and words in context.

Introduction to writing craftsmanship and the art of communicating in business; format of common business letters, reports, and minutes; composing various types of effective business letters, social business letters, and employment letters; writing research essays; the stenographer's responsibility for correspondence. Prerequisite STNO-123.
Basic Bookkeeping
A thorough working knowledge of double-entry bookkeeping; use of accounts; analyzing business transactions; recording changes in asset, liability and capital accounts of a proprietorship in the service industry; completion of accounting cycle, trial balance, classified financial statements and year-end closing procedures. Banking activities, preparation of cash proof, bank reconciliations; use and maintenance of petty cash book; processing cash receipts and cash payments with journals; payrolls with deductions.

Business Mathematics
The fundamentals of arithmetic as applied to business calculations; aliquot parts; percentage; trade discounts; retail selling; payroll, interest; bank discount; mathematics applied to business problems.

Shorthand Transcription
Review of the fundamentals of Pitman shorthand words, phrases and shortforms; speed building from oral dictation and the stenolab to develop accurate writing skills and high shorthand speeds; practice at transcribing varied correspondence on the typewriter within prescribed time limits; oriented to practical applications in the business community. Prerequisite STNO-120.

Intermediate Typewriting

Advanced Typewriting
Topics included are: two-page letters and memorandums, various stationeries and letterheads. Financial Statements: tables with leaders and letters with tables. Legal Documents: resolution, minutes of meetings, letters with carbon copies and blind carbon copies, filling of blanks on forms, complete bound manuscript, statistical typing, tables, interoffice memos, news releases, telegrams, tables, information tests. Prerequisite STNO-222.

Office Procedures
Duties and responsibilities of a secretary; development of grooming and good work habits through self-evaluation and self-improvement; the importance of good human relationships in the business office; sources of information; filing systems and procedures; modern communication systems; postal services; banking services; transportation of goods; purchasing and sales routines; travel arrangements; applying for work. Strong emphasis on practical work, including term projects, filing, and the opportunity to work in a Model Office, designed to promote active student participation and interest.

Machine Transcription
Transcribing pre-recorded material for manuscripts, letters, telegrams, interoffice memoranda.

Theory of Structures
Shear and bending moment diagrams for beams and frames, the three moment equation, truss analysis by the method of sections, approximate analysis of indeterminate structures, structural loads and procedures, fundamentals of moment distribution. Prerequisite CIVL-202, CIVL-205.

Timber Design and Formwork
Design of the individual components of buildings based on CSA standard 086 using the CITC handbook to include design of sawn timber beams, glulam beams, joists rafters, deck; design of simple sawn columns, single glulam columns, spliced columns, design of timber fasteners including connectors and bolts; plywood design including stressed skin panel, stiffened panels and plywood beams.

Design of formwork to consist of basic theory including load and pressures, design procedures from available tables. Complete design of wall forms, slab
forms, column forms, beam forms, shoring and scaffolding, and lateral bracing of forms. Prerequisite CIVL-205.

STRL-317
Soil Mechanics

STRL-406
Reinforced Concrete Design

STRL-410
Foundations
Stress distribution beneath loaded areas, bearing capacity evaluation; design of footings (square, rectangular, combined) and raft foundations. End bearing and friction pile design. Evaluation of lateral pressure, analysis of retaining walls, sheet piling and anchor block. Methods of dewatering excavations. Foundation layout. Prerequisite STRL-317.

STRL-412
Structural Steel Design
Design of the individual components of buildings based on CSA Standard 516, 1969 using the C.I.S.C handbooks; design of rolled tension members, built up tension members and sag rods axially loaded columns three plated welded columns, hollow structural sections, column base plates and columns subject to combined axial and bending stress, simple beams, continuous beams, plate girders, lintels, and beams subject to biaxial loading; bolted and welded building connections. Design procedures include both plastic and elastic methods where applicable. Prerequisite STRL-308.

STRL-414
Bridge Design
Bridge design consideration as based on A.A.S.H.O. specifications; hydrology, hydraulics and soil considerations; culvert design, selection and installation; reinforced concrete bridge, composite steel and concrete bridge, bridge surveys and inspection correlated with the design, detailing and drawing of plans for a complete bridge. Prerequisite CIVL-205.

STRL-415
Estimating
Pre-tendering investigation; specification, working and shop drawing interpretation; quantity take-off; direct and indirect costing, cost accounting cycles and keys.

Contract Management; analysis of actual to estimated costs; subtrade bidding & tendering practices.

Filing and information retrieval systems.

STRL-422
Design of Structures
Moment distribution for frames, sides-way, nonprismatic frames, and wind loads, applied design of building frames, use of computer programs, deflection in beams and frames, deflection methods of structural analysis, determinant arches, shear walls, influence line diagrams. Prerequisite STRL-308.

STRL-204
Theory of Instruments
A study of the propagation of light geometrical and physical optics - as related to applications in surveying.

A study of modern survey instruments, conventional and optical distance measuring - the tape, subtense bar, self-leveling levels, geodimeter, distomat, tachometer and the principle of static measurement. The field testing and adjustments of the dumpy level and the engineer's transit. Prerequisite CIVL-103, MAT11-109.

SURV-205
Drafting
Methods of plotting survey information
from field notes, the National Topographic Map System symbols, topographic maps. Determination of volumes of borrow pits, stockpiles and reservoirs with the polar planimeter and by pick and scale. Plotting profiles and cross-sections and determination of volumes. Plotting of preliminary and location plans for route surveys. Plan and profile of sewer and water facilities. Site plans for building construction. All plans and maps drafted on linen and India ink where applicable. Prerequisite CIVL-103, CIVL-106.

SURV-209
Computer Application

SURV-215
Survey Camp - 80 hours
The purpose of this field school is to acquaint the students with basic survey techniques and party-chief responsibilities.

The field work to include a closed traverse, a closed level circuit, the peg test, reciprocal leveling, angle by repetition and construction surveys.

Emphasis is on clear, neat, concise field notes. Prerequisites CIVL-203, SURV-204, MATH-109.

SURV-303
Advance Surveying
Hydrographic surveying, determination of shore line, obstruction surveys, and hydrographic maps. Field layout and control for bridges, buildings and municipal utilities. Underground and mine surveying. Mensuration, special curve problems, intersection of a curve with a straight line, intersection of two curved right of ways, and replacing spirals with terminal curves. Advance problems in open and closed traverses. Emphasis on compiling and use of clear, neat, concise field notes. Prerequisite CIVL-203, SURV-204, MATH-209, SURV-215.

SURV-304
Theory and Use of Instruments
A continuation of course SURV-204. The main emphasis will be on extensive field practice in the use of modern survey instruments, including the Tachometer, distomat, tellurometer, gyrotheodolite, and the investigation of their capabilities, limitations and precision. Prerequisite SURV-204, CIVL-203, SURV-215.

SURV-305
Drafting
Drafting of plans under the Manitoba Land Surveys Acts such as right of way, mineral claims, legal plans, certificates for mortgage purposes. Plotting survey plans using angle and distance and rectangular coordinates. All plans to be drafted on linen in India ink where applicable. Prerequisite CIVL-203, SURV-205.

SURV-307
Route Surveys

SURV-316
Photogrammetry
Determination of Air Base. The parallax bar and parallax bar constant. Height determination by parallax bar. Correction graphs. Profiles and contours by parallax bar. Tilt analysis, determination of swing, tilt and exact flying height. Theory of anaglyptic stereo plotters. Interior, Relative and absolute orientation of the Kelsh plotters. Laboratory work is designed to give maximum experience with manipulation of the floating dot. Prerequisite CIVL-316, MATH-109, CIVL-106.

SURV-317
Soil Mechanics
Nature of soils, soil structure and texture, soil moisture, wet and dry density, void ratio porosity and degree of saturation, Atterberg limits, grain size analysis, engineering soil classification methods.

Moisture-density relationships, standard and modified proctor compaction tests, compaction procedures and equipment,
sand cone and volumeter for measurement of in place densities.

Soil surveys and sampling procedures.

SURV-402
Terrain Classification
Air photo recognition of the major land forms of the following origins: glacial, fluvial, colluvial, marine, lacustrine and acolian. Background data on the major rock types. Igneous, sedimentary and metamorphic, the work of water, wind and glaciation. The formation of organic and permafrosted organic land forms. Recognition of the more common types of softwoods and hardwoods, found on the Canadian shield.

SURV-403
Control Surveys

SURV-406
Legal Surveying

SURV-407
Town Planning

SURV-408
Astronomy

Emphasis on compiling and use of clear, neat, concise field notes. Prerequisite MATII-310, SURV-304.

SURV-415
Survey Camp – 2 weeks
The purpose of this camp is to acquaint the students with advanced and practical survey techniques.

The field work to include retracement surveys, closed level circuits, astronomical observation for azimuth, construction surveys and geodetic surveys in trigonometric leveling and second order methods of triangulation and trilateration.

Emphasis is on clear, neat, concise field notes. Prerequisites: SURV-403, Control Surveys, SURV-406 Legal Surveying, SURV-408 Astronomy, SURV-307 Route Surveys.

SURV-416
Cartography
Photogrammetry will consist of 40 hours of plotting using the Kelsh plotter. Cartography will consist of map projections positive and negative, scribing, peel coat methods and reproduction methods. Cartography will include 40 hours of scribing using manuscripts from the Kelsh plotters. Prerequisite SURV-316.

SURV-424
Hydrology
Hydraulics - Bernoulli’s and continuity equation - flow measurements with weirs and flumes. Open channel flow, Manning equation. Backwater curves.
Hydrology - Collection and presentation of precipitation data and run-off data, measuring discharge, stream gauging and graphical presentation of run-off data. Peak discharge and flood run-off, drainage design, flood protection. Sedimentation sampling and methods of soundings. Prerequisite MATH-209.

TCOM-101 Electrical Fundamentals
Series and parallel DC circuits, magnetism, motors, generators, series and parallel AC circuits, inductance and inductive reactance, capacity and capacitive reactance, resonant circuits, time constants, voltmeters, ammeters, VOM, VTVM, TVM, Oscilloscope, Wheatstone bridge, meggers.

TCOM-102 Semi-conductors and Vacuum Tubes
Two terminal devices, transistors, vacuum tubes; FETs, SCRs, LASCRs, triacs, unjunction transistors, photo devices, tube and transistor testers.

TCOM-103 Radio Receivers and Transmitters
Power supplies, AF amplifiers, AM demodulators, R.F. amplifiers, oscillators, superheterodyne receiver and alignment, troubleshooting, EM demodulators and FM receivers. Oscillators, buffers, frequency multipliers, power amplifiers, Amplitude modulation. Frequency modulation.

TCOM-202 Introduction to Micro-Wave
The micro-wave spectrum high frequency limitations of components, wave-guides, parabolic reflectors, cavities, planar triodes. The baseband signal, loading effect of causal channels, narrow band and wideband FM. Layout of a micro-wave transmitter, block diagram for commercial systems, time delay, phase delay, non-linear delay. Bandwidth requirements for a micro-wave system.

TCOM-203 Radio Receivers and Transmitters II
Propagation and radiating systems, single sideband transmitters and receivers, television receivers, television transmitters, color television transmission. Transmitter tuning, neutralizing and troubleshooting.

TCOM-204 Basic Telecommunication Concepts
Teleprinters, methods of sending and receiving coded information, terms. Mechanical switching. Broadband exchanges.

TCOM-205 Introduction to Data Transmission
Communication systems, facilities WATS dataphone, TWX, data communications systems, digital codes and formats.

TRIC-101 Fundamentals of Electricity

TRIC-102 Residential Blueprint Reading

TRIC-103 Direct Current Machines and Controls
Series-shunt-compound generators and motors principles of operation and characteristics.

TRIC-151 Residential Wiring
To practise the methods and techniques as they apply to house wiring.

TRIC-152 Electrical Lab.
To connect electrical equipment to D.C. source to determine their behaviour and characteristics.

TRIC-201 Alternating Current Fundamentals
Voltage-current relations in A.C. circuits containing resistance, inductance and capacitance.

TRIC-202 3-Phase Systems and Transformers
Voltages and currents relations in three-phase systems. Principles of operation of transformers in single and three-phase systems.

TRIC-203 Alternating Current Machines and Controls
The operating principles of alternators and motors, in single and three-phase systems and their control.
TRIC-204
Electric Motor Repair
Theory of operation of common single phase motors. Procedure for analyzing motor faults, stripping motors and rewinding.

TRIC-205
Commercial Blueprint Reading
Explanations of plans and specifications of commercial buildings. Code calculations.

TRIC-251
Commercial Wiring
To practise the methods and techniques as they apply to commercial buildings.

TRIC-252
Electrical Lab. (A.C.)
To connect electrical equipment to an A.C. source to determine their behavior and characteristics.

TRIC-253
Electrical Motor Repair
Analyzing motor faults, stripping of motors and rewinding, testing.

TVES-112
Direct Current Fundamentals
Conductors, resistors, insulators, Ohm’s Law, resistance measurements and calculations, magnetism, capacity, inductance, time constants, VOM, VTVM, capacity testers.

TVES-113
Electronic Fundamentals
Basic AC generator, frequency spectrum, reactance, impedance, resonance, phase relationships, oscilloscopes.

TVES-114
Electronic Fundamentals
Vacuum tubes and CRT’s and their characteristics. Semi-conductors and their characteristics, gain, microphones, speakers, audio amplifiers, LC and RC oscillators, modulation, demodulation, mixing and the superheterodyne principle, power supplies, tube and transistor testers.

TVES-115
AM and FM Transmitters
AM transmitters, carriers, sidebands, FM transmitters, antenna systems.

TVES-116
Radio Receivers and Servicing
RF amplifiers, converters, IF amplifiers, detection, AF amplifiers, AGG systems, Alignment and alignment generators, superheterodyne tracking, image and beat interference, servicing techniques.

TVES-117
FM, Stereo, HI-FI, Television Basics
Discriminators, ratio detector, AFC, composite signal, multiplexing, sound separation, amplifiers, servicing techniques.

TVES-201
Television Standards and Fundamentals
Standards for monochrome television, NTSC standards for color television. Camera tubes, the composite signal, vestigial sideband transmission.

TVES-202
Antennas and Master Antenna Systems
Hertz and Marconi antennas, balanced and unbalanced transmission lines, multi-element antennas, antenna distribution systems.

TVES-203
Television Receivers and Servicing
RF, VIF, VF, SIF amplifiers, alignment. Cathode ray tubes and brightness circuits, blocking oscillators and multi-vibrators, vertical deflection, horizontal deflection, AFC systems, sync and AGG circuits.

TVES-204
Closed Circuit Television
Applications of CCTV. Vidicon cameras, Sync and deflection generators. Lens systems, switching units and remote control units. Monitors and slave receivers. Sound systems.

TVES-301
Color Television
Light and color, NTSC system, the colorplexed video signal, circuits equivalent to monochrome, tri-gun picture tube, purity and convergence, color sync, automatic controls. Offset generator used for color alignment and adjustment.

TVES-302
Solid State Television
Review of solid state physics, transistor television receivers, servicing transistor television sets.

UPHO-101
Basic Tools and Equipment
Use of various hand tools, cushion mach-
ine, picking machine, sewing machines, electric shears, foam cutting machine.

**UPHO-102**

**Spring Construction**
Webbing, slatted seats, fastening springs, no-sag springs, unit springs, spring edges, typing springs.

**UPHO-103**

**Burlap & Stuffing Up**
Attaching burlap, sewing burlap, lining on open frame, edge rolls, single stuffing, double stuffing, stitching up, shaping.

**UPHO-104**

**Trimmings**
Making and fitting panels, attaching outside covers, blind tacking, hand sewing, applying leather and mercerized gimp, spacing furniture nails - attaching skirts.

**UPHO-105**

**General Upholstery**
The actual upholstering and reupholstering of chesterfield suites, foot stools, occasional chairs, etc.

**UPHO-201**

**Coverings**
Measuring projects, laying out plans, material layout, cutting material to size, fitting covers, cutting and pleating, putting on covers, making cushions, sewing material together.

**UPHO-202**

**Foam Rubber Applications**
Cutting and shaping of foam rubber, fabricating and cementing. Applying tack strips.

**UPHO-203**

**Advanced General Upholstery**
Advanced upholstering including tufting and channeling on chesterfields and chairs, etc.

**UPHO-204**

**Woodworking**
Simple woodworking principles: Operation of basic woodworking machines, hand tools, practical projects.

**UPHO-217**

**On-Job-Training**
Gives an opportunity to experience working in a custom and production shop.

**VITE-101**

**Trade Theory and Practice**
Direct professional experience for the Vocational Industrial student, who will be assigned to an experienced instructor at the R.R.C.C. in the particular area of concentration of student. Technical reports and assignments.

**VITE-102**

**Drawing Interpretation**
Drafting fundamentals, Drawing interpretation common to all major trades. Application of drafting principles through individual projects related to specific trade areas.

**WACH-101**

**Basic Exercises**
Projects designed to develop finger dexterity and a high degree of co-ordination between eye, mind and hands.

**WACH-102**

**Balance Wheels**
Staking 17 ligne and 10½ ligne balance staffs, true and poise the balance wheels. Removal of balance staff; making balance staff with and without sample to a working watch.

**WACH-103**

**Hairsprings**
Preparing 17 ligne and 10½ ligne hairsprings for service by calleting, truing, overcoiling and vibrating.

**WACH-104**

**Fundamental Construction of Watches**
Types of mainsprings and mainspring barrels. Trains and their ratios, winding and setting mechanisms. Repairing and adjusting of escapement, jewelling, friction and shock system.

**WACH-105**

**Repairing Watches**
The greatest proportion of the course will be devoted to the repair and conditions found in the industry. The object of the course will be the development of skill and speech.

**WELD-101**

**General Principles of The Oxy-Acetylene Process**
Historical development, oxygen and acetylene, flame characteristics, equipment, set-up and operation of equipment, general precautions, identifying metals, preparation for welding, expansion and contraction.
WELD-102
Oxy-Acetylene Cutting
Principles of oxygen cutting, various flame cutting applications, cutting steels, cast iron corrosion resistant steels, machine flame cutting, edge preparation, cutting heavy sections, gouging.

WELD-103
Miscellaneous Applications, Inspection and Management
Theory pertaining to miscellaneous applications, silver brazing, hard facing, rebuild worn parts, flame harden, heating and flame treating processes, aluminum die cast, case hardening, basic pipe welding, inspecting testing welds, basic repair of equipment.

WELD-151
Oxy-Acetylene Welding of Ferrous Alloys
Common ferrous alloys, steel metallurgy, fusion welding mild steel, principles of sheet metal jiggling, welding in all positions, braze welding steel, braze welding cast iron, fusion welding cast iron, procedure control.

WELD-201
Safety Precautions in Arc Welding
Introduction, care and repair of accessories, protective equipment, welding empty containers, arc flashes, burns, toxic fumes.

WELD-202
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 positions of welded joints.

WELD-205
Miscellaneous Welding Theory
Theory of electric welding processes T.I.G., M.I.G. arc air gouging as well as stick electrode welding theory. Polarity (reverse and direct) electrode identification and markings.

WELD-251
Basic Welding Procedures
Strike and establish an arc, bead welding, restart a continuous bead, weaving, whipping, building a pad.

WELD-252
General Arc Welding Techniques
Welding in all positions; flat horizontal, vertical - up, vertical - down, overhead.

WELD-253
Light Gauge (Sheet Metal) Welding
Welding in all positions: flat, horizontal, vertical - down, overhead.

WELD-254
Semi-Automatic (M.I.G.) Welding
Welding in all positions on sheet metal and plate.

WELD-255
Miscellaneous Welding and Application
Miscellaneous welding theory, code, testing basic welding of aluminum, cast iron, stainless steel, arc air gouging, cutting with the electrode, basic pipe welding, field trips, projects.

WELD-506
Welding (Related)
Oxy-acetylene welding and brazing procedures and theory as applied to the trade.

WELD-507
Welding - Arc
Safety precautions. Theory in circuits, electrodes, polarity, current requirements and welding definitions. Striking an arc and head welding in all positions.

WOOD-101
Hand Tools
Measuring tools, layout tools, testing tools, sawing tools, bench and special planes, edge cutting tools, boring tools, fasteners: Nails, screws and others, smoothing tools.

WOOD-102
Woodworking Machines
General safety rules, operations and maintenance of the following: table saw, radial arm saw, bandsaw, jigsaw, jointer, planer, sander, mortiser, tenoner, wood lathe, sanding machines, portable power tools, power actuated tools.

WOOD-103
Concrete Form Construction
Footing, foundation walk for single and multiple dwelling units, concrete slabs, sidewalk steps, piles, columns, beams, ceilings and the stripping of forms.

WOOD-105
Equal Pitch Roofing
Types of roofs: flat roofs, gable roofs, equal pitch hip roof, equal pitch inter-
secting hip roofs.

WOOD-106
Stair Building
Basic types of stairs, mathematical terms and calculations, building code requirements, simple, straight stairs, mitered and housed stringers, handrails.

WOOD-107
Finishing
Application of siding, cornices, door and window trim, inside and outside doors, closets, baseboards, feature walls, tile ceilings, etc.

WOOD-108
Cabinet Work
Shop layouts, billing of material, kitchen cabinets, bookshelves, vanity sets, furniture, wood bending, veneering, wood finishing and history of furniture.

WOOD-109
Unequal Pitch Roofing
Intersecting roofs of unequal pitch.

WOOD-110
Surveying
Familiarization with the builders' level and transit to check elevations and to layout building lines.

WOOD-111
Estimating
Take off quantities of material, cost of material and labour, subtrades, simple business procedures.
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