RED RIVER
COMMUNITY COLLEGE

2055 Notre Dame Avenue,
Winnipeg, Manitoba.
R3H 0J9
Telephone 786-6311

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Sponsored jointly by the
Government of the Province of Manitoba
and the Government of Canada

Approved by, and issued under, the authority of the
Minister of Colleges and Universities Affairs
Following a period of rapid growth and expansion, Manitoba's young Community Colleges can now be viewed as having entered a period of maturity. The Department of Colleges and Universities Affairs, through the province-wide Community College program, accepted the challenge of providing needed educational opportunities in all fields of endeavor, and met that need.

The enthusiastic response of Manitobans has been the proof of that need, with ever greater numbers of our citizens, young and old, taking advantage of the opportunities for new careers and advanced skills that have been opened by our Community Colleges.

To properly fulfill our obligation and our purpose in creating the Community Colleges, it would be insufficient simply to rest on past achievements. Instead, the Department of Colleges and Universities Affairs has embarked on a course of action whose ultimate goal is to ensure that the Community College system remains a part of the community and changes with the changing needs of the community.

There is a wealth of resources available in terms of learning experience within the colleges, the universities, our high schools, and indeed, within the community itself. We intend to tap those resources by co-ordinating the multitude of different educational opportunities available and making of them an integrated whole. Experimental programs are already underway that make the resources of the community colleges available to regional high schools and, in similar ways, we hope to broaden the scope and effectiveness of the Community Colleges by reaching out to the community: by bringing down the institutional walls, so to speak, and recognizing the fact that skills that are learned in the community are as relevant as skills learned in the institution, and often more so.

Maturity is the simple recognition that the Community Colleges have as much to learn from the community as the community does from the community colleges. It is that kind of responsiveness that we strive for and it is that kind of responsiveness that will ensure the continued success of the Community College Program.

Saul A. Miller
Administrative Staff

G. L. Talbot, B. Ed............... Director
S. P. Didcote, B.Sc., (I.E.), Assistant Director,
C. H. Howard, B.Sc., (C.E.), Assistant Director,
P. Eng. ................................ Educational Support Services
R. A. Dunham, B.Sc., B. Ed. Principal,
G. A. Joseph, B.A., B.E., Industrial & Technology Division
P. Eng. ................................
R. A. Sanburn, B.Sc., Principal,
Bus. Admin. ......................... Extension & Community Services
Principal,
K. Newman Division
Supervisor
G. Anderson Purchasing Coordinator
Mrs. E. Bagot Bookstore Manageress
W. Boblinski Accountant
J. Graham Chief Storekeeper
W. H. Grant Registrar
H. V. Hume, B.Sc., B. Ed... Supervisor, Guidance & Testing
D. Curtis, B.A., B. Ed... Counsellor
R. M. Floch (Miss) B.S., Counsellor
H.Ec., B. Ed....................... Counsellor
J. N. Neufeld, B.A.,...
B. Paed., B. Ed................... Counsellor
M. H. Sawka, B.Sc., Counsellor
(E.E.), B.Ed........................ Counsellor
Mrs. P. A. Law, 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.), P. Eng. ..................... Assistant Director

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,
  Learning Resources Centre
J. Green ................................. Manager/Producer
  ETV Production Centre
L. E. Mousseau, B.A. ............ Physical Plant Coordinator
I. Appleyard (Miss) ............... Facility Utilization Coordinator

*******************************

J. G. Cartwright ............... Supervisor, Food Services
S. L. Ursel .............................. Maintenance Superintendent,
  Manitoba Dept. of Public Works

*******************************

(To be appointed)
Officer in Charge .............. Student Placement Office,
  Dept. of Manpower & Immigration

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"CERTIFICATE COURSES" • ENTRY DATES

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<td>July 2</td>
</tr>
<tr>
<td>Heavy Duty Operators</td>
<td>The Pas</td>
<td>Sept. 4</td>
<td>Oct. 29</td>
<td>Mar. 11</td>
</tr>
<tr>
<td>Heavy Duty Repair</td>
<td>The Pas</td>
<td>Sept. 4</td>
<td>Oct. 29</td>
<td>May 6</td>
</tr>
<tr>
<td>Industrial Mechanics</td>
<td>The Pas</td>
<td>Sept. 4</td>
<td>Oct. 29</td>
<td>Jan. 3</td>
</tr>
<tr>
<td>Industrial Parts, Sales &amp; Service</td>
<td>Brandon</td>
<td>Oct. 1</td>
<td>Jan. 2</td>
<td>Apr. 1</td>
</tr>
<tr>
<td>Library Technician</td>
<td>Winnipeg</td>
<td>Sept. 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Machine Shop Practice</td>
<td>Winnipeg</td>
<td>Sept. 6</td>
<td></td>
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<tr>
<td>Machine Shop Practice</td>
<td>Brandon</td>
<td>Sept. 4</td>
<td>Nov. 5</td>
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<tr>
<td>Masonry (Bricklaying)</td>
<td>Winnipeg</td>
<td>Sept. 4</td>
<td></td>
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<tr>
<td>Meat Cutting</td>
<td>Winnipeg</td>
<td>Sept. 4</td>
<td>Nov. 5</td>
<td>Feb. 11</td>
</tr>
<tr>
<td>Medical Records Technician</td>
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<td>Sept. 5</td>
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<tr>
<td>Mineral Sciences</td>
<td>The Pas</td>
<td>Sept. 4</td>
<td></td>
<td></td>
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<tr>
<td>Operating Engineers</td>
<td>Winnipeg</td>
<td>Sept. 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Painting and Decorating</td>
<td>Winnipeg</td>
<td>Sept. 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Photographic Technician</td>
<td>Winnipeg</td>
<td>Sept. 4</td>
<td></td>
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<tr>
<td>Plumbing</td>
<td>Winnipeg</td>
<td>Sept. 6</td>
<td>Feb. 4</td>
<td></td>
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<td>Practical Nursing</td>
<td>Winnipeg</td>
<td>Sept. 4</td>
<td>Feb. 4</td>
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<td>Radio Operators</td>
<td>Winnipeg</td>
<td>Sept. 4</td>
<td>Feb. 4</td>
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<tr>
<td>Radio &amp; T.V. Servicing</td>
<td>Brandon</td>
<td>Sept. 4</td>
<td>Feb. 4</td>
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<tr>
<td>Refrigeration &amp; Air Cond.</td>
<td>Winnipeg</td>
<td>Sept. 4</td>
<td>Feb. 4</td>
<td></td>
</tr>
<tr>
<td>Service Station Attendant</td>
<td>The Pas</td>
<td>Sept. 4</td>
<td>Feb. 4</td>
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<tr>
<td>Sheet Metal</td>
<td>Winnipeg</td>
<td>Sept. 4</td>
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<td></td>
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<tr>
<td>Social Services</td>
<td>Brandon</td>
<td>Oct. 2</td>
<td>Jan. 3</td>
<td>Apr. 3</td>
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<tr>
<td>Social Services</td>
<td>Winnipeg</td>
<td>Sept. 5</td>
<td></td>
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<tr>
<td>Stenography</td>
<td>Brandon</td>
<td>Oct. 1</td>
<td>Jan. 2</td>
<td>July 2</td>
</tr>
<tr>
<td>Stenography</td>
<td>The Pas</td>
<td>Sept. 4</td>
<td>Feb. 4</td>
<td></td>
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<tr>
<td>Survey Technician</td>
<td>The Pas</td>
<td>Sept. 4</td>
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<td>Telecommunications</td>
<td>Winnipeg</td>
<td>Sept. 6</td>
<td>Feb. 4</td>
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<tr>
<td>T.V. Servicing</td>
<td>Winnipeg</td>
<td>Sept. 4</td>
<td>Feb. 4</td>
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<tr>
<td>Upholstery</td>
<td>Winnipeg</td>
<td>Sept. 4</td>
<td>Dec. 3</td>
<td>Feb. 4</td>
</tr>
<tr>
<td>Vocational Teacher Training</td>
<td>Winnipeg</td>
<td>Sept. 4</td>
<td></td>
<td></td>
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<tr>
<td>Watch Repair</td>
<td>Winnipeg</td>
<td>Sept. 4</td>
<td>Dec. 3</td>
<td>Feb. 4</td>
</tr>
<tr>
<td>Welding</td>
<td>Winnipeg</td>
<td>Sept. 4</td>
<td>Nov. 5</td>
<td>Jan. 7</td>
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<tr>
<td>Welding</td>
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<td>Nov. 5</td>
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<td>Welding</td>
<td>The Pas</td>
<td>Sept. 4</td>
<td>Nov. 5</td>
<td>Jan. 3</td>
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<td>1973</td>
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<td>JANUARY</td>
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## Calendar of Events

### 1973

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday July 2nd</td>
<td>Dominion Day (College closed).</td>
</tr>
<tr>
<td>Tuesday July 3rd</td>
<td>Departmental Summer School opens.</td>
</tr>
<tr>
<td>Monday July 30th</td>
<td>Departmental Summer School second session opens.</td>
</tr>
<tr>
<td>Monday August 6th</td>
<td>Civic Holiday (College closed).</td>
</tr>
<tr>
<td>Monday September 3rd</td>
<td>Labour Day (College closed).</td>
</tr>
<tr>
<td>Tuesday September 4th</td>
<td>Fall Term commences (see page for other entry dates).</td>
</tr>
<tr>
<td>Monday September 10th</td>
<td>Final date for late registration for Day school courses.</td>
</tr>
<tr>
<td>Monday September 10th</td>
<td>Registration begins for Fall Term Evening Courses.</td>
</tr>
<tr>
<td>Monday September 17th</td>
<td>Fall term Evening Courses commence.</td>
</tr>
<tr>
<td>Monday October 8th</td>
<td>Thanksgiving Day (College closed).</td>
</tr>
<tr>
<td>Friday December 21st</td>
<td>Last day of classes before Christmas vacation.</td>
</tr>
<tr>
<td>Tuesday December 25th</td>
<td>Christmas Day (College closed).</td>
</tr>
<tr>
<td>Wednesday December 26th</td>
<td>Boxing Day (College closed).</td>
</tr>
<tr>
<td>Thursday December 27th</td>
<td>Office re-opens.</td>
</tr>
</tbody>
</table>

### 1974

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuesday January 1st</td>
<td>New Year's Day (College closed).</td>
</tr>
<tr>
<td>Wednesday January 2nd</td>
<td>College re-opens.</td>
</tr>
<tr>
<td>Thursday January 3rd</td>
<td>Classes recommence.</td>
</tr>
<tr>
<td>Monday January 7th</td>
<td>Registration begins for Winter Term Evening Courses.</td>
</tr>
<tr>
<td>Monday January 14th</td>
<td>Winter Term Evening courses commence.</td>
</tr>
<tr>
<td>Wednesday January 16th</td>
<td>Fall Term Day courses examinations commence.</td>
</tr>
<tr>
<td>Saturday January 26th</td>
<td>Where applicable, mid-term break begins.</td>
</tr>
<tr>
<td>Monday February 4th</td>
<td>Spring Term Day School courses registration.</td>
</tr>
<tr>
<td>Friday February 8th</td>
<td>Final date for late Spring Term registration.</td>
</tr>
<tr>
<td>Monday April 1st</td>
<td>Registration begins for Spring Term Evening Courses.</td>
</tr>
<tr>
<td>Monday April 8th</td>
<td>Spring Term Evening Courses commence.</td>
</tr>
<tr>
<td>Friday April 12th</td>
<td>Good Friday (College closed).</td>
</tr>
<tr>
<td>Day</td>
<td>Date</td>
</tr>
<tr>
<td>-----------</td>
<td>------------</td>
</tr>
<tr>
<td>Monday</td>
<td>April 15th</td>
</tr>
<tr>
<td>Tuesday</td>
<td>April 16th</td>
</tr>
<tr>
<td>Friday</td>
<td>April 19th</td>
</tr>
<tr>
<td>Monday</td>
<td>May 20th</td>
</tr>
<tr>
<td>Monday</td>
<td>June 10th</td>
</tr>
<tr>
<td>Thursday</td>
<td>June 27th</td>
</tr>
<tr>
<td>Friday</td>
<td>June 28th</td>
</tr>
</tbody>
</table>
General Information

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 co-operation 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; basic training for skills development courses for persons lacking the pre-requisites for vocational 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 Colleges reserves the right to make changes in its offerings, regulations and procedures.

The Assiniboine Community College in Brandon and The 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.

RED RIVER COMMUNITY COLLEGE
IS A MEMBER OF THE
ASSOCIATION OF CANADIAN COMMUNITY COLLEGES
Admission Procedures

PRE-REQUISITES 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.

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:

Each Division has an Admissions Committee which is established by the Principal of the Division. All applications must be approved by this Committee. Applicants may be asked to appear before it 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.

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.

S.A.C.U. TESTS SCORES:

The Community Colleges, at present, do not require the submission of S.A.C.U. scores for admission purposes because of the variety of qualifications currently acceptable for admission to their various courses.

RECOGNITION OF G.E.D. ACADEMIC EQUIVALENCY STANDING:

Applicants who have written the General Educational Development Tests and who have been awarded Grade X or Grade XI certificates of academic equivalency by the Department of Education will be considered as having met the academic prerequisites of courses which require Grade X (or Adult TEN) standing or Grade XI (or Adult ELEVEN) standing respectively.
In the case of courses which require a Grade XII standing, the Grade XII diploma 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 XII 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, 408 - 1181 Portage Avenue, Winnipeg, R3C 0V8.

SUBJECT CREDIT

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 Registrar within three weeks of published commencement date for the course as stated in the College Calendar.
(b) Provide suitable documentation of subject content and the grade received for the work to be evaluated.

COURSE CREDIT

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 graduate of RR.C.C. with a Diploma in Chemical Technology may complete the requirements for a B.Sc. at the University of Winnipeg in 2 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 4 years instead of 5 years as before.

In a 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 4 years instead of the previous 5. As an alternative, if each is completed separately, half a year's credit will be granted for whichever course is completed first.
APPLICATIONS FOR ADMISSION:

A. Post Secondary Courses — The following regulations apply to courses which have a basic pre-requisite of Grade XII and to the Pre-College courses.

All applicants who are paying their own fees are required to:
1. Apply in writing using the approved application form for The Red River Community College.
2. Hold at least the minimum academic prerequisites listed under each course.
3. Submit a transcript of their high school marks (Grades XI and XII 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.
4. Applications must be received or postmarked not later than midnight, August 31st for those students applying for the Fall Term, and January 31st for those applying for the Spring Term.
5. Be 16 years of age or over, or as specifically set out.
6. Be physically qualified in reference to the type of course selected.
7. When the number of applicants exceeds the accommodation available, the Admissions Committee reserves the right to accept those who are considered most likely to succeed.

B. Certificate Courses — The following regulations apply to courses where basic pre-requisites are less than Grade XII.

Applicants who are not sponsored by Canada Manpower are classified as “Provincial Entry” applicants. Provincial Entry Applicants, when accepted, are required to pay tuition fees, and must provide their own textbooks, supplies and other equipment.

Those applying for entry 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, if accepted, will have their names placed on our waiting list and will be so notified. It is to be understood that, in some courses lasting one year or less, there may be a waiting list of some length. Acceptance into a course may not occur for a number of months.
C. 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

FEES AND REFUNDS:

A. POST SECONDARY COURSES — The following regulations apply to courses which have a basic pre-requisite of Grade XII and to the Pre-College courses.

Fees: A tuition fee of $100.00 and student activity fee (see Item "C" below) for each 5 month term are payable in full on or before the date of 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.

Refunds:

1. Where a satisfactory reason for withdrawal has been given to the Principal, he may recommend that a refund of tuition fees be granted to the Student.

2. In those cases where refunds are granted, the following will apply:

(a) Students withdrawing before the final date for late registration will be granted a refund of the full tuition fee paid.

(b) Students withdrawing after the final date for late registration but before the end of the first calendar month of instruction will be granted a refund of the tuition fee paid less $20.00.

(c) Students withdrawing during the second calendar month of instruction will be granted a refund of the tuition fee paid less $40.00.

(d) No refunds will be granted after the second calendar month of instruction (i.e. the end of October or the end of March) but, if a student transfers to another suitable course, credit up to the amount of the unused portion may be applied towards the payment of the fees of that course.
B. CERTIFICATE COURSES — The following regulations apply to courses whose entrance pre-requisites are less than Grade XII.

Tuition fees for all courses are based on a monthly rate as described below. The number of months for each course is shown under course details in this calendar.

$7.00 per month for all courses except Welding. The rate for Welding is $14.00 per month.

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 30 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 30 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 30 days unless special circumstances warrant consideration for a refund. The Principal may exercise discretionary powers in such cases.

C. STUDENT ACTIVITY FEES:
A Student Activity Fee based on the rate of $1.50 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.

D. 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 the 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 the Red River Community College through the Canada Manpower Training Program (C.M.T.P.) program through the Federal CANADA MANPOWER CENTRE. Dependent 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 16 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 & AWARDS
The Administrative Management Society bursaries (two at $100.00 each) one available in each of the Third and Fourth Term to students in Secretarial Science.

The American Society for Metals (Manitoba Chapter) Scholarships — A scholarship of $50.00 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.

The Association of Administrative Assistants awards two scholarships at $150.00; one available in each of the Second and Fourth Term to students in Secretarial Science.

Association of Manitoba Land Surveyors Scholarships (two at $100.00 each) to students entering the Third Term of Surveying Technology.
Bird Construction Company Limited Scholarships ($200.00 and $100.00) for students entering Third Term of Building Technology.

Bristol Aerospace Ltd. Scholarships (two at $100.00 each) to students entering the Third Term of Electronic and Mechanical Technology.

Canadian Kodak Co., Bursary ($100.00) 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 Limited — an annual Book Award to a Chemical student with the highest achievement in the Instrumentation subject. (CHEM 305 & 405).

The Canadian Restaurant Association Foundation (one bursary of $200.00) available to a student enrolled in the second year of Hotel and Restaurant Administration.

The Canada Packers Limited ($100.00) 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 ($50.00 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 the Fourth Term.

Chevron Standard Oil Scholarship ($300.00) to a student entering the Third Term of Civil or Structural Technology.

Codville Scholarship Fund ($100.00) awarded annually to a student in the Meatcutting course who is making favorable progress and who requires financial assistance.

Co-op Vegetables Oils Ltd. Scholarship ($50.00) to a student in the Operating Engineers Program who completes Term I successfully.

Crane Supply Limited — A $25.00 award for the best Utilidor Design in Plant Engineering in Heat and Power Technology.

Credit Grantors Association of Winnipeg. Two bursaries of $100.00 each, one available in each of the Third and Fourth Term, to students in Business Administration.
Data Processing Management Association Bursary ($200.00) available to a student in the third term of the Computer Analyst/Programmer course.

Department of Health and Social Development awards a gold medal each year to an outstanding student in Social Services Course.

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

Garland Commercial Ranges Limited Award — An annual award of $100.00 will be made to an outstanding student enrolled in the Commercial 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 Clerical, Bookkeeping and Office Machines Program.

The Grummet Memorial Fund bursary — $125.00 — 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 $100.00 each) both available to students in the Second Term of the Computer Analyst/Programmer Course.

The International Nickel Engineering Technology Bursaries (4 at $150.00 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 ($100.00) awarded to the graduate in Fourth Term with the highest standing in the Technology Program.

LIEUTENANT-GOVERNOR’S MEDALS FOR PROFICIENCY:

1) 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
   c) Good character and personality.

2) 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. $100.00 to a student entering the 2nd year of the Diploma Nursing Course. Applications available from the M.A.R.N., 647 Broadway Ave., Winnipeg 1, Man.

The Manitoba Electrical Association Scholarship $100.00 for a student in the Third Term of Electrical Technology.

The Manitoba Hotel Association contributes two bursaries of $250.00 each; both of which are available to students entering the third term of the final year of Hotel and Restaurant Administration.

Manitoba Hydro Scholarship ($100.00) for a student entering Third Term of Electrical Technology.

The Manitoba Society of Certified Engineering Technicians and Technologists Award — A slide rule to the Engineering Technology student who shows the most improvement during Term I.

The Manitoba Society of Certified Engineering Technicians & Technologists, Inc. ($100.00) to a student member of MSCETT INC. who from among the student members, is the
top student entering third term in the Technology courses at the Red River Community College.

The Manitoba Sugar Company Limited Bursary ($100.00) to a student entering Third Term of Heat & Power or Production Technology.

Manitoba Telephone System Scholarship ($100.00) to a student entering the Third Term of Electronic Technology.

Warner Chilcott Company — award for General Proficiency.
Canadian Laboratory Supplies — award for Theory in Microbiology.
Fisher Scientific Company — award for Theory in Microbiology.

Mohawk Oil Company Limited Award ($250.00) presented annually to Third Term Business Administration students who are in the marketing pattern.

Pritchard Engineering Co. Ltd. Bursary: ($300.00) to a student entering Third Term of a Mechanical Technology Program.

The Roning Group: ($100.00) to a technology student displaying the greatest proficiency in oral and written communication, and in report writing during Terms I and II.

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 Engineer 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 Engineer component of the Canadian Army during World War I, World War 2, 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.

The T. Eaton Co. Canada Limited Bursaries (two at $150.00 each) one available in each of the Third and the Fourth Term, to students in Business Administration.

Templeton Engineering Scholarships (two at $200.00 each) to students entering the Third Term of Civil and Structural Technology.

Underwood McLellan and Associates Limited Scholarships (two at $100.00 each) to students entering the Third Term of Civil and Structural Technology.

The Winnipeg Opti-Mrs. Club (Two bursaries at $100.00 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 $100.00 each) one available to Second Term students in each of Advertising Art and Commercial & Industrial Sales.

Xerox of Canada Ltd. One $250.00 fellowship to a student in Electronic Technology, Industrial and Technology Division; one $250.00 fellowship to a student in Business Administration.

Stafford Foods Limited Award ($50.00) available annually to a student in the Commercial Cooking course.

Wiedman Brothers Limited and J. M. Schneider (Man.) Ltd. Award ($100.00) available annually to a student in the Commercial Cooking course.

Robin Hood Multifoods Limited ($50.00) awarded twice annually to students in the Commercial Baking course.

Student Services

BOARD AND ROOM

No dormitories are operated in connection with The 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 Book Store does not handle used books.

COUNSELLING SERVICES:
Counselling Services are provided for R.R.C.C. 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 provide 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 coun-
sellor.

4. Public Relations:
   The counselling staff participate in high school career days
and give career talks to high school students and other inter-
ested groups.

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

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

APPOINTMENT
Appointments are preferred, but are not always essential.
The following telephone numbers are direct lines to the Coun-
selling Offices: 786-6335, 786-6362, 786-6288.
THE CRAZY OX

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 The 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

The 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.

The 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 in the heart of 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, an audio-visual storage room, the reference area, and the bibliography and index room.

The Learning Resources Centre's comprehensive collection includes books, periodicals, newspapers, government documents, films and filmstrips, transparencies, and other audio-visual materials and equipment in all major fields. Under its open-stack system, students and faculty have full access to almost all materials. Orientation is given to all new students to make them familiar with the Learning Resources Centre and its use.

The construction of a three studio television facility is now complete at the College. It consists of two classroom studios for instructors’ and students’ inservice training and one major production studio to serve the educational programming needs of the entire College. The facility is located in the Audio-Visual Production Centre and along with videotape it is responsible for the production of 35mm slides, filmstrips, audio tape, overhead transparencies and art cards for flip charts and television.

LOCKERS

Lockers are available without cost to full-time students. However, as the College is not responsible for personal property 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.

CREDIT PROGRAM

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 of 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.

PHYSICAL EDUCATION AND ATHLETIC PROGRAMS

The Red River Community College physical education and athletic programs will attempt to reach the following objectives.

1. To awaken an interest in a variety of activities usually associated with social and family life in our society.

2. To increase knowledge of those activities commonly found in the high schools.

3. To provide a framework of intramural competition within which each student and staff member might feel at ease competing with others for equal ability and interests.

4. 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.
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 the Red River Community College is located in Room C-211 Bldg. (C). It co-ordinates 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 the 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 30-hour course incorporating all of the above is offered on a voluntary basis. To those who complete the course successfully, 2 credit hours will be awarded and the credit may be used in any course where options apply.

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. However, 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

Each student should attend in a manner satisfactory for the achievement of the objectives of his/her course. 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 in-
flexible 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 The 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 standing. Periodic progress reports are maintained and will be sent to a Parent or Guardian upon request. A student whose progress is unsatisfactory may be placed on probation or dismissed.

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 pre-requisite of Grade XII.

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 pre-requisites 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 pre-requisites, 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 Registrar 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 pre-requisites of less than Grade XII:

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. Supplemen- tals 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:
1. Satisfactory completion of all subjects required for the course.
2. Recommendation of their Instructor or Department Head and approval of the Principal.

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

Duration Certificates or Diplomas will be issued on payment of a fee of $1.00.

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.

CONVOCATIONS

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 letter 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>
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</thead>
<tbody>
<tr>
<td>A+</td>
<td>4.0</td>
<td>Exceptional</td>
</tr>
<tr>
<td>A</td>
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<td>Outstanding</td>
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<tr>
<td>B+</td>
<td>3.5</td>
<td>Above Average</td>
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<tr>
<td>B</td>
<td>3.0</td>
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</tr>
<tr>
<td>Grade</td>
<td>Grade Points</td>
<td>Description</td>
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<td>-------</td>
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<td>----------------------</td>
</tr>
<tr>
<td>A</td>
<td>4.0</td>
<td>Average</td>
</tr>
<tr>
<td>B</td>
<td>3.5</td>
<td>Minimum acceptable performance</td>
</tr>
<tr>
<td>C</td>
<td>3.0</td>
<td>Failure</td>
</tr>
<tr>
<td>D</td>
<td>2.0</td>
<td>Pass</td>
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</tbody>
</table>

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.
### Applied Arts and Business Division

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FACULTY
APPLIED ARTS AND BUSINESS DIVISION

Sanburn, R.A., B.Sc. (Bus. Admin) Principal
Judt, L., B.Sc., M.Sc. Chairman, Teacher Education Sec.

Ahluwalia, R.S., B. Comm., D.B.M. Accounting
Anderson, T.J., B.A., M.B.A. Management & Personnel
Angel, M., B.A., B.L.S. Library Technician
Balanduk, J.G. Business Education Practices
Barbaza, W., R.P.I. Dipl. Hotel Administration
Bechert, J.L. Business Education Practices
Bellamy, W.R. Business Education Practices
Berezowiecki, A.R., B.A. Communications & Social Sciences

Bird, J. Secretarial Science
Boyaniwsky, M. Business Education Skills
Briggs, J. Business Education Practices
Brown, K.E. Computer Analyst/Programmer
Cameron, D.B., B. Comm., C.A. Marketing & Merchandising
Campbell, G.R.D., C.A., B. Comm., M.B.A. Accounting
Carroll, M. Business Education Skills
Cartwright, J. G. Supervisor, Food Services
Ceaser, R.J., B.A., B. Comm. Economics, Ins. & Law
Chang, S., B.A. Business Education Skills
Chopp, L.M. Computer Analyst/Programmer
Chubb, B.J., M.I.B.B. Food Services
Collins, Y., B.A. Dept. Head, Secretarial Science
Cuthbert, J. B. Graphic Arts
Daly, P.M. Business Education Skills
Derksen, A., R.I.A. Dept. Head, Accounting
Dixon, J., B.A. Business Education Skills
Dryburgh, K., B.Sc. Computer Analyst/Programmer
Dutchuk, M., B. Comm. Management & Personnel
Edwards, L. Business Education Skills
Emeruwa, L.E., B.A. Communications & Social Sciences

Fife, R.F. Food Services, Production Manager
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Schmidt, J., B.Sc. .................................................. Computer Analyst/Programmer
Sheldon, G., P.P.I. Dipl. ........................................... Hotel Administration
Simmonds, A.H. .................................................... Photo Tech.
Simpson, D.H., B.A. ................................................ Communications & Social Sciences

Sjoberg, K., B.Comm. .............................................. Management & Personnel
Smith, E.A. .......................................................... Creative Communications
Smith, S.J. ............................................................ Business Education Practices
Spencer, L.A. ........................................................ Food Services, Lab. Student Sup.

Sprunt, O.E. ........................................................ Creative Communications
Sundmark, R.A., Dip. F.A. ........................................ Advertising Art
Surtees, A.E. ........................................................ Commercial Art
Tascona, R. B.A. ..................................................... Business Education Skills

Warman, H., B.A. .................................................... Secretarial Science
Watt, M.A.F. ........................................................ Business Education Skills
Wawryk, J.D. ........................................................ Food Serv., Lab Student Supervisor

Whitley, J., B.F.A. ................................................... Creative Communications Lab. S. Sup.

Williamson, D.S., B.A., B.Ed. .................. Dept. Head, Creative Arts
Woroniuk, J. ........................................................ Photo Tech., Lab. Student Super
Young, V.H., B.A., B.Paed., B.Ed. Marketing & Merchandising
Zacharias, H.E., B.A., B.Ed. ..................... Communications & Social Sciences
Zamuda, J., R.I.A. .................................................. Accounting
FACULTY
TEACHER EDUCATION SECTION

Bogucki, S., B.Sc., M.Sc. in Ed. .......... Industrial & Industrial Arts
Falconer, L.C. ................................ Business Education
Hardy, K.W., B. Comm., B.Ed. .......... Dept. Head, Business Education
Langlois, M.A. ................................ Business Education
McMillan, J.B., B.Sc. ................. Industrial & Industrial Arts
Rampaul, W., B.A., B.Ed., M.Ed. .... Business Education
Rosendahl, R.R., B.Sc. Ed. ............ Industrial & Industrial Arts
Van Rooy, W., A.A.S., B.S., M.S. ... Industrial & Industrial Arts
Pre-Applied Arts and Business Course

ENTRANCE REQUIREMENTS: (one of)

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

2. Students successful in B.T.S.D. Adult ELEVEN 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 20 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 five months duration starting in February and ending in June. The successful completion of this course will allow a candidate academic admission into any course in the Business or Applied Arts Divisions at the Red River Community College. The subject material offered will prepare a student for final examinations in the General Course Mathematics 301, English 301, Social Studies 301. Department of Education standing will be awarded to all students who are successful in the examinations.

FEES AND EXPENSES:

The tuition fee for the Pre-College course is $100.00 for the 5 month term. Other expenses include textbooks, incidentals, board and lodging.

COURSE OUTLINE

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<thead>
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<th>Hours per week</th>
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<td></td>
<td>Lect.</td>
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<td>English</td>
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<td>Mathematics</td>
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<tr>
<td>Social Studies</td>
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</table>
ENTRANCE REQUIREMENTS: (one of)

1. Grade XII.

2. Completion of Pre-College Course.

3. Exceptionally talented students if 17 years of age or over.

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 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, requires 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.
<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Course Title</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
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<td>Introduction to Advertising</td>
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<td>AART-103</td>
<td>Mechanical Drawing</td>
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<td>3</td>
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<td>AART-104</td>
<td>Fundamentals of Drawing</td>
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<td>AART-105</td>
<td>Fundamentals of Design</td>
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<td>AART-106</td>
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<td>AART-108</td>
<td>Introduction to Art</td>
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<td>AART-201</td>
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<td>AART-206</td>
<td>Fundamentals of Photography</td>
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<td>AART-207</td>
<td>Reproduction Methods &amp; Materials</td>
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<td>AART-208</td>
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<td>AART-304</td>
<td>Drawing</td>
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<td>AART-305</td>
<td>Design and Illustration</td>
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<td>Visual Exploration</td>
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<td>AART-317</td>
<td>Production Art</td>
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<td>SOSC -131</td>
<td>Introduction to Social Sciences</td>
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<td>AART-405</td>
<td>Advanced Illustration</td>
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<td>AART-408</td>
<td>Commercial Problems</td>
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<td>AART-410</td>
<td>Visual Explorations</td>
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Barbering

ENTRANCE REQUIREMENTS:
1. Academic — Grade X or B.T.S.D. Adult TEN. 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.

DURATION OF COURSE:
Approximately 10 months. Successful completion of this course qualifies the graduate for a Certificate of Attainment.

FEES AND EXPENSES:
The tuition fee is $7.00 per month, or fraction thereof. Other expenses include textbooks and supplies totalling approximately $120.00.

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 the financial rewards 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.
COURSE OUTLINE

SUPPLIES:

Students must supply themselves with at least two barber’s white jackets.

Textbooks, barbers' jackets and a complete kit of barbering tools for this course will cost approximately $120.00.

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

Total 1400 Hours

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<td>BARB-101</td>
<td>Health and Sanitation 66</td>
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<td>BARB-102</td>
<td>Barbering Implements, Honing, Stropping 85</td>
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<td>BARB-103</td>
<td>Face Shaving 120</td>
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<td>BARB-104</td>
<td>Men’s Haircutting 720</td>
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<td>BARB-105</td>
<td>Men’s Hairstyling 116</td>
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<td>BARB-106</td>
<td>Current Trends in Barbering 50</td>
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<td>BARB-107</td>
<td>Anatomy and Physiology 30</td>
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<td>BARB-108</td>
<td>Disorders of Scalp, Skin and Hair 30</td>
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<td>BARB-109</td>
<td>Shampoos, Tonics, Massages 95</td>
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<td>BARB-110</td>
<td>Light Therapy, Cosmetology 20</td>
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<td>BARB-111</td>
<td>Shop Management and General Aspects 20</td>
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<td>BARB-112</td>
<td>Modern Men’s Haircoloring 48</td>
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1,400
Business Accountancy

ENTRANCE REQUIREMENTS:

A minimum of complete Grade XI in the General, University Entrance or Vocational courses or B.T.S.D. Adult ELEVEN. 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 10 months. Successful completion of this course qualifies the graduate for a Certificate of Attainment.

FEES AND EXPENSE:

The tuition fee is $7.00 per month, or fraction thereof. Other expenses include textbooks and supplies totalling approximately $90.00.

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 bookkeeping and accounting. He is capable of maintaining a complete set of books in most business enterprises.
## COURSE OUTLINE

### TERM I

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<td>Business Communications</td>
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<td>ACNT-164</td>
<td>Business Mathematics</td>
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<td>ACNT-167</td>
<td>Business Machines</td>
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<td>ACNT-266</td>
<td>Introduction to Computers</td>
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<td>ACNT-169</td>
<td>Office Procedures, or</td>
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<td>ACNT-168</td>
<td>Basic Typewriting</td>
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<td>Cost Accounting</td>
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<td>ACNT-262</td>
<td>Business Communications</td>
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<td>ACNT-264</td>
<td>Business Mathematics</td>
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<tr>
<td>ACNT-265</td>
<td>Principles of Organization &amp; Management</td>
<td>2</td>
<td>3</td>
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<td>ADMN-106</td>
<td>Business Law</td>
<td>2</td>
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<td><strong>Total</strong></td>
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</table>
Business Administration

ENTRANCE REQUIREMENTS:

1. Complete Grade XII standing (University Entrance, General, or Vocational Commercial Course). 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 20 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, co-ordination, 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.
## BUSINESS ADMINISTRATION
### FIRST YEAR COURSE OUTLINE

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Term I Hours Per Week</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL-102</td>
<td>Oral Communications</td>
<td>1 2 3</td>
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<tr>
<td>SOSC-131</td>
<td>Introduction to Social Sciences</td>
<td>2 1 2</td>
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<tr>
<td>ADMN-101</td>
<td>Accounting</td>
<td>3 1 4</td>
<td></td>
</tr>
<tr>
<td>ADMN-102</td>
<td>Economic Principles</td>
<td>3 1 4</td>
<td></td>
</tr>
<tr>
<td>ADMN-103</td>
<td>Marketing</td>
<td>2 1 3</td>
<td></td>
</tr>
<tr>
<td>ADMN-106</td>
<td>Business Law I</td>
<td>2 1 3</td>
<td></td>
</tr>
<tr>
<td>ADMN-109</td>
<td>Introduction to Business</td>
<td>2 - 2</td>
<td></td>
</tr>
<tr>
<td>ADMN-110</td>
<td>Financial Mathematics</td>
<td>2 1 4</td>
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</tr>
<tr>
<td>ADMN-116</td>
<td>Special Mathematics Tutorial</td>
<td>- 3 -</td>
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</tr>
<tr>
<td>ENGL-108</td>
<td>Study Skills</td>
<td>- 1 2</td>
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<td></td>
<td>*Optional Additions to Normal Program</td>
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### TERM II

<table>
<thead>
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<th>Term II Hours Per Week</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ENGL-213</td>
<td>Basic Business Communications</td>
<td>2 2 4</td>
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<tr>
<td>SOSC -231</td>
<td>Human Behavior in Organizations</td>
<td>2 1 2</td>
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</tr>
<tr>
<td>ADMN -201</td>
<td>Accounting</td>
<td>2 3 4</td>
<td></td>
</tr>
<tr>
<td>ADMN -202</td>
<td>Economic Principles</td>
<td>3 1 4</td>
<td></td>
</tr>
<tr>
<td>ADMN -203</td>
<td>Marketing</td>
<td>2 2 4</td>
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<tr>
<td>ADMN -205</td>
<td>Statistics</td>
<td>2 2 4</td>
<td></td>
</tr>
<tr>
<td>ADMN -217</td>
<td>Introduction to Computers</td>
<td>2 2 3</td>
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<tr>
<td></td>
<td></td>
<td>15 13 25</td>
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### SECOND YEAR

### TERM III

All Students must take ENGL-310

<table>
<thead>
<tr>
<th>Subject</th>
<th>Subject</th>
<th>Term III Hours Per Week</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL-310</td>
<td>Report Writing</td>
<td>1 2 4</td>
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</table>

Students must elect 7 of the following 10 subjects

A complete term is 25 credit hours

<table>
<thead>
<tr>
<th>Subject</th>
<th>Subject</th>
<th>Term III Hours Per Week</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADMN-302</td>
<td>International Economics and Trade</td>
<td>2 1 3</td>
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</tr>
<tr>
<td>ADMN-305</td>
<td>Statistical Analyses</td>
<td>2 2 3</td>
<td></td>
</tr>
<tr>
<td>ADMN-312</td>
<td>Business Finance</td>
<td>2 1 3</td>
<td></td>
</tr>
<tr>
<td>ADMN-313</td>
<td>Personnel</td>
<td>3 1 3</td>
<td></td>
</tr>
<tr>
<td>ADMN-314</td>
<td>Selling and Advertising</td>
<td>2 1 3</td>
<td></td>
</tr>
<tr>
<td>SALE -104</td>
<td>Consumer Behaviour</td>
<td>2 1 3</td>
<td></td>
</tr>
<tr>
<td>ADMN-304</td>
<td>Labor Economics and Industrial Relations</td>
<td>2 1 3</td>
<td></td>
</tr>
<tr>
<td>ADMN-318</td>
<td>Intermediate Accounting - A</td>
<td>2 2 3</td>
<td></td>
</tr>
<tr>
<td>ADMN-322</td>
<td>Computer Applications in Business</td>
<td>2 2 3</td>
<td></td>
</tr>
<tr>
<td>SOSC -334</td>
<td>Political Science</td>
<td>2 1 3</td>
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</table>
BUSINESS ADMINISTRATION

SECOND YEAR

TERM IV

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>ADMN-402</td>
<td>Systems</td>
<td>0 2 1</td>
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<tr>
<td>ADMN-415</td>
<td>Business Management</td>
<td>2 2 4</td>
</tr>
<tr>
<td>ADMN-419</td>
<td>Business Seminar</td>
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<td></td>
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Elect five of the following options:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ADMN-403</td>
<td>Cost Accounting</td>
<td>2 2 3</td>
</tr>
<tr>
<td>ADMN-407</td>
<td>Production and Work Study</td>
<td>2 2 3</td>
</tr>
<tr>
<td>ADMN-409</td>
<td>Retail Accounting and Budgeting</td>
<td>2 2 3</td>
</tr>
<tr>
<td>ADMN-410</td>
<td>Merchandising</td>
<td>2 2 3</td>
</tr>
<tr>
<td>ADMN-411</td>
<td>Public Finance</td>
<td>2 2 3</td>
</tr>
<tr>
<td>ADMN-412</td>
<td>Finance and Financial Intermediaries</td>
<td>2 2 3</td>
</tr>
<tr>
<td>ADMN-418</td>
<td>Intermediate Accounting—B</td>
<td>2 2 3</td>
</tr>
<tr>
<td>ADMN-420</td>
<td>Risk and Insurance</td>
<td>2 2 3</td>
</tr>
<tr>
<td>ADMN-421</td>
<td>Marketing Research</td>
<td>2 2 3</td>
</tr>
<tr>
<td>ADMN-422</td>
<td>Computer Programming</td>
<td>2 2 3</td>
</tr>
<tr>
<td>SOSC-431</td>
<td>Contemporary Issues in Canadian Society</td>
<td>2 2 3</td>
</tr>
<tr>
<td>ADMN-423</td>
<td>Quantitative Methods</td>
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<tr>
<td>ADMN-424</td>
<td>Canadian Real Estate</td>
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<td>ADMN-425</td>
<td>Business Law II</td>
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<tr>
<td>ADMN-430</td>
<td>Other Elective</td>
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</table>

1. Accounting Pattern shall include:

ADMN-403 Cost Accounting
ADMN-418 Intermediate 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 and Office Machines

ENTRANCE REQUIREMENTS:
A minimum of complete Grade X or B.T.S.D. Adult TEN 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 10 months. Successful completion of this course qualifies the graduate for a Certificate of Attainment.

FEES AND EXPENSES:
The tuition fee is $7.00 per month, or fraction thereof. Other expenses include textbooks and supplies totalling approximately $80.00.

EMPLOYMENT OPPORTUNITIES:
Due to the emphasis on training in bookkeeping and on calculating 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 I

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Hours Per Week</th>
<th>Lect.</th>
<th>Lab.</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>CBOM-140 Accounting ......................</td>
<td>6</td>
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<td>CBOM-142 Business Machines ...............</td>
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<td>STNO-225 Office Procedures ..............</td>
<td>1</td>
<td>1</td>
<td>2</td>
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<tr>
<td>CBOM-144 Business Mathematics ..........</td>
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<td>STNO-122 Basic Typewriting .............</td>
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<td>6</td>
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<td>STNO-123 Business Communications ..</td>
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<tr>
<td></td>
<td>16</td>
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<tr>
<td>Subject No.</td>
<td>Subject</td>
<td>Lect.</td>
<td>Lab.</td>
<td>Hours</td>
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<td>CBOM-242</td>
<td>Business Machines</td>
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<td>STNO-225</td>
<td>Office Procedures</td>
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<td>CBOM-243</td>
<td>Data Processing</td>
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<td>CBOM-244</td>
<td>Business Mathematics</td>
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<td>STNO-223</td>
<td>Business Communications</td>
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<td>*</td>
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<td>Elect 3 of the following options</td>
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<tr>
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<tr>
<td>CBOM-241</td>
<td>2</td>
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<tr>
<td>STNO-222</td>
<td>2</td>
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<tr>
<td>STNO-224</td>
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<td>CBOM-247</td>
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**TERM II**

<table>
<thead>
<tr>
<th>Hours Per Week</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lect.</td>
<td>Lab.</td>
</tr>
<tr>
<td>14</td>
<td>21</td>
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</tbody>
</table>
Clerk Typist

ENTRANCE REQUIREMENTS

A minimum of Grade X or B.T.S.D. Adult TEN, 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 6 months. Successful completion of this course qualifies the graduate for a Certificate of Attainment.

FEES AND EXPENSES:

The tuition fee is $7.00 per month, or fraction thereof. Other expenses include textbooks and supplies totalling approximately $80.00.

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.

COURSE OUTLINE

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Hours Per Lecture</th>
<th>Hours Per Lab</th>
<th>Hours Per Week</th>
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<td>CLRK-102</td>
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<td>STNO-225</td>
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<td>3</td>
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<tr>
<td>CLRK-105</td>
<td>0</td>
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<tr>
<td>Physical Education (Optional)</td>
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<tr>
<td></td>
<td>12</td>
<td>23</td>
<td>25</td>
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</tbody>
</table>
Commercial and Industrial Sales

ENTRANCE REQUIREMENTS:

1. Complete Grade XII or B.T.S.D. Adult ELEVEN, 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 20 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 I provides the fundamental training required for a career in basic sales. Term II 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 I and withdraw during Term II 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 $100.00 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 the 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

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Term I</th>
<th>Term II</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours Per Week</td>
<td>Credit</td>
</tr>
<tr>
<td>SALE-114 Sales Communications</td>
<td>2 2 3</td>
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</tr>
<tr>
<td>SOSC-121 Human Behavior for Salesmen</td>
<td>2 1 2</td>
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<tr>
<td>SALE-101 Basic Salesmanship</td>
<td>3 3 5</td>
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<tr>
<td>SALE-102 “In Business” Training</td>
<td>- 2 2</td>
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<tr>
<td>SALE-103 Basic Marketing</td>
<td>2 2 4</td>
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<tr>
<td>SALE-104 Consumer Behaviour</td>
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<tr>
<td>SALE-105 Accounting</td>
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<tr>
<td>SALE-106 Business Math and Machines</td>
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<tr>
<td>SALE-107 Structure and Organization of Business</td>
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<td></td>
<td>15 15 25</td>
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<td>SALE-214 Advanced Sales Communications</td>
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<td>SOSC-221 Behavioral Science for Salesmen</td>
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<td>SALE-201 Advanced Salesmanship</td>
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<td>SALE-202 Advanced “In Business” Training</td>
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<tr>
<td>SALE-203 Marketing Management</td>
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<tr>
<td>SALE-206 Advertising and Other Promotions</td>
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</tr>
<tr>
<td>SALE-207 Structure and Organization of Business</td>
<td>2 1 3</td>
<td></td>
</tr>
<tr>
<td>SALE-208 Merchandising</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>14 16 25</td>
<td></td>
</tr>
</tbody>
</table>
Computer Analyst/Programmer

ENTRANCE REQUIREMENTS:
1. Complete Grade XII standing (University Entrance, General or Vocational Commercial Course) 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 20 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 (Dipl. 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 scientific and business application of electronic 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 idea in the field of technology.

**COURSE OUTLINE**

**First Year**

**TERM I**

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL-110</td>
<td>Business Communications</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>ADMN-101</td>
<td>Accounting</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>ADMN-109</td>
<td>Business Organizations</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>PROG-101</td>
<td>Data Processing Programming I</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>PROG-102</td>
<td>Data Processing Mathematics I</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>13</strong></td>
<td><strong>17</strong></td>
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</tbody>
</table>

**TERM II**

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL-208</td>
<td>Oral Communications</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>ENGL-209</td>
<td>Study Skills</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>ADMN-111</td>
<td>Economic Principles</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>ADMN-208</td>
<td>Accounting</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>PROG-201</td>
<td>Data Processing Programming II</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>PROG-202</td>
<td>Data Processing Mathematics II</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>10</strong></td>
<td><strong>20</strong></td>
</tr>
</tbody>
</table>
## Second Year

### TERM III

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADMN-221</td>
<td>Economic Principles</td>
<td>2</td>
</tr>
<tr>
<td>ADMN-403</td>
<td>Cost Accounting</td>
<td>2</td>
</tr>
<tr>
<td>BROG-301</td>
<td>Data Processing Programming II</td>
<td>3</td>
</tr>
<tr>
<td>PROG-302</td>
<td>Data Processing Mathematics III</td>
<td>3</td>
</tr>
<tr>
<td>PROG-303</td>
<td>Systems Analysis and Design</td>
<td>3</td>
</tr>
<tr>
<td>PROG-304</td>
<td>Operating Systems</td>
<td>2</td>
</tr>
</tbody>
</table>

| Total Credits | 15 | 15 | 25 |

### TERM IV

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOSC-131</td>
<td>Introduction to Social Sciences</td>
<td>2</td>
</tr>
<tr>
<td>ADMN-407</td>
<td>Production and Work Study.</td>
<td>2</td>
</tr>
<tr>
<td>*ADMN-415</td>
<td>Business Management</td>
<td>2</td>
</tr>
<tr>
<td>PROG-402</td>
<td>Data Processing Mathematics IV</td>
<td>3</td>
</tr>
<tr>
<td>PROG-403</td>
<td>Computer Topics and Modern Concepts</td>
<td>3</td>
</tr>
<tr>
<td>PROG-404</td>
<td>D.P. Organization</td>
<td>2</td>
</tr>
<tr>
<td>PROG-405</td>
<td>Project and Technical Report</td>
<td>0</td>
</tr>
</tbody>
</table>

| Total Credits | 14 | 16 | 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. If another elective is taken only 4 credit hours may be counted towards the diploma.
Creative Communications

ENTRANCE REQUIREMENTS: (one of)
1. Grade XII
2. Completion of Pre-College Course
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 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.

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:

COURSE OUTLINE

First Year

TERM 1

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRCO-101</td>
<td>Creative Writing Workshop</td>
<td>1</td>
<td>3</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>
</tbody>
</table>

*CRCO-107 Typewriting (required for those who lack basic typing skills) 0 2

TERM 2

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Hours Per 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>
</tr>
</tbody>
</table>

|                  |                  | 13             | 17           | 25           |

Second Year

TERM 3

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRCO-301</td>
<td>Copywriting Workshop</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>CRCO-302</td>
<td>Journalism Workshop</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>CRCO-303</td>
<td>TV-Radio Lab.</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>CRCO-304</td>
<td>Creative Writing</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>CRCO-305</td>
<td>Public Relations</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>CRCO-207</td>
<td>Photography</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
During Term III students are placed with business firms for practical work experience for a period of two weeks.

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRCO-401</td>
<td>Writing Seminar</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>CRCO-402</td>
<td>Advanced Writing Projects</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>CRCO-403</td>
<td>Cultural History</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>ADMN-103</td>
<td>Marketing</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>CRCO-404</td>
<td>Special Problems in Advertising</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>CRCO-405</td>
<td>Interpretive Reporting</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>CRCO-407</td>
<td>Freelance Writing</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>CRCO-408</td>
<td>Copywriting and Copy Editing</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>CRCO-409</td>
<td>TV-Radio Lab.</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>CRCO-410</td>
<td>Public Relations</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>CRCO-411</td>
<td>Mass Media and Society</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>CRCO-412</td>
<td>Theatre Arts</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>CRCO-414</td>
<td>Theatre Arts Lab.</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

During Term IV students are placed with business firms for a further two-week period of practical work experience.
Food Services

ENTRANCE REQUIREMENTS:

PREREQUISITES for all Food Services courses.

1. Grade X or B.T.S.D. Adult TEN.

2. Recent medical, dental and chest X-ray certificates will be required from each applicant before commencing training.

3. An applicant for Chef's Training must have the prerequisite for the Food Services course and one of:
   (a) Successful completion of a Basic Cooking course
   (b) 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 $7.00 per month or fraction thereof. Other expenses include textbooks and supplies totalling approximately $35.00.

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>Subject Name</th>
<th>Hours</th>
</tr>
</thead>
<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>40</td>
</tr>
<tr>
<td>RESC-510</td>
<td>Science</td>
<td>20</td>
</tr>
<tr>
<td>NUTR-507</td>
<td>Nutrition</td>
<td>20</td>
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<tr>
<td></td>
<td></td>
<td><strong>1,120</strong></td>
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</tbody>
</table>

### COMMERCIAL BAKING COURSE OUTLINE

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject Name</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>
</tr>
<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>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>790</strong></td>
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</table>

### CHEF TRAINING COURSE OUTLINE

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject Name</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEF-301</td>
<td>Kitchen Management</td>
<td>248</td>
</tr>
<tr>
<td>CHEF-302</td>
<td>Garde Manger</td>
<td>248</td>
</tr>
<tr>
<td>CHEF-303</td>
<td>Patisserie</td>
<td>248</td>
</tr>
<tr>
<td>CHEF-304</td>
<td>Practical Work</td>
<td>496</td>
</tr>
<tr>
<td></td>
<td>Students will also receive instruction in accounting, nutrition, human relations, etc.</td>
<td>160</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>1,400</strong></td>
</tr>
</tbody>
</table>

### MEAT CUTTING COURSE OUTLINE

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject Name</th>
<th>Hours</th>
</tr>
</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>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>700</strong></td>
</tr>
</tbody>
</table>
Graphic Arts

ENTRANCE REQUIREMENTS:

A minimum of complete Grade XI in the General, University Entrance, or Vocational courses; or Basic Training for Skill Development Adult ELEVEN. 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 pre-requisites 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 10 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 1 or 2 of the 3 blocks. This is possible if there are openings in the groups. Maximum group capacity is 12 students.

FEES AND EXPENSES:

The tuition fee is $7.00 per month, or fraction thereof. Other expenses include textbooks and supplies totalling approximately $50.00.
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

Subject No.
GART-100 English
GART-101 Typewriting
GART-103 Design and Layout
GART-104 Hand Composition
GART-105 Machine Composition
GART-106 Type Imposition
GART-107 Platen and Cylinder Press
GART-108 Paste Make-up
GART-109 Camera and Darkroom
GART-110 Offset Imposition and Platemaking
GART-111 Offset Press
GART-112 Bindery Operations
Hairdressing and Beauty Culture

ENTRANCE REQUIREMENTS:

1. Academic — Grade X or B.T.S.D. Adult TEN.
   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 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.

DURATION OF COURSE:

Approximately 10 months. Successful completion of this course qualifies the graduate for a Certificate of Attainment.

FEES AND EXPENSES:

The tuition fee is $7.00 per month, or fraction thereof. Other expenses include textbooks, and supplies including uniforms totalling approximately $100.00.

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>Description</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAIR-125</td>
<td>Introduction to Cosmetology</td>
<td>5</td>
</tr>
<tr>
<td>HAIR-126</td>
<td>Bacteriology, Sterilization and Sanitation</td>
<td>35</td>
</tr>
<tr>
<td>HAIR-127</td>
<td>Anatomy and Physiology</td>
<td>20</td>
</tr>
<tr>
<td>HAIR-128</td>
<td>Shampoo and Rinses</td>
<td>105</td>
</tr>
<tr>
<td>HAIR-129</td>
<td>Hair and Scalp Treatment</td>
<td>70</td>
</tr>
<tr>
<td>HAIR-130</td>
<td>Hairstyling</td>
<td>420</td>
</tr>
<tr>
<td>HAIR-131</td>
<td>Hair Shaping</td>
<td>210</td>
</tr>
<tr>
<td>HAIR-132</td>
<td>Cold Waving</td>
<td>140</td>
</tr>
<tr>
<td>HAIR-133</td>
<td>Manicuring</td>
<td>70</td>
</tr>
<tr>
<td>HAIR-134</td>
<td>Tinting and Bleaching</td>
<td>175</td>
</tr>
<tr>
<td>HAIR-135</td>
<td>Skin and Facial Treatment</td>
<td>70</td>
</tr>
<tr>
<td>HAIR-136</td>
<td>Beauty Salon Management</td>
<td>35</td>
</tr>
<tr>
<td>HAIR-137</td>
<td>Beauty, Charm and Poise</td>
<td>45</td>
</tr>
</tbody>
</table>

1,400
Hotel and Restaurant Administration

ENTRANCE REQUIREMENTS:

1. Grade XII (University Entrance, General or Commercial Courses) 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 20 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.

FEES AND EXPENSES:

The tuition fee is $100.00 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 may expect to start well up the scale in these departments and through initiative, and additional specialized training, and on-the-job experience aspire to managerial positions. One pre-requisite for every job in the hospitality field is to have a genuine liking for strangers and people and to be able to excite this feeling in them.
# COURSE OUTLINE
## FIRST YEAR

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Term I</th>
<th>Hours</th>
<th>Credit</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL-110</td>
<td>Business Communications</td>
<td></td>
<td>20</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>SOSC-131</td>
<td>Introduction to Social Sciences</td>
<td></td>
<td>30</td>
<td>20</td>
<td>2</td>
</tr>
<tr>
<td>ADMN-111</td>
<td>Economic Principles</td>
<td></td>
<td>40</td>
<td>40</td>
<td>3</td>
</tr>
<tr>
<td>HOTL-101</td>
<td>Foods and Beverages</td>
<td></td>
<td>40</td>
<td>60</td>
<td>4</td>
</tr>
<tr>
<td>HOTL-102</td>
<td>Sanitation, Safety, Housekeeping</td>
<td></td>
<td>40</td>
<td>20</td>
<td>3</td>
</tr>
<tr>
<td>HOTL-103</td>
<td>Typewriting</td>
<td></td>
<td>10</td>
<td>30</td>
<td>2</td>
</tr>
<tr>
<td>HOTL-104</td>
<td>Accounting</td>
<td></td>
<td>40</td>
<td>40</td>
<td>4</td>
</tr>
<tr>
<td>HOTL-105</td>
<td>Mathematics and Business Machines</td>
<td></td>
<td>40</td>
<td>40</td>
<td>2</td>
</tr>
<tr>
<td>HOTL-109</td>
<td>Introduction to Business</td>
<td></td>
<td>10</td>
<td>20</td>
<td>2</td>
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## TERM II

<table>
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<th>Subject</th>
<th>Hours</th>
<th>Credit</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL-208</td>
<td>Oral Communications</td>
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<td>40</td>
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<tr>
<td>ENGL-209</td>
<td>Study Skills</td>
<td>0</td>
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</tr>
<tr>
<td>SOSC-231</td>
<td>Human Behavior in Organizations</td>
<td>40</td>
<td>20</td>
<td>2</td>
</tr>
<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>
<td>40</td>
<td>40</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Maintenance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HOTL-203</td>
<td>Front Office Procedures</td>
<td>40</td>
<td>40</td>
<td>4</td>
</tr>
<tr>
<td>HOTL-204</td>
<td>Departmental Cost Controls</td>
<td>40</td>
<td>80</td>
<td>4</td>
</tr>
<tr>
<td>HOTL-206</td>
<td>Special Catering and Waitress Services</td>
<td>40</td>
<td>40</td>
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<td></td>
<td>Total</td>
<td>240</td>
<td>360</td>
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SECOND YEAR

TERM III

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOTL-301</td>
<td>Food Service Operations</td>
<td>40</td>
</tr>
<tr>
<td>HOTL-304</td>
<td>Management Accounting</td>
<td>20</td>
</tr>
<tr>
<td>HOTL-305</td>
<td>Advertising and Marketing Research</td>
<td>40</td>
</tr>
<tr>
<td>HOTL-308</td>
<td>Physical Facilities Layout Equipment</td>
<td>40</td>
</tr>
<tr>
<td>HOTL-309</td>
<td>Materials Control</td>
<td>40</td>
</tr>
<tr>
<td>HOTL-310</td>
<td>Foods and Beverage Service</td>
<td>40</td>
</tr>
<tr>
<td>HOTL-311</td>
<td>Personnel</td>
<td>40</td>
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</table>

TOTAL CREDITS: 260

TERM IV

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOTL-407</td>
<td>Food and Beverage Control</td>
<td>40</td>
</tr>
<tr>
<td>HOTL-408</td>
<td>Seminar and Field Work</td>
<td>40</td>
</tr>
<tr>
<td>HOTL-409</td>
<td>Beverage Management</td>
<td>20</td>
</tr>
<tr>
<td>HOTL-410</td>
<td>Law and Public Relations</td>
<td>40</td>
</tr>
<tr>
<td>HOTL-411</td>
<td>Financial Management</td>
<td>40</td>
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</tbody>
</table>

TOTAL CREDITS: 180

Elect two of the following options:
(HOTL-401 and HOTL 403 may not be taken in combination)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOTL-401</td>
<td>Advanced Foods and Kitchen Management</td>
<td>40</td>
</tr>
<tr>
<td>HOTL-402</td>
<td>Speciality Group and Resource Management</td>
<td>40</td>
</tr>
<tr>
<td>HOTL-403</td>
<td>In-Service Training</td>
<td>40</td>
</tr>
<tr>
<td>HOTL-404</td>
<td>Human Relations, Hospitality Industry</td>
<td>40</td>
</tr>
<tr>
<td>HOTL-405</td>
<td>Introduction to Computers</td>
<td>40</td>
</tr>
<tr>
<td>HOTL-406</td>
<td>OTHER ELECTIVE</td>
<td>40</td>
</tr>
</tbody>
</table>

TOTAL CREDITS: 220

* 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 XII (University Entrance, General or Commercial course) with demonstrated proficiency in English.

2. 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 examination. The Admissions Committee will consider each applicant on an individual basis.

3. B.T.S.D. Adult ELEVEN , A 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:

On 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 course in Library Technician is $100.00 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 I

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIBR-207</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>LIBR-102</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>LIBR-103</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>LIBR-107</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>LIBR-105</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>LIBR-106</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

Laboratory & Practical Work

---

TERM 2

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIBR-201</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>LIBR-203</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>LIBR-206</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>LIBR-209</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>LIBR-210</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>LIBR-210</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

In addition to the above, at least 3 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 4 weeks in other established libraries in the community during the second term.
Medical Records Technician

ENTRANCE REQUIREMENTS:

1. A minimum of Grade XI or Adult ELEVEN Business and Basic Typewriting 35 W.P.M.
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 10 months. Successful completion of this course qualifies the graduate for a Certificate of Attainment.

FEES AND EXPENSES:

The tuition fee is $7.00 per month or fraction thereof. Other expenses include textbooks and supplies totalling approximately $100.00.

EMPLOYMENT OPPORTUNITIES:

Medical Records Technician graduates are qualified for employment in Medical and Dental offices, Medical Clinics, Hospitals and Public Health Departments and Agencies to fill positions in medical recordkeeping and processing.
## COURSE OUTLINE

### TERM I

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>STN0-123</td>
<td>Business Communications</td>
<td>2 3</td>
<td>5</td>
</tr>
<tr>
<td>MREC-102</td>
<td>Data Processing and Medical Statistics</td>
<td>3 2</td>
<td>5</td>
</tr>
<tr>
<td>MREC-103</td>
<td>Medical Terminology I</td>
<td>4 4</td>
<td>6</td>
</tr>
<tr>
<td>MREC-104</td>
<td>Medical Records Science I</td>
<td>2 0</td>
<td>2</td>
</tr>
<tr>
<td>MREC-109</td>
<td>Anatomy and Physiology</td>
<td>2 2</td>
<td>4</td>
</tr>
<tr>
<td>SOSC-131</td>
<td>Introduction to Social Sciences</td>
<td>2 1</td>
<td>3</td>
</tr>
</tbody>
</table>

### TERM II

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MREC-201</td>
<td>Legal Aspects of Medical Records</td>
<td>1 1</td>
<td>2</td>
</tr>
<tr>
<td>MREC-202</td>
<td>Medical Records Science II</td>
<td>2 2</td>
<td>4</td>
</tr>
<tr>
<td>*MREC-203</td>
<td>Medical Terminology II and Medical Essentials</td>
<td>5 5</td>
<td>9</td>
</tr>
<tr>
<td>MREC-204</td>
<td>Medical Coding</td>
<td>3 2</td>
<td>4</td>
</tr>
<tr>
<td>MREC-209</td>
<td>Anatomy and Physiology</td>
<td>2 2</td>
<td>4</td>
</tr>
<tr>
<td>MREC-205</td>
<td>Business Organization &amp; Management</td>
<td>1 1</td>
<td>2</td>
</tr>
</tbody>
</table>

* Includes 2 weeks practicum experience
ENTRANCE REQUIREMENTS:

A minimum of complete Grade XI in the General, University Entrance or Vocational Courses; or Basic Training for Skill Development Adult ELEVEN. 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 10 months. Successful completion of this course qualifies the graduate for a Certificate of Attainment.

FEES AND EXPENSES:

The tuition fee is $7.00 per month, or fraction thereof. Other expenses include textbooks and supplies totalling approximately $50.00.

EMPLOYMENT OPPORTUNITIES:

An increasing demand in industry for Photographic Technicians provides many opportunities for those who desire 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>Course Title</th>
<th>Hours</th>
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<td>FOTO-100</td>
<td>Photographic Theory</td>
<td>120</td>
</tr>
<tr>
<td>FOTO-101</td>
<td>Practical Photography — Monochrome</td>
<td>400</td>
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<tr>
<td>FOTO-102</td>
<td>Related Sciences</td>
<td>80</td>
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<tr>
<td>ENGL-507</td>
<td>Communication</td>
<td>40</td>
</tr>
<tr>
<td>FOTO-104</td>
<td>Composition and Design</td>
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</tbody>
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### Total Hours: 680

## TERM 2

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>FOTO-200</td>
<td>Photographic Theory</td>
<td>80</td>
</tr>
<tr>
<td>FOTO-201</td>
<td>Practical Photography — Monochrome</td>
<td>220</td>
</tr>
<tr>
<td>FOTO-202</td>
<td>Related Sciences</td>
<td>40</td>
</tr>
<tr>
<td>FOTO-203</td>
<td>English and Related Business Studies</td>
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</tr>
<tr>
<td>FOTO-204</td>
<td>Graphic Arts</td>
<td>20</td>
</tr>
<tr>
<td>FOTO-205</td>
<td>Practical Photography — Colour</td>
<td>300</td>
</tr>
</tbody>
</table>

### Total Hours: 680
Secretarial Science

ENTRANCE REQUIREMENTS:

1. Complete Grade XII standing (University Entrance, General, Vocational Commercial), 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 20 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 $100.00 for each of the four terms. Other expenses include textbooks, incidentals, board and lodging.

EMPLOYMENT OPPORTUNITIES:

The purpose of the Secretarial 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
### FIRST YEAR

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>TERM I</strong></td>
<td>Lect.</td>
<td>Lab.</td>
</tr>
<tr>
<td>ENGL-107</td>
<td>Oral Communications</td>
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<td>2</td>
</tr>
<tr>
<td>SECR-103</td>
<td>Basic Shorthand</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>SOSC-131</td>
<td>Introduction to Social Sciences</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>ADMN-101</td>
<td>Accounting</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>SECR-101</td>
<td>Secretarial Procedures</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>SECR-102</td>
<td>Typewriting</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>SECR-104</td>
<td>Introduction to Business</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>SECR-105</td>
<td>Statistics</td>
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<th>Lect.</th>
<th>Lab.</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
<td>ENGL-209</td>
<td>Study Skills</td>
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</tr>
<tr>
<td>ENGL-211</td>
<td>Written English</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>SOSC-231</td>
<td>Human Behavior in Organizations</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>ADMN-111</td>
<td>Economic Principles</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>ADMN-201</td>
<td>Accounting</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>SECR-201</td>
<td>Secretarial Procedures</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>SECR-202</td>
<td>Intermediate Typewriting</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>SECR-203</td>
<td>Basic Shorthand and Transcription</td>
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<tr>
<td></td>
<td><strong>Total</strong></td>
<td>15</td>
<td>17</td>
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# Second Year

## TERM III

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
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<td>ENGL-310</td>
<td>Report Writing</td>
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<tr>
<td>SOSC-334</td>
<td>Political Science</td>
<td>2 1 3</td>
</tr>
<tr>
<td>ADMN-202</td>
<td>Economics</td>
<td>2 2 4</td>
</tr>
<tr>
<td>SECR-301</td>
<td>Business Law</td>
<td>1 1 2</td>
</tr>
<tr>
<td>SECR-302</td>
<td>Advanced Typewriting</td>
<td>1 4 5</td>
</tr>
<tr>
<td>SECR-303</td>
<td>Advanced Shorthand &amp; Transcription</td>
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<td>SECR-309</td>
<td>Secretarial Procedures</td>
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## TERM IV

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**Elect two of the following options:**

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<td>11 17 25</td>
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Stenography Course

ENTRANCE REQUIREMENTS:

A complete Grade XI or B.T.S.D. Adult ELEVEN. Grade XII 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 10 months. Successful completion of this course qualifies the graduate for a Certificate of Attainment.

FEES AND EXPENSES:

The tuition fee is $7.00 per month, or fraction thereof. Other expenses include textbooks and supplies totalling approximately $80.00.

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 stenographic 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.

COURSE OUTLINE

TERM I

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Lect.</th>
<th>Lab.</th>
<th>Hours</th>
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# Business Education Programs

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## Industrial Education Programs

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<tr>
<td>(3-40-52-007)</td>
<td>Vocational Industrial (One-Year)</td>
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Business Teacher Education

ENTRANCE REQUIREMENTS:

TWO YEAR COURSE

Grade XII standing in 300, 301, or 305 subjects or their equivalents.

Anyone not meeting the above requirement 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 will be required to write an entrance exam. The Admissions Committee will consider each applicant on an individual basis.

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

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

ONE YEAR COURSE

A Grade XII standing in 300, 301 or 305 subjects or their equivalents.

AND

Complete standing in the High School Business Education program or standing in a Business Education program of approximately ten months in duration at an approved business college.

NOTE: To be approved, a Business Education program must consist of the following courses at the Grade XII or equivalent level:

(a) Typewriting 302
(b) Shorthand 302 or Accounting 302
(c) Three of the following: Office Practice, Business Law, Economics, Marketing, Business Management, Business Data Processing, Accounting (where not applied in (b)), and other approved courses.

All students must have completed an introductory accounting course at or above the Grade XI level.

Other post high school Business Education programs will be considered on an individual basis.
Preference will be given to those who demonstrate proficiency in office skills. All 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.

*See note

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

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.

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

NOTE: *Where an applicant has completed a post-secondary program which would allow him advanced credits in the one-year program, Typewriting will not be a prerequisite. This applies mainly to graduates of Red River Community College and the University of Manitoba, Faculty of Commerce.

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 Business Education prerequisites.

FEES AND OTHER COSTS:

In 1973-74, fees are waived for applicants agreeing to teach in Manitoba for one year for each year of training received. Fees for other applicants are $200 per year.

A student activity fee of $1.50 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. The cost in the one-year course is approximately $125.

Students being sponsored by Canada Manpower or any other agency will not be expected to pay their own fees.

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 established 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 Provincial Community Colleges.

Two 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, and includes data processing and heavier course in marketing.
<table>
<thead>
<tr>
<th>Subject No.</th>
<th>COURSE</th>
<th>Hours</th>
<th>Credit</th>
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<tbody>
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<td>Business Law I</td>
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<td>BUTE-111</td>
<td>Data Processing I</td>
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<td>BUTE-112</td>
<td>Data Processing II</td>
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<tr>
<td>BUTE-204</td>
<td>Economics Principles I</td>
<td>80</td>
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<td>BUTE-205</td>
<td>Marketing I</td>
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<td>BUTE-207</td>
<td>Marketing II</td>
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<tr>
<td>BUTE-209</td>
<td>Methods of Teaching Basic Business and Accounting</td>
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<td>BUTE-211</td>
<td>Course Construction in Business Education</td>
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<td>4</td>
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<td>BUTE-212</td>
<td>Student Teaching</td>
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<td>BUTE-213</td>
<td>Educational Testing and Evaluation</td>
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<td>4</td>
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<tr>
<td>BUTE-216</td>
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<td>BUTE-217</td>
<td>Business Organization and Management</td>
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<td>BUTE-218</td>
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<td>Accounting III</td>
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<td>BUTE-221</td>
<td>Office Practice</td>
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<td>BUTE-222</td>
<td>Economics Principles II</td>
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# TWO YEAR PROGRAM

## Accounting—Major

### First Year

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<td>BUTE-107</td>
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<td>Business Law I</td>
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<td>BUTE-109</td>
<td>Communications Skills</td>
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<td>5</td>
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<tr>
<td>BUTE-110</td>
<td>Introductory Psychology</td>
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<tr>
<td>BUTE-111</td>
<td>Data Processing I</td>
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**TOTAL** 1220 50

### Second Year

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<td>BUTE-209</td>
<td>Methods of Teaching Basic Business and Accounting</td>
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<td>Course Construction in Business Education</td>
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<td>BUTE-212</td>
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<td>BUTE-217</td>
<td>Business Organizations and Management</td>
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**TOTAL** 1060 50
### ONE YEAR PROGRAM

**Secretarial — Major**

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<td>BUTE-204</td>
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<td>BUTE-205</td>
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## TWO YEAR PROGRAM

### Secretarial—Major

#### First Year

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<td>Business Mathematics and Office Machines</td>
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<tr>
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**TOTAL** 1240 50

#### Second Year

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<td>Shorthand Transcription and Typewriting</td>
<td>120</td>
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<tr>
<td>BUTE-202</td>
<td>Office Practice</td>
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<td>BUTE-204</td>
<td>Economics Principles I</td>
<td>80</td>
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<td>BUTE-208</td>
<td>Methods of Teaching Shorthand</td>
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<td>Methods of Teaching Basic</td>
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<td></td>
<td>Business and Accounting</td>
<td>100</td>
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<tr>
<td>BUTE-211</td>
<td>Course Construction in Business Education</td>
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<td>BUTE-212</td>
<td>Student Teaching</td>
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<tr>
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<td>BUTE-216</td>
<td>Methods of Teaching Typewriting</td>
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<td>Business Organization and Management</td>
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<tr>
<td>BUTE-222</td>
<td>Economics Principles II</td>
<td>80</td>
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</table>

**TOTAL** 1160 50
Industrial Arts Teacher Education

ENTRANCE REQUIREMENTS:

A complete Grade XII program as prescribed by the Department of Education.

Applicants not meeting the above requirement 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.

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.

Applicants may be required to write entrance tests and to appear for a personal interview.

Applicants may 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:

In 1973-74, fees are waived for applicants agreeing to teach in Manitoba for one year for each year of training received. Fees for other applicants are $200 per year.

A student activity fee of $1.50 per month will be collected at the time of registration.

Books and supplies for the two year course cost approximately $100 in the first year and $100 in the second 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 PROGRAM
#### First Year

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>COURSE</th>
<th>Hours</th>
<th>Credit</th>
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<tbody>
<tr>
<td>IATE-101</td>
<td>Drafting and Design</td>
<td>200</td>
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<td>IATE-102</td>
<td>Metalwork</td>
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</tr>
<tr>
<td>IATE-103</td>
<td>Graphic Arts</td>
<td>200</td>
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<tr>
<td>IATE-104</td>
<td>Woodwork</td>
<td>200</td>
<td>7</td>
</tr>
<tr>
<td>IATE-105</td>
<td>Methods of Teaching Industrial Subjects</td>
<td>120</td>
<td>8</td>
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<tr>
<td>IATE-109</td>
<td>Communication Skills</td>
<td>80</td>
<td>5</td>
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<tr>
<td>IATE-112</td>
<td>Audio Visual Education</td>
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<td>IATE-212</td>
<td>Student Teaching</td>
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<tr>
<td>BUTE-110</td>
<td>Introductory Psychology</td>
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<td><strong>TOTAL</strong></td>
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#### Second Year

<table>
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<th>COURSE</th>
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<tr>
<td>IATE-201</td>
<td>Plastics</td>
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<td>IATE-202</td>
<td>Electricity and Electronics</td>
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<td>IATE-203</td>
<td>Power Technology</td>
<td>200</td>
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<tr>
<td>IATE-205</td>
<td>Laboratory Methods in Industrial Arts</td>
<td>80</td>
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<tr>
<td>IATE-207</td>
<td>General Science</td>
<td>80</td>
<td>5</td>
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<tr>
<td>IATE-209</td>
<td>Organizing Industrial Education</td>
<td>60</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IATE-210</td>
<td>Principles of Industrial Education</td>
<td>60</td>
<td>4</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 and Evaluation</td>
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<td>BUTE-218</td>
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<td>IATE-214</td>
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<td><strong>TOTAL</strong></td>
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</table>


Vocational Industrial Teacher Education

ENTRANCE REQUIREMENTS:

1. A complete Grade XI academic or complete Grade XII Vocational standing as prescribed by the Department of Education.

   Anyone not meeting the above requirement 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.

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.

   Applicants may be required to write entrance tests and appear for personal interviews.

DURATION OF THE COURSE:

One school year of ten months’ duration.

FEES AND OTHER COSTS:

Books and supplies for the ten-month course will cost approximately $100.00.

A student activity fee of $1.50 per month will be collected at the time of registration.

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 requirements of the Department of Education for Vocational Industrial teachers.

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>COURSE</th>
<th>Hours</th>
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<td>Trade Theory and Practice</td>
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<td>VITE-102</td>
<td>Drawing Interpretation</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>
<td>5</td>
</tr>
<tr>
<td>IATE-112</td>
<td>Audio Visual Education</td>
<td>60</td>
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<td>IATE-207</td>
<td>General Science</td>
<td>80</td>
<td>5</td>
</tr>
<tr>
<td>IATE-209</td>
<td>Organizing Industrial Education Facilities</td>
<td>60</td>
<td>4</td>
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<tr>
<td>IATE-210</td>
<td>Principles of Industrial Education</td>
<td>60</td>
<td>4</td>
</tr>
<tr>
<td>IATE-211</td>
<td>Course Construction in Industrial Education</td>
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<tr>
<td>IATE-212</td>
<td>Student Teaching</td>
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<td>N.C.</td>
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<td>BUTE-213</td>
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<td>BUTE-218</td>
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<td>TOTAL</td>
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</table>
Extension And Community Services Division

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Basic Training for Skills Development

F. Yadao, B.Sc., M.Sc. ......................... Supervisor, Winnipeg
A.B. Ramrattan, B.A. .......................... Supervisor,
Dip. in Adult Education ....................... East Central Manitoba
J.B. Froese, B.Sc. .............................. Assist. Supervisor, Winnipeg
F. J. Gamaldo, B.A. ............................ Assist. Supervisor, Winnipeg
Cert. in Education ....................... Curriculum Consultant
L.R. Fletcher, B.A., B.Ed. ....................
FACULTY

Ali, J., B.Sc.
Anderson, J., B.A., M.Ed.
Aubin, C., B.A. (Sociology).
   B.A. (Fine Arts)
Barnes, F. W.
Bird, V. (Mrs.)
Bozyk, B. (Miss), B.A.
Braid, M. (Mrs.)
Buchanan, G., B.Sc.
Burkhardt, A. (Miss), B.A., B.
   Ed.
Burtniak, H. (Miss), B.A.
Chow, B., B.A. (Hons.)
Cox, T., B.Sc.
Darvill, D., B.A.
Doerksen, D.
Doerksen, J., B.A., Th.B.
Eischen, T. B.A.
Faryon, W., B.A.L.L.B.
Fitzgerald, D. (Miss), B.A.
Fortune, P., B.Sc.
Foss, D. (Mrs.)
Fraser, P. (Miss), B.A.
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.
Heuchert, F., B.A., B.Ed.
Karalnick, M., B.A., B. Ed.
Kellington, N., B.Sc.
Keep, D., 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, 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.
Mohammed, A.B., B.A.
Nairn, B., B.A.
Nelson, C.
Nicholson, S. (Mrs.)
Oliver, R.
Payne, E., B.A.
Peach, N., B.Sc., B. Ped.
   (Hons), 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 Education
Ranville, D. (Miss)
Riddle, K. (Mrs.)
Sacher, C. (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.
Tickner, D., B.A.
Tickner, R. (Mrs.) B.A.
Vanhartevelt, H. (Mrs.), Dipl.
   Psychiatric training
Vatnsdal, G, B.A.
Walmsley, R.
Wilmot, C., B.A.
Zwolak, P. (Miss), B.A.

B.T.S.D. NEW CAREERISTS

Boubard, L.
Bushie, G.
Cochrane, E.  
Harper, T
Henderson, D.
AGRICULTURE AND SPECIAL COURSES

A.C. Chorney, B.S.A., B. Ed. Supervisor, Agriculture & Special Courses
J.A. Boechers, B.S.A. (Hons.) E. Meyer, Dip. Agriculture
J.M. Bowman, B.S.A. R. Pasieczka, Dip. Agriculture
D.L. Gervin, Dip. Agriculture J.R. Pedersen, Dip. Agriculture
K.C. Henry, B.S.A. W.M. Polon, B.S.A.
C.C. Hunter, Dipt. Agriculture K. Proven, Dip. Agriculture
M.H. Johnston, B.S.A. B.D. Randell, B.S.A.
J. Kostel, Dip Agriculture R. Radcliffe, Dip. Agriculture
J. Martens, B.S.A. R. Rasmussen, B.S.A.
J. Martin, B.S.A. D. Richmond, Dip. Agriculture
C.J. Masse, (Mrs.), B.S.A. B.E. Stober, Dip. Agriculture
T. McGregor, Dip. Agriculture L.B. Sweetser, Dip. Agriculture

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
A.G. Latto Consultant
C.W. Keil Consultant
Basic Training for Skills Development

Basic Training For Skill Development Courses are available in Manitoba to mature adults who wish to acquire further training but lack the necessary academic qualifications. The courses are primarily designed to upgrade and prepare students for training at the Manitoba Community Colleges.

LOCATION

Basic Training For Skills Development courses are offered at the Fort Osborne Centre and Red River Community College, Winnipeg; The Assiniboine Community College, Brandon; the Keewating Community College, The Pas; and various rural centres.

ENTRANCE QUALIFICATIONS

Courses are open to students who are sixteen years of age or more and who have been out of school at least one year. In addition, each student is required to write a Level Placement Test before enrolling in a course to ensure that he will start at the level for which he is qualified.

SUBSISTENCE ALLOWANCES

In certain cases students are eligible to receive subsistence allowances while attending Basic Training Skills For Development courses. Persons interested in obtaining information on subsistence allowances should contact their local Canada Manpower Centre. Students who do not qualify for support from Canada Manpower may be eligible to receive assistance from the Department of Health and Social Development through their Student Aid program.

BASIC TRAINING FOR SKILLS DEVELOPMENT COURSES

Four different levels of instruction are offered in the Basic Training for Skills Development Program. It is not intended that these levels shall correspond specifically with grade levels in the public school system. However, some approximate comparisons are useful and they are indicated with the description of each level.

TEACHING METHODS

Two approaches to training are employed in B.T.S.D. courses between Adult FIVE and Adult TEN. Through Placement Testing, students are referred either to a Continuous Progress
or to a Group Instruction class. Group Instruction classes, which resemble the traditional classroom situation in many ways, begin and end on specified dates. The Continuous Progress approach on the other hand, admits students to training at any stage of an Adult TEN, EIGHT or FIVE course and allows them to graduate whenever they complete Adult TEN. The duration of the course depends on the level at which the student enrolls.
BASIC TRAINING FOR SKILLS DEVELOPMENT

ADULT FIVE

DURATION:
8 weeks.

PURPOSE:
To prepare students for Adult EIGHT

APPROXIMATE GRADE EQUIVALENT:
Grades 4 and 5

COURSE CONTENT:
Mathematics - 80 periods
Communication - 160 periods

COURSE DETAILS:
Mathematics - Numbers, basic operations, problem solving.
Communication - Reading and vocabulary development, spelling, basic grammar, sentence writing.

ADULT EIGHT

DURATION:
16 weeks

PURPOSE:
To prepare students for Adult TEN

APPROXIMATE GRADE EQUIVALENT:
Grades 6 to 8

COURSE CONTENT:
Mathematics - 200 periods
Communication - 200 periods
Physical Science - 80 periods

COURSE DETAILS:
Mathematics - Whole numbers (review), fractions, decimals, percentages, basic graphs, budgeting and spending.

Communication - Development of reading speed and comprehension, vocabulary and spelling development, grammar, mechanics, sentence structure, sentence writing.

Physical Science - Scientific analysis, measurement, fire, water, electricity, magnetism, machines.
BASIC TRAINING FOR SKILLS DEVELOPMENT

ADULT TEN

DURATION:
16 weeks

PURPOSE:
To prepare students for Adult ELEVEN and for courses at Manitoba Community Colleges requiring a Grade 10 standing.

APPROXIMATE GRADE EQUIVALENT:
Grades 9 and 10

COURSE CONTENT:
Mathematics - 160 periods
Communication - 160 periods
Physical Science - 160 periods

COURSE DETAILS:
Mathematics - Further 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; paragraph construction, outlining, expository paragraph writing.

Physical Science - Basic scientific concepts; measurements of forces, temperature, heat, pressure, density, work, electricity; systems of measurement; problem solving.

ADULT ELEVEN
The Adult ELEVEN course is divided into two sections: Adult ELEVEN-A (Science - based) and Adult ELEVEN-B (Arts - based). Students should confirm the entrance requirements of the Community College course of their choice before enrolling in Adult ELEVEN in order to ensure that they have chosen the proper section.

DURATION:
Both sections of the Adult ELEVEN course are 20 weeks in length.
BASIC TRAINING FOR SKILLS DEVELOPMENT
ADULT ELEVEN

PURPOSE:

To prepare students for Manitoba Community College courses which require a grade XI standing for entrance.

APPROXIMATE GRADE EQUIVALENT:

Grade 11

ADULT ELEVEN - A

COURSE CONTENT:

Mathematics - 220 periods
Communications - 160 periods
Physical Science - 220 periods

COURSE DETAILS:

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; review of grammar, usage, sentence construction usage; writing of paragraphs, letters, research papers, reading development; speed and comprehension; vocabulary and spelling 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 ELEVEN - B

COURSE CONTENT:

Business Mathematics - 200 periods
Communication - 200 periods
Canadian Economy - 200 periods
BASIC TRAINING FOR SKILLS DEVELOPMENT
ADULT ELEVEN-B

COURSE DETAILS:
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 labor organization; monetary and banking systems; alternate economic systems.

BASIC LITERACY:
PURPOSE:
A programmed course is available to bring the skills of a candidate up to the entrance requirements of B.T.S.D. Adult FIVE level. This course is offered to trainees who can speak and understand English.

APPROXIMATE GRADE EQUIVALENT:
Grades 0 to 3

COURSE CONTENT:
Basic Arithmetic
Communication.
OCCUPATIONAL ENGLISH

The Occupational English course offers instruction in English as a second language to those who are unemployed by reason of a lack of proficiency in English. Its major purpose is to provide students with the means of communication.

The course is divided into three levels: Basic, Intermediate and Advanced.

THE BASIC COURSE
DURATION:
8 weeks

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

THE INTERMEDIATE COURSE
DURATION:
8 weeks

COURSE CONTENT:
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.

THE ADVANCED COURSE
DURATION:
8 weeks

COURSE CONTENT:
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.

LOCATION: Occupational English courses are offered at Red River Community College.
Agricultural Courses

The Agricultural Courses currently available are now in their sixth year of operation. These courses are being 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

The Farm Management course is a 75 day course, running from mid-November until March. The course is designed to instruct farm operators in the technology, techniques and science of the operation of his farm business. Areas covered in the course include Farm Business Management, Land Management, Livestock Management, Farm Engineering, Mathematics and Communications with 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 VII or B.T.S.D. Adult EIGHT education, 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 VII 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 VII 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 functional Grade VII education or equivalent who are producing fluid or manufacturing milk and currently manage a dairy enterprise.

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.
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 bulldozzers, rippers, scrapers, graders and front end loaders.
HOMEMAKERS TRAININGS

ENTRANCE REQUIREMENTS:
- Grade VII or B.T.S.D. Adult EIGHT (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:
- 12 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
- Childrens 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.
Evening Program

Over 200 courses (and over 450 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
   a. Business Administration
   b. Commercial and Industrial Sales
   c. Computer Analyst/Programmer
   d. Commercial
   e. Certified Professional Secretaries

2. APPLIED ARTS
   a. Social Welfare
   b. Graphic Arts
   c. Advanced Barbering and Hairstyling
   d. Operators Hairstyling
   e. Child Care

3. FOOD SERVICES

4. HEALTH SCIENCES

5. INDUSTRIAL AND TECHNOLOGY
   a. Technology
   b. Apprenticeship
   c. Building Construction Technician
   d. Chemistry
   e. Digital Circuits and the Digital Computer
   f. Drafting
   g. Industrial
   h. Industrial Electrical Maintenance
   i. Industrial Electronics
   j. Industrial Supervision
   k. Manitoba Municipal Recreation Director's Association
   l. Quality Control
   m. Radio and Television Electronics
   n. Structural Design
   o. Town Planning
   p. Trade Improvement
6. MANAGEMENT DEVELOPMENT PROGRAM AREAS
   1. Marketing
   2. Human Resources
   3. Material Resources
   4. Financial Resources
   5. Special courses in Management Development area.

7. TEACHER EDUCATION
   These courses assist teachers in becoming certified. They are a supplement of the regular summer Teacher Training Program.

8. SPECIAL COURSES
   1. Over 45 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.
      6. Credit courses for the MANSCEET Program.

   Courses are available three times during the academic year fall, winter and spring Trimesters.

REGISTRATION DATES – 1973-1974

FALL TRIMESTER – 1973
   - During regular office hours 9:00 a.m. - 4:00 p.m. Monday through Friday, up to and including September 12, 1973.
   - A SPECIAL EVENING REGISTRATION will be held Monday, September 10th, 1973, from 7:00 p.m. to 9:00 p.m.
   - Fall Trimester classes will start September 17, 18 and 22, 1973.

WINTER TRIMESTER – 1974
   - During regular office hours 9:00 a.m. - 4:00 p.m. Monday through Friday, up to and including January 9, 1974.
   - A SPECIAL EVENING REGISTRATION will be held Monday, January 7th, 1974, from 7:00 p.m. to 9:00 p.m.
   - Winter Trimester classes will start January 14, 15 and 19, 1974.
SPRING TRIMESTER -- 1974

- During regular office hours 9:00 a.m. — 4:00 p.m. Monday through Friday, up to and including Wednesday, April 3, 1974.

- A SPECIAL EVENING REGISTRATION will be held Monday, April 1, 1974 from 7:00 p.m. to 9:00 p.m.

- Spring Trimester classes start April 8, 9, and 13, 1974.

- 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.
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.
COMMUNITY SERVICES

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.
<table>
<thead>
<tr>
<th>CODE</th>
<th>COURSES</th>
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<tr>
<td>(3-37-21-004)</td>
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<tr>
<td>(3-37-21-005)</td>
<td>Refresher Course for Graduate Nurses</td>
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<td>(3-37-21-001)</td>
<td>Medical Laboratory Technology</td>
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<td>(3-37-21-002)</td>
<td>Medical Radiological Technology</td>
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<td>Medical Laboratory &amp; Radiological Technologies</td>
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<td>(3-37-21-009)</td>
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</table>
FACULTY
HEALTH SCIENCES DIVISION

Penner, P.F., B.A., B.Ed. .......... Principal
Ames, L. (Mrs.), R.T. .......... Lab Student Supervisor
Beattie, M. (Miss), R.N., B.N. .... Practical Nursing
Black, R.G., R.N., B.N. ........ Diploma Nursing
Chalmers, A.M. (Miss), R.N.
    Cert. Nurs. Ed. ............... Practical Nursing
Curle, D.C., B.Sc., A.R.T. ....... Medical Laboratory Technology
Dick, D.M. (Miss), R.N.,
    B.Sc., M.A. .................. Supervisor, Diploma Nursing
Dugal, J. (Miss), R.N., B.N. .... Diploma Nursing
Ellis, N. (Mrs.), B.Sc., A.R.T. ...
Felix, M.A. (Miss), R.N., B.N. .. Medical Laboratory Technology
Good, A., R.T. (R) ............. Practical Nursing
Gramek, G.M. (Miss), A.R.T. ... Lab Student Supervisor
Greenwood, M. (Mrs.), R.N.,
    B.N. ......................... Diploma Nursing
Hirst, E. (Miss), B.Sc., A.R.T.
Holden, L. (Mrs.), R.T. ......... Medical Laboratory Technology
Howlett, C.M. (Miss), R.N.,
    L.C.S.L.T. .................. Lab Student Supervisor
Jasper, P.M. (Mrs.), R.N.,
    Cert. Nurs. Ed. ............. Practical Nursing
Kaminsky, J.H. (Miss), B.Sc.,
    A.R.T. ........................ Medical Laboratory Technology
Labun, E. (Miss), R.N., B.N.
Lafreniere, G. (Mrs.), R.N.
    B.Sc. Nurs. Ed. ............. Diploma Nursing
Maxwell, C., R.T. (C.S.R.T.),
    R.T. (C.S.L.T.) ............. Department Head, Medical Radiological Technology
Muirhead, M. (Miss), B.Sc.
    (H.E.) . ........................ Child Care Services
McCartin, M. (Miss), RN., B.N.
McCalm, A.P. (Mrs.), R.N. .... Diploma Nursing
McIvor, N. (Mrs.), R.N.
    Cert. P.H.N. .................. Practical Nursing
McLennan, L.E. (Mrs.),
    L.C.S.L.T. .................... Department Head, Practical Nursing
Patz, S. (Miss), R.N., B.N. .... Diploma Nursing
Penner, A.M., A.R.T. ........... Medical Laboratory Technology
Rempel, M. (Miss), R.N., B.N.
Sagan, J. (Miss), R.T. (C.S.R.T.) Medical Laboratory Technology

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Scorer, L. (Miss), R.N., B.Sc., N. Diploma Nursing
Smith, B., B.A., C.E.F. Social Services
Tsujimoto, A. (Miss), B.Sc., (L.A.) Medical Laboratory Technology
Warmbrod, M. (Mrs.), B.Sc., M.Sc. Child Care Services
Wayne, P. (Mrs.), R.N., B.N. Diploma Nursing
Zonneveld, M.J. (Mrs), R.N. B.N. Diploma Nursing
Diploma Nursing Education

ENTRANCE REQUIREMENTS:

1. A complete Manitoba Grade XII 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 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. Entrance examinations and personal interviews are required. Each applicant is considered individually by the Admissions Committee.

3. Applicants must 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.

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 $100.00 for each term. Other expenses include student fees, textbooks, supplies, uniforms and accessories costing approximately in each term — 1 — $160.00; 2 — $75.00; 3 — $45.00; 4 — $55.00.

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 No. 775-0261.
## DIPLOMA NURSING PROGRAM

### COURSE OUTLINE

<table>
<thead>
<tr>
<th>Term</th>
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<th>Course Title</th>
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</tbody>
</table>

*See Subject Description*
Practical Nursing

ENTRANCE REQUIREMENTS:
1. Complete Manitoba Grade X, or equivalent standing with Science and/or Biology as a required subject, or
2. Basic Training for Skill Development Adult TEN.
3. Anyone who does not meet the above pre-requisites may submit an application. The Admissions Committee will review the application on an individual basis.

Applicants must be between 17 and 55 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 Admission 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 February and September each year. Applicants should apply at least six months prior to the opening date of the program to the Registrar, Red River Community College, 2055 Notre Dame Avenue, Winnipeg, Manitoba, R3H 0J9.

DURATION AND TYPE OF COURSE
One year — 5 months spent at Red River Community College, and 6 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 $35.00 for the 5 month term at the College. Other expenses include student fees ($7.50), books, (approximately $45.00), uniforms (approximately $40.00), transportation, incidentals and private living accommodation.

EXPENSES
A student allowance is paid by the hospital for the time spent in the hospital. No pay is 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>Course Title</th>
<th>Lect.</th>
<th>Lab.</th>
<th>Hours</th>
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<tr>
<td>NURS-102</td>
<td>Anatomy and Physiology</td>
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<td>NURS-103</td>
<td>Medical and Surgical Nursing</td>
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<td>NURS-104</td>
<td>Personal and Vocational Relationship</td>
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During the 6 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.
REFRESHER COURSE FOR GRADUATE NURSES

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 program, 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 - $40.00
Text Books - approximately $15.00
Uniform is required for hospital experience.
Medical Laboratory Technology

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 the Red River Community College.

ENTRANCE REQUIREMENTS:

A Grade XII standing with English 300 or 301, Mathematics 300 or 301, Chemistry 300 or Physical Science 301, and one of Biology 300, Biology 301, or Physics 300, plus any other electives to give a complete Manitoba Grade XII 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
Manitoba Health Services Commission 599 Empress Street, Winnipeg, Manitoba. R3C 2T6
Grace General Hospital, 300 Booth Drive, Winnipeg, Manitoba. R3J 3M7

Misericordia General Hospital, 99 Cornish Avenue, Winnipeg, Manitoba. R3C 1A2
St. Boniface General Hospital, 409 Tache Avenue, St. Boniface, Manitoba. R2H 2A6
Health Sciences Centre (General Centre) 700 William Avenue, Winnipeg, Manitoba. R3E 0Z3
Victoria General Hospital, 2340 Pembina Highway, Winnipeg, Manitoba. R3T 2E8

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 nine 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 $180.00 for nine months at the 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**

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>TERM I</th>
<th>Credit Hours</th>
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<td>MEDL-201</td>
<td>Anatomy and Physiology</td>
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<td>MEDL-202</td>
<td>Clinical Microbiology and</td>
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<td>Immunology</td>
<td>2</td>
<td>5</td>
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<td>MEDL-203</td>
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<td>Haematology</td>
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</table>
Medical Radiological Technology

(X-Ray, Nuclear Medicine and Radiotherapy Technicians)

ENTRANCE REQUIREMENTS:

A complete Manitoba Grade XII standing with demonstrated proficiency in English, Mathematics, Physics, or Physical Science.

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 19 years of age

2. Attend the 5 month Red River Community College pre-technology course and receive credit in the required subjects

   OR

   achieve a Grade XII equivalency standing in Manitoba on the G.E.D. tests with proficiency in English, Mathematics and Science.

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 the 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 these listed below.

DIAGNOSTIC TECHNIQUES (X-RAY TECHNICIANS TRAINING):
Brandon General Hospital,
150 McTavish Avenue E.,
Brandon, Manitoba.
R7A 2B3

Health Sciences Centre
(Childrens' Centre)
685 Bannatyne Avenue,
Winnipeg, Manitoba.
R3E 0W1

Manitoba Health Services Commission,
599 Empress Street,
Winnipeg, Manitoba.
R3C 2T6

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

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

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

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

Victoria General Hospital
2340 Pembina Highway,
Winnipeg, Manitoba.
R3T 2E8
RADIOTHERAPY: 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 the training centre.

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 2 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 2 years duration with 19 months in the hospital and 5 months spent at Red River Community College in a didactic program.
DURATION AND TYPE OF COURSE:

Students will attend the Red River Community College for a five month period beginning in either September or February of each year. After successful completion of this program at the College the students in training will then return to their hospital centres for the remainder of their training period.

At the end of this two year period and with hospitals 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 $100.00 for the 5 month term at the 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. Others 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

The following syllabus is approved by the Canadian Society of Radiological Technicians in co-operation 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>Hours Per Week</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MEDR-109 Anatomy &amp; Physiology</td>
<td>5 Lect., 2 Lab.</td>
<td>6</td>
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<tr>
<td>MEDR-110 Physics of Electricity &amp; Magnetism</td>
<td>3 Lect., 0 Lab.</td>
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<tr>
<td>MEDR-111 Radiobiology &amp; Protection</td>
<td>2 Lect., 4 Lab.</td>
<td>3</td>
</tr>
<tr>
<td>MEDR-112 Apparatus &amp; Accessory Equipment</td>
<td>2 Lect., 0 Lab.</td>
<td>3</td>
</tr>
<tr>
<td>MEDR-113 Image Recording in Radiography</td>
<td>4 Lect., 2 Lab.</td>
<td>4</td>
</tr>
<tr>
<td>MEDR-114 Radiographic Positioning</td>
<td>4 Lect., 2 Lab.</td>
<td>6</td>
</tr>
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<td><strong>Total</strong></td>
<td>20 Lect., 10 Lab.</td>
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</table>
Medical Laboratory and Radiological Technologies

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 30 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 for entrance requirements for Medical Laboratory Technology.

See page for entrance requirements for Medical Radiological Technology.

LENGTH OF COURSE

Radiological RT and Laboratory Assistant Course

Thirty months training made up of 24 months in Medical Radiological (X-Ray) Technology (2 months orientation; 5 months at the Red River Community College; 14 months X-ray apprenticeship in Laboratory and X-ray units in rural Manitoba and 3 months X-ray affiliation in Winnipeg or Brandon X-ray departments) plus a six month Laboratory Assistant course.

Laboratory RT and X-ray Assistant Course

Thirty months training made up of 24 months in Medical Laboratory Technology (9 months at Red River Community College; 12 months laboratory internship in a hospital laboratory and 3 months 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 $46.00 during the next 12 months of training.
2. payment of a bi-weekly stipend of $55.00 during the last 12 months of training.
3. reimbursement for textbooks up to a maximum of $40.00.
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 Commission 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. The 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 $520.00 — $980.00 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
Child Care Services

ENTRANCE REQUIREMENTS: (one of)
1. Grade XII,
2. Complete pre-College course
3. 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.
4. All applicants will be interviewed by an Admissions Committee.
   Applicants must be in good health.

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 $100.00 per 5 month term. Textbooks, student activity fees and supplies may total approximately $100.00.

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 I

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject and Description</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>CCSC-109</td>
<td>Child Behaviour and Development</td>
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<tr>
<td>SOCL-106</td>
<td>Self Understanding &amp; Social Feeling</td>
<td>2  2  4</td>
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<td>CCSC-107</td>
<td>Philosophies of Child Care</td>
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<td>CCSC-102</td>
<td>Child Care Forum and Field Placement</td>
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<td>CCSC-104</td>
<td>Creative Activities</td>
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<td>CCSC-105</td>
<td>Community Resources</td>
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<td>ENGL-112</td>
<td>Children's Literature</td>
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### TERM II

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<td>Child Behavior and Development</td>
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<td>SOCL-206</td>
<td>Self Understanding and Social Feeling</td>
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<td>CCSC-207</td>
<td>Child Care Services Resources</td>
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<td>CCSC-202</td>
<td>Child Care Forum and Field Placement</td>
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<td>CCSC-204</td>
<td>Creative Activities</td>
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<td>CCSC-206</td>
<td>Physical Care of the Child</td>
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<td>CCSC-321</td>
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### TERM III

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<td>Child Care Forum and Field Management</td>
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<td>CCSC-306</td>
<td>Family System</td>
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<td>CCSC-301</td>
<td>Curriculum Planning</td>
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<td>CCSC-300</td>
<td>Independent Study in Child Care</td>
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<td>CCSC-341</td>
<td>Creative Drama</td>
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<td>CCSC-326</td>
<td>Guidance of the Child</td>
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<tr>
<td>CCSC-322</td>
<td>Music For Children II</td>
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<td>SOSC-421</td>
<td>Exceptional Children</td>
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<td>CCSC-400</td>
<td>Seminar in Child Care</td>
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<td>CCSC-401</td>
<td>Curriculum Planning</td>
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<td>CCSC-425</td>
<td>Physical Science for the Child</td>
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<tr>
<td>CCSC-431</td>
<td>Children's Literature &amp; Language Skills</td>
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<tr>
<td></td>
<td>7</td>
<td>22</td>
<td>25</td>
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</table>

NOTE: Field Placement - 1 day per week plus one 4 week block placements during the Term.
Social Services

ENTRANCE REQUIREMENTS: (one of)
1. Grade XII
2. B.T.S.D. Adult ELEVEN
3. Complete standing in Pre-College 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 20 years of age on or before September 30, in the year of registration.

Applicants will be required to appear for a personal interview. The Admissions Committee will consider each applicant on an individual basis.

OTHER:
1. All applicants will be interviewed by an Admissions Committee prior to enrolment in the course.
2. Applicants must be in good health.
3. For field placement and employment purposes, it is recommended that applicants have the ability and authority to drive a car.

DURATION OF COURSE: Beginning October 1, 1973

One College year of approximately 12 months divided into 4 sessions of 3 months each. A total of 60 credit hours qualifies the graduate for a Certificate of Attainment.

FEES AND EXPENSES:

The tuition fee for the course is $60.00 per session. Other expenses include textbooks, student fees, incidentals, board and lodging, field trips and some additional expenses to field placement.

EMPLOYMENT OPPORTUNITIES:

This course is designed to train people for employment in the expanding field of social service, including both private and public agencies. Employment opportunities are emerging in a variety of areas as the emphasis of social service programs shifts to meet new needs or find new ways of coping with social changes.

The ultimate aim of the course is the development of knowledge skills and techniques which are required to bring the agency, worker and client together in a meaningful relationship. The course focuses on developing the ability to deal with the
complexity of human behavior and the development of knowledge of the various social service processes.

COURSE OUTLINE

SESSION I

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>SOSC-151</td>
<td>Introductory Psychology</td>
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<td>Introductory Sociology</td>
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<tr>
<td>SSER-155</td>
<td>Economics</td>
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<td>SOSC-153</td>
<td>Political Science</td>
<td>4</td>
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<td>ENGL-157</td>
<td>Communication Skills</td>
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<tr>
<td>SSER-156</td>
<td>Orientation to the Social Services</td>
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Total: 27 Hours 15 Credit Hours

SESSION II

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<td>SOSC-251</td>
<td>Human Relations</td>
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<tr>
<td>SOSC-252</td>
<td>Regional Sociology</td>
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<tr>
<td>SSER-256</td>
<td>Law</td>
<td>4</td>
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<td>SSER-258</td>
<td>Public Administration</td>
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<tr>
<td>SSER-255</td>
<td>Community Resources</td>
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<tr>
<td>SSER-257</td>
<td>Contemporary Social Service Practice</td>
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Total: 28 Hours 15 Credit Hours

SESSION III

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<th>Subject No.</th>
<th>Subject</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
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<tbody>
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<td></td>
<td>Orientation to Field Training</td>
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<td></td>
<td>Field Training</td>
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<tr>
<td>SSER-350</td>
<td>Assessment of Field Training</td>
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<td>15</td>
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SESSION IV

During Session IV, one or more 12 weeks specialization courses will be offered. Possible areas are: Urban Income Maintenance Institutional Child Care Services, Geriatric Care Services, Northern Social Service, Correctional Services.

NOTE:

1. Candidates may attend Session IV at Assiniboine Community College for the area of specialization, if necessary arrangements can be made.

2. Depending upon established needs, the colleges may offer additional specialization courses for graduates and other qualified individuals.
## Industrial and Technology Division

<table>
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<tr>
<th>CODE</th>
<th>COURSES:</th>
<th>Page</th>
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<td>(3-36-01-000)</td>
<td>AUTO/DIESEL</td>
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<td>(3-36-01-001)</td>
<td>Auto Body Repair</td>
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<td>(3-36-01-002)</td>
<td>Automotive Mechanical Repair</td>
<td>160</td>
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<tr>
<td>(3-36-01-003)</td>
<td>Diesel Mechanics — Transport</td>
<td>162</td>
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<td>(3-36-02-000)</td>
<td>CHEMICAL TECHNOLOGY</td>
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<td>Chemical Technology</td>
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<td>CIVIL TECHNOLOGY</td>
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FACULTY
INDUSTRIAL AND TECHNOLOGY DIVISION

Dunham, R.A., B.Sc., B.Ed...... Principal
Skinner, J.D. ......................... Chairman
Yanchyshyn, W., B.A. ............... Chairman

Allen, W. G., C.E.T .................. Automotive
Anderson, G.E. ....................... Civil Technology
Baergen, J.R., B.Sc. ................. Industrial Mathematics
Bale, R. J. .......................... Carpentry & Woodworking
Barr, R.M., B.Sc., B.Ed., M.A.M.T. Technology Mathematics
Beech, R. S. ........................ Watch Repair
Blicq, R.S., M.I.E.E.E ................ Dept. Head, Industrial & Technology Communication
Boily, L., B.Sc., C.E.T ............. Technology Mathematics
Boroskae, M.W., C.E.T ............. Industrial Electrical
Bourke, A.P. ........................ Electrical Appliance Servicing
Braun, H. ............................ Automotive
Brayford, B.P. ....................... Storekeeper, Auto/Diesel
Brown, C.C. ........................ Sheet Metal
Burns, R.D., B.Sc., P. Eng., C.A.P. Technology Physics
Burzynski, A.A., B.Sc., M.Sc .... Chemical Technology
Caldwell, R.T., C.E.T .............. Civil Technology
Carmichael, L.E. .................... Technician, Electronic Technology

Challenger, M.P., B.Sc., (Hons.) (M.E.), M.C.S.M.E., P.Eng. Mechanical Technology
Chin, R., B.Sc., (E.E.), P.Eng. Electronic Technology
Chisholm, S.T ........................ Radio Operating
Clayton, S.H. ........................ Carpentry & Woodworking
Crandell, B.H., Dipl. T. (Electronics), C.E.T. Electronic Technology
Dales, D.N. .......................... Automotive
Davidson, J.C.B. .................... Painting & Decorating
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. ...................... Auto Body

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<th>Name</th>
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Hildebrand, N.N. ...................... Auto Body
Hill, F.B., C.E.T. ...................... Electronic Technology
Holder, R.R. .......................... Industrial Electrical
Hunt, P., (Mrs.), C.T.A. .............. Dept. Head, Industrial Drafting
Ingeman, M.E., (Mrs.), R.T. .......
Jacobs, M., B.Sc., (Hons.), M.Sc., Ph.D. .......... Chemical Technology
Jivan, A.P., B.Sc., P.Eng. .......... Technology Mathematics
Johnson, H.L. ........................ Industrial Electrical
Johnson, J.D. ........................ Plumbing
Johnston, A.T. ......................... Industrial Electrical
Kane, R.O., C.T.A. .................... Industrial Mathematics
Kell, K.A.J. .......................... Industrial Mathematics & Science
Klasz, J. ................................ Civil Technology
Knoff, V.R., B.Acc. ................. Industrial Science
Kolaski, E.S., B.Sc., (C.E.), P. Eng. .......... Electrical Technology
Kramer, B.E. .......................... Diesel
Krywy, S., B.Sc., (E.E.), P. Eng. .......... Welding
Laczko, J. ............................. Refrigeration
Larson, A.W. .......................... Electrical Technology
Laxdal, J.A. ........................... Operating Engineers
Locken, R.C. .......................... Industrial Drafting
Lussier, L.E., C.E.T. .................. Electronic Technology
Mathieson, G. ........................ Plumbing
Mikkelsen, R.D. ............................. Industrial Science
Moffat, W.E., B.Sc., (Hons.) ........ Electrical Technology
Monkman, R.E. ........................ Automotive
Morris, G.D. .......................... Industrial Mathematics
Morrison, T.R. ........................ Industrial Electrical
Moskal, P. ........................... Industrial Electrical
McCoy, J.P. .......................... Industrial Electrical
McCurdy, M.B., B.Sc., (M.E.), P. Eng. ........................................... Mechanical Technology
McLean, S.L., C.E.T. ................................................. Sheet Metal
McMillan, R.R., B.Sc., (M.E.), P. Eng. ........................................... Technology Communication
Ness, G.D. ................................................................. Technology Communications
Nicholls, K.E., B.Ed., C.E.T. ............................................... Technology Mathematics
Nishimura, T. ............................................................... Industrial Electrical
Notley, G.D.C., B.Sc. ..................................................... Dept. Head, Industrial Electrical
Olsen, T.M. ................................................................. Telecommunications
Onyschak, S., B.Sc., B.Ed. ................................................ Industrial Science
Palmason, S.H. ............................................................ Plumbing
Pankiw, J. ................................................................. Plumbing
Patterson, E.G. .............................................................. Industrial Electrical
Patterson, J.T., C.E.T. ...................................................... Dept. Head, Auto/Diesel
Patton, W.J., B.Sc., (M.E.), P. Eng. ........................................... Mechanical Technology
Pedora, J.M. ............................................................... Welding
Pickering, J. ............................................................... Industrial Communication
Reece, H.A., B.Sc. ......................................................... Civil Technology
Read, E.H. ................................................................. Telecommunications
Reid, D.D. ................................................................. Carpentry & Woodworking
Ridgeway, W.J. ............................................................. Industrial Communication
Rizvi, S.I.H., B.Sc., (Hons. Phy.), M.Sc. .................................. Technology Physics
Ross, L., B.Sc., (Hons.), M.Sc., M.C.I.C. ................................ Dept. Head, Chemical Technology
Round, V.N. ............................................................... Upholstery
Roy, E.C. ................................................................. Industrial Electrical
Ruck, D.N. ................................................................. Welding
Sawchyn, J.I. ............................................................. Automotive
Schroeder, A.M., B.Sc., (Ed.) ................................................ Industrial Drafting
Schweedic, R.R., C.E.T. .................................................. Refrigeration
Shabaga, G.A. .............................................................. Technician, Electrical Technology
Shand, D.H., C.E.T. ............ Electronic Technology
Shere, S.W., B.Sc., M.A.M.S.,
M.E.M.S. ...................... Technology Mathematics
Shirtliffe, L.A., Dipl. T.,
(Instrumentation)
M.I.E.E.E. ...................... Instrumentation Technology
Shulakewych, L.B., B.Sc., (E.E.)
M.Sc., (E.E.) .................... Electronic Technology
Shura, A.D. ..................... Diesel
Skrynyk, S.M., B.Sc., (Hons.),
M.Sc., M.C.I.C. ............... Chemical Technology
Small, B.J. ...................... Auto Body
Smendziuk, E.S., B.Sc., (C.E.),
B.Ed., P.Eng. ................... Civil Technology
Smith, G.H. ..................... Masonry
Sobkowicz, E.W., B.Sc., (E.E.)
Dept. Head, Electronic
Technology
Solmundson, S.E., B.Sc., (C.E.),
P. Eng. .......................... Civil Technology
Stark, J. .......................... Carpentry & Woodworking
Stephen, T.J., Man. 1st Class
Op. Eng. ......................... Operating Engineers
Stratton, T.R., C.E.T. .......... Civil Technology
Sutherland, W.D. ............... Industrial Drafting
Suzanne, P.R. ................. Technician, Mechanical
Technology
Szебеледы, Г. Б., C.E.T. .... Chemical Lab Student
Supervisor
Taubner, W. ..................... Industrial Drafting
Thiessen, E.J. ................... Automotive
Thody, F.C. ...................... Automotive
Thurston, G.S., B.A. .......... Technology Communication
Trylinski, C. .................... Industrial Electrical
Undiks, J.O. ..................... Industrial Science
Van de Mosselaer, H. J. .... Machine Shop
Van Humbeck, E., B.Sc., (E.E.) Electronic Technology
Vigfusson, J.E. .................. Carpentry & Woodworking
Vincent, J.H., B.Sc., M.Sc. ... Chemical Technology
Vincent, J.M. .................... Industrial Mathematics
Walker, D.E. .................... Plumbing
Walker, K.M., B.Sc., (M.E.),
P. Eng. ......................... Mechanical Technology
Walker, J.M. .................... Industrial Drafting
Watson, D.A., B.A. .......... Machine Shop
Watts, D., B.A. (Hons.) ...... Technology Communication
Weinstein, F. (Mrs.), R.T. ... Chemical Lab Student
Supervisor
Wheeler, R. G. ................... Automotive
Wiebe, H.D., B.A., B.Ed.,
  C.E.T. ..........................
Williams, L.A. (Mrs.), B.Sc., M.
  Sc., B.Ed. ....................
Williams, T.A., B.Sc., (C.E.),
  P. Eng. ........................
Wilson, H., B.Sc., (M.E.),
  M.C.S.M.E., P. Eng. .......

Young, W.K. ....................
Youngson, K. (Mrs.) ..........  

Technology Mathematics
Chemical Technology
Civil Technology
Dept. Head, Mechanical Technology
Diesel
Storekeeper, Chemical Technology
Auto/Diesel Department
Auto Body Repair

ENTRANCE REQUIREMENTS:

Grade X or Basic Training for Skill Development Adult TEN.

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 I successfully to be eligible for Term II. Successful completion of this course qualifies the graduate for a Certificate of Attainment.

FEES AND EXPENSES:

The tuition fee is $7.00 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $45.00.

COURSE OUTLINE

TERM I

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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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<td>ABOD-101</td>
<td>Oxy-Acetylene Welding and Cutting</td>
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<td>ABOD-102</td>
<td>Hand Tools, Power Grinders, Vibrators</td>
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<td>ABOD-103</td>
<td>Basic Metal Working &amp; Soldering</td>
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<td>ABOD-104</td>
<td>Hydraulic Power Equipment and Alignment of Auto Bodies</td>
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660 25
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<td>Alignment of Frames and Body Components</td>
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<td>Spray Painting Equipment</td>
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<td>Refinishing Vehicles</td>
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**EMPLOYMENT OPPORTUNITIES:**

Students who successfully complete this course may find employment in a number of interesting fields such as:

1. An auto body mechanic or painter working for an established shop.
2. An insurance adjuster trainee.
3. A representative for auto body repair equipment and supplies in the sales field.

As well as finding employment in the above mentioned 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 X or Basic Training for Skill Development Adult TEN.

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 I successfully to be eligible for Term II. Successful completion of this course qualifies the graduate for a Certificate of Attainment.

FEES AND EXPENSES:

The tuition fee is $7.00 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $60.00.

COURSE OUTLINE

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<td>AUTO-104</td>
<td>Electrical Systems</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>AUTO-105</td>
<td>Fuel Systems &amp; Emission Controls</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>AUTO-106</td>
<td>Tune-Up</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>AUTO-107</td>
<td>Transmission</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>AUTO-108</td>
<td>Rear Axles &amp; Drivelines</td>
<td>25</td>
<td>1</td>
</tr>
<tr>
<td>AUTO-109</td>
<td>Brakes</td>
<td>60</td>
<td>2</td>
</tr>
<tr>
<td>AUTO-110</td>
<td>Steering &amp; Suspension</td>
<td>25</td>
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</tr>
<tr>
<td>AUTO-507</td>
<td>Automatic Transmission</td>
<td>70</td>
<td>3</td>
</tr>
</tbody>
</table>

660 25

The above subjects will be covered during the first 20 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 II. Term I comprises theory lectures and practical experiences on shop models and equipment.
### TERM 2

<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>
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<tr>
<td>MATH-508</td>
<td>Mathematics</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>DRAF-504</td>
<td>Sketching &amp; Blueprint Reading</td>
<td>50</td>
<td>2</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 and Adjusting</td>
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<tr>
<td>AUTO-255</td>
<td>Tune-up - Dyna Testing</td>
<td>80</td>
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<tr>
<td>AUTO-256</td>
<td>Transmission - Standard</td>
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<tr>
<td>AUTO-257</td>
<td>Rear Axles and Drivelines</td>
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<tr>
<td>AUTO-258</td>
<td>Brakes - Hydraulic, Disc Power</td>
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<tr>
<td>AUTO-259</td>
<td>Steering Repairs</td>
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<tr>
<td>AUTO-260</td>
<td>Transmission - Automatic</td>
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<td></td>
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</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td>660</td>
<td>25</td>
</tr>
</tbody>
</table>

The above subjects will be covered during the second 20 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:

**AUTOMOTIVE SERVICE:** Journeyman mechanic, shop foreman, service manager, parts manager, machine operator, special areas.

**SERVICE FIELDS:** service station operator, auto parts outlets, maintenance supervisor.
# Diesel Mechanics—Transport

**ENTRANCE REQUIREMENTS:**

Grade X or Basic Training for Skill Development Adult TEN.

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 10 months. Successful completion of this course qualifies the graduate for a Certificate of Attainment.

**FEES AND EXPENSES:**

The tuition fee is $7.00 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $85.00.

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>COURSE OUTLINE</th>
<th>Hours</th>
<th>Credit Hours</th>
</tr>
</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>80</td>
<td>2</td>
</tr>
<tr>
<td>DRAF-504</td>
<td>Sketching &amp; Blueprint Reading</td>
<td>50</td>
<td>2</td>
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<td>SHOP-505</td>
<td>Machine Shop</td>
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<td>2</td>
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<td>RESC-520</td>
<td>Science</td>
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<td>WELD-506</td>
<td>Welding</td>
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<td>DESL-101</td>
<td>Running Gear I</td>
<td>80</td>
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<tr>
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<td>Standard Transmissions</td>
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<td>10</td>
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<td>DESL-103</td>
<td>Rear Axles</td>
<td>80</td>
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<td>DESL-104</td>
<td>Brake Systems</td>
<td>80</td>
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<td>DESL-105</td>
<td>Automatic &amp; Power Shift Transmissions</td>
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<tr>
<td>DESL-106</td>
<td>Power Train</td>
<td>80</td>
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</tr>
<tr>
<td>DESL-107</td>
<td>Engine Overhaul I</td>
<td>80</td>
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<tr>
<td>DESL-108</td>
<td>Engine Overhaul II</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>
<td>80</td>
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<tr>
<td>DESL-111</td>
<td>Electrical Lab</td>
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<tr>
<td>DESL-112</td>
<td>Fuel Systems Lab</td>
<td>85</td>
<td></td>
</tr>
</tbody>
</table>

\[1320 \text{ Hours} \quad 50\text{ Credit Hours}\]
EMPLOYMENT OPPORTUNITIES:

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

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.
4. Equipment suppliers and manufacturers.

As well as finding employment as mechanics, opportunities also exists 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 XII standing. Candidates who have a complete Grade XII but who do not have the required subjects indicated above are invited to apply to the Registrar 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 20 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 III.

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 $100.00 for each of the four terms. Other expenses include textbooks, incidentals, board and lodging.
## Chemical Technology

### COURSE OUTLINE

#### First Year

**TERM 1**

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL-101 Communications</td>
<td>3 Lect. 0 Lab.</td>
<td>3</td>
</tr>
<tr>
<td>MATH-107 Mathematics</td>
<td>2 Lect. 2 Lab.</td>
<td>3</td>
</tr>
<tr>
<td>ERON-104 Electricity &amp; Magnetism</td>
<td>2 Lect. 2 Lab.</td>
<td>3</td>
</tr>
<tr>
<td>CHEM-101 General Chemistry</td>
<td>3 Lect. 3 Lab.</td>
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</tr>
<tr>
<td>CHEM-102 Descriptive Inorganic Chemistry</td>
<td>3 Lect. 0 Lab.</td>
<td>3</td>
</tr>
<tr>
<td>CHEM-103 Inorganic Qualitative Analysis</td>
<td>3 Lect. 3 Lab.</td>
<td>5</td>
</tr>
<tr>
<td>CHEM-107 Mechanics and Heat</td>
<td>2 Lect. 2 Lab.</td>
<td>3</td>
</tr>
</tbody>
</table>

Total: 18 Lect. 12 Lab. 25 Credit Hours

**TERM 2**

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL-201 Report Writing</td>
<td>3 Lect. 0 Lab.</td>
<td>3</td>
</tr>
<tr>
<td>MATH-207 Mathematics</td>
<td>3 Lect. 2 Lab.</td>
<td>4</td>
</tr>
<tr>
<td>ERON-204 Electronics</td>
<td>2 Lect. 2 Lab.</td>
<td>3</td>
</tr>
<tr>
<td>CHEM-203 Inorganic Quantitative Analysis</td>
<td>2 Lect. 6 Lab.</td>
<td>6</td>
</tr>
<tr>
<td>CHEM-204 Organic Chemistry</td>
<td>3 Lect. 4 Lab.</td>
<td>6</td>
</tr>
<tr>
<td>CHEM-207 Optics and Nuclear Chemistry</td>
<td>2 Lect. 2 Lab.</td>
<td>3</td>
</tr>
</tbody>
</table>

Total: 15 Lect. 16 Lab. 25 Credit Hours

#### Second Year

**TERM 3**

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH-307 Calculus</td>
<td>3 Lect. 2 Lab.</td>
<td>4</td>
</tr>
<tr>
<td>CHEM-304 Organic Chemistry</td>
<td>3 Lect. 4 Lab.</td>
<td>6</td>
</tr>
<tr>
<td>CHEM-305 Instrumental Chemical Analysis</td>
<td>2 Lect. 8 Lab.</td>
<td>7</td>
</tr>
<tr>
<td>CHEM-306 Physical Chemistry</td>
<td>3 Lect. 3 Lab.</td>
<td>5</td>
</tr>
<tr>
<td>CHEM-307 Laboratory Techniques</td>
<td>1 Lect. 0 Lab.</td>
<td>1</td>
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<tr>
<td>CHEM-309 Industrial Chemistry</td>
<td>2 Lect. 0 Lab.</td>
<td>2</td>
</tr>
</tbody>
</table>

Total: 14 Lect. 17 Lab. 25 Credit Hours
TERM 4

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject Name</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM-405</td>
<td>Instrumental Chemical Analysis</td>
<td>2</td>
<td>7</td>
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<tr>
<td>CHEM-406</td>
<td>Physical Chemistry</td>
<td>3</td>
<td>5</td>
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<tr>
<td>CHEM-407</td>
<td>Laboratory Techniques</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>CHEM-410</td>
<td>Chemical Projects</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>CHEM-411</td>
<td>Chemical Data Handling</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Elect 2 of the following options</td>
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<td>6</td>
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<tr>
<td></td>
<td></td>
<td>14</td>
<td>17</td>
</tr>
<tr>
<td>CHEM-412</td>
<td>Economics and Industrial Relations</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>CHEM-413</td>
<td>Industrial Chemistry</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>CHEM-414</td>
<td>Pollution and its Control</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>CHEM-415</td>
<td>Corrosion and Metallurgy</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>CHEM-416</td>
<td>Water Treatment</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

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: 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.
Biochemical Technology

ENTRANCE REQUIREMENTS:
As outlined for Chemical Technology Course (Page 164).

COURSE OUTLINE

FIRST YEAR
As outlined for Chemical Technology Course (Page 164).

SECOND YEAR

TERM 3

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MATH-312</td>
<td>Calculus</td>
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<tr>
<td>BCHM-304</td>
<td>Organic Chemistry</td>
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<tr>
<td>BCHM-305</td>
<td>Instrumental Biochemical Analysis</td>
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<td>8</td>
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<tr>
<td>BCHM-306</td>
<td>Biophysical Chemistry</td>
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<td>3</td>
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<tr>
<td>BCHM-307</td>
<td>Laboratory Techniques</td>
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<tr>
<td>BCHM-314</td>
<td>Biochemistry</td>
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<tr>
<td>BCHM-315</td>
<td>Microbiology</td>
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14  17  25

TERM 4

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<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>BCHM-405</td>
<td>Instrumental Biochemical Analysis</td>
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<td>8</td>
</tr>
<tr>
<td>BCHM-406</td>
<td>Biophysical Chemistry</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>BCHM-407</td>
<td>Laboratory Techniques</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>BCHM-414</td>
<td>Biochemistry</td>
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</tr>
<tr>
<td>BCHM-415</td>
<td>Microbiology</td>
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</tr>
<tr>
<td>BCHM-410</td>
<td>Biochemical Project</td>
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<tr>
<td>CHEM-411</td>
<td>Chemical Data Handling</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

12  20  25
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 XII standing.

2. Successful completion of the Pre-Technology Course.

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 20 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 $100.00 for each of the four terms. Other expenses include textbooks, incidentals, board and lodging.

COURSE OUTLINE

First Year

TERM 1

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Hours Per Week Credit</th>
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<tbody>
<tr>
<td></td>
<td>Lect.</td>
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<tr>
<td>ENGL-101</td>
<td>Communications</td>
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<tr>
<td>MATH-107</td>
<td>Mathematics</td>
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<tr>
<td>BIOL-102</td>
<td>General Chemistry</td>
</tr>
<tr>
<td>BIOL-103</td>
<td>Analytical Chemistry</td>
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<tr>
<td>BIOL-105</td>
<td>Zoology</td>
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<tr>
<td>BIOL-106</td>
<td>Botany</td>
</tr>
<tr>
<td>CHEM-108</td>
<td>Mechanics, Heat &amp; Electricity</td>
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169
TERM 2

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
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</thead>
<tbody>
<tr>
<td>ENGL-201</td>
<td>Report Writing</td>
<td>3</td>
<td>0</td>
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<tr>
<td>BIOL-203</td>
<td>Analytical Chemistry II</td>
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<td>3</td>
<td>4</td>
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<td>BIOL-204</td>
<td>Organic Chemistry</td>
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<tr>
<td>BIOL-205</td>
<td>Ecology</td>
<td>2</td>
<td>2</td>
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<tr>
<td>BIOL-206</td>
<td>Entomology &amp; Parasitology</td>
<td>2</td>
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<tr>
<td>BIOL-208</td>
<td>Applied Optics &amp; Radiation Biology</td>
<td>2</td>
<td>3</td>
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<td>BIOL-211</td>
<td>Biological Data Handling</td>
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Second Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL-305</td>
<td>Instrumental Methods of Analysis</td>
<td>3</td>
<td>3</td>
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<tr>
<td>BIOL-313</td>
<td>Anatomy &amp; Physiology</td>
<td>2</td>
<td>2</td>
<td>3</td>
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<td>BIOL-314</td>
<td>Biochemistry</td>
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<td>BIOL-315</td>
<td>Microbiology</td>
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<td>BIOL-316</td>
<td>Micro Techniques</td>
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<tr>
<td>BIOL-318</td>
<td>Plant Pathology</td>
<td>2</td>
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TERM 4

<table>
<thead>
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<th>Term 3</th>
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<td>Biological Project</td>
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<td>BIOL-414</td>
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<td>BIOL-415</td>
<td>Microbiology</td>
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<tr>
<td>BIOL-418</td>
<td>Animal Pathology</td>
<td>2</td>
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<tr>
<td>BIOL-419</td>
<td>Genetics &amp; Breeding</td>
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<td>0</td>
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<tr>
<td>BIOL-420</td>
<td>Nutrition &amp; Animal Care</td>
<td>2</td>
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<tr>
<td>BIOL-421</td>
<td>Hygiene &amp; Sanitation</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>BIOL-423</td>
<td>To be announced</td>
<td>3</td>
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</table>

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. These include 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 XII standing. Candidates who have a complete Grade XII but who do not have the required subjects indicated above are invited to apply to the Registrar to have their credentials reviewed by the Admissions Committee, or

2. Successful completion of the Pre-Technology Course.

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 20 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
First Year

TERM 1

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
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<tbody>
<tr>
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<td>Communications</td>
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<tr>
<td>MATH-109</td>
<td>Mathematics</td>
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<tr>
<td>CIVL-102</td>
<td>Mechanics</td>
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<td>2</td>
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<tr>
<td>CIVL-103</td>
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<tr>
<td>CIVL-105</td>
<td>Strength of Materials</td>
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<tr>
<td>CIVL-106</td>
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14  16  25
TERM 2

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<th>Term 3</th>
<th>Term 4</th>
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<td>ENGL-206</td>
<td>Specifications &amp; Reports</td>
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<td>2</td>
<td>3</td>
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<tr>
<td>MATH-209</td>
<td>Mathematics</td>
<td>3</td>
<td>3</td>
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</tr>
<tr>
<td>CIVL-202</td>
<td>Mechanics</td>
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<td>3</td>
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<tr>
<td>CIVL-203</td>
<td>Surveying</td>
<td>3</td>
<td>3</td>
<td>6</td>
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</tr>
<tr>
<td>CIVL-205</td>
<td>Strength of Materials</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td></td>
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<tr>
<td>CIVL-206</td>
<td>Drafting</td>
<td>1</td>
<td>5</td>
<td>4</td>
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</table>

13 17 25

FLOW CHART SHOWING RELATIONSHIP OF BUILDING, CIVIL, DESIGN & DRAFTING, STRUCTURAL AND SURVEYING TECHNOLOGY COURSES
Building Technology

ENTRANCE REQUIREMENTS:
As outlined for Civil Technology Department courses (Page 171).

COURSE OUTLINE

First Year
As outlined for Civil Technology Department courses (Page 171).

Second Year

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Term 3 Hours Per Week</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>CIVL -413</td>
<td>Job Control and Costing ........</td>
<td>2 Lect., 1 Lab.</td>
<td>2</td>
</tr>
<tr>
<td>STRL-308</td>
<td>Theory of Structures ..........</td>
<td>2 Lect., 2 Lab.</td>
<td>3</td>
</tr>
<tr>
<td>STRL-311</td>
<td>Timber Design &amp; Formwork ......</td>
<td>3 Lect., 2 Lab.</td>
<td>4</td>
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<tr>
<td>STRL-317</td>
<td>Soil Mechanics .................</td>
<td>3 Lect., 3 Lab.</td>
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<td>BLDG-302</td>
<td>Building Construction ..........</td>
<td>3 Lect., 3 Lab.</td>
<td>5</td>
</tr>
<tr>
<td>BLDG-306</td>
<td>Concrete Construction ..........</td>
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<td></td>
<td></td>
<td>16 Lect., 14 Lab.</td>
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TERM 4

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<thead>
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<th>Subject</th>
<th>Term 4 Hours Per Week</th>
<th>Credit Hours</th>
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<td>BLDG-402</td>
<td>Building Construction ..........</td>
<td>3 Lect., 4 Lab.</td>
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<tr>
<td>BLDG-404</td>
<td>Construction Administration</td>
<td>3 Lect., 2 Lab.</td>
<td>4</td>
</tr>
<tr>
<td>BLDG-407</td>
<td>Building Services &amp; Specifications</td>
<td>2 Lect., 2 Lab.</td>
<td>3</td>
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<td>BLDG-410</td>
<td>Foundations ....................</td>
<td>2 Lect., 2 Lab.</td>
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<tr>
<td>BLDG-411</td>
<td>Code Interpretation &amp; Safety</td>
<td>3 Lect., 0 Lab.</td>
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<td>BLDG-412</td>
<td>Estimating ....................</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>15 Lect., 15 Lab.</td>
<td>25</td>
</tr>
</tbody>
</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 171).

## COURSE OUTLINE

### First Year
As outlined for Civil Technology Department courses (Page 171).

### Second Year

<table>
<thead>
<tr>
<th>Subject No</th>
<th>Subject</th>
<th>TERM 3</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
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<tr>
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<td></td>
<td>Lect.</td>
<td>Lab.</td>
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<tr>
<td>MATH-309</td>
<td>Mathematics</td>
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<tr>
<td>CIVL-312</td>
<td>Hydraulics</td>
<td>3</td>
<td>2</td>
<td>5</td>
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<tr>
<td>CIVL-316</td>
<td>Photogrammetry</td>
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<td>5</td>
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<td>CIVL-317</td>
<td>Soil Mechanics</td>
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<td>CIVL-320</td>
<td>Structural Design</td>
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<tr>
<td>CIVL-321</td>
<td>Street &amp; Highway Design</td>
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<th>Hours Per Week</th>
<th>Credit Hours</th>
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<td>CIVL-418</td>
<td>Pavement Mix Design</td>
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<tr>
<td>CIVL-419</td>
<td>Geology</td>
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<tr>
<td>CIVL-423</td>
<td>Water Supply &amp; Waste Disposal</td>
<td>4</td>
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<td>CIVL-424</td>
<td>Hydrology</td>
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<td>CIVL-425</td>
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<td></td>
<td>14</td>
<td>16</td>
<td>25</td>
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</tbody>
</table>

## 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, hydro electric 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 171).

COURSE OUTLINE
First Year
TERM 1
As outlined for Civil Technology Department courses (Page 171).

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Term</th>
<th>Subject Name</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
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<tr>
<td>ENGL-201</td>
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<td>Report Writing</td>
<td>2 Lect. 1 Lab.</td>
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<tr>
<td>MATH-209</td>
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<td>Mathematics</td>
<td>3 Lect. 3 Lab.</td>
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<tr>
<td>DEDR-205</td>
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<td>Architectural Drafting</td>
<td>1 Lect. 4 Lab.</td>
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<td>DEDR-207</td>
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<td>Mechanical Drafting</td>
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<tr>
<td>DEDR-208</td>
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<td>Strength of Materials</td>
<td>2 Lect. 2 Lab.</td>
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<tr>
<td>DEDR-210</td>
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<td>Materials</td>
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<tr>
<td>DEDR-212</td>
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<td>Theory of Systems</td>
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Second Year
TERM 3

<table>
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<th>Subject No.</th>
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<td>DEDR-305</td>
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<tr>
<td>DEDR-308</td>
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<td>Structural Design</td>
<td>2 Lect. 2 Lab.</td>
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<td>DEDR-311</td>
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<td>Building Construction</td>
<td>3 Lect. 0 Lab.</td>
<td>3</td>
</tr>
<tr>
<td>DEDR-312</td>
<td></td>
<td>Theory of Systems</td>
<td>4 Lect. 0 Lab.</td>
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<tr>
<td>DEDR-321</td>
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<td>Mechanical Drafting and Design</td>
<td>0 Lect. 8 Lab.</td>
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<td>DEDR-322</td>
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<td>Materials and Specifications</td>
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<td>12 Lect. 18 Lab.</td>
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</tbody>
</table>
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 programme, which has a wide and varied content in the fields of both engineering and architecture, permits graduates of this programme to be gainfully employed in a wide variety of job opportunities.

Graduates of this programme 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 171).

COURSE OUTLINE

First Year
As outlined for Civil Technology Department courses (Page 171).

Second Year

TERM 3
As outlined for Building Technology courses (Page 167).

TERM 4

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject Description</th>
<th>Lect.</th>
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<td>Foundations</td>
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<td>2</td>
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<td>Structural Steel Design</td>
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<td>Bridge Design</td>
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<td>STRL-415</td>
<td>Estimating</td>
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<td>2</td>
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<td>STRL-422</td>
<td>Design of Structures</td>
<td>3</td>
<td>3</td>
<td>5</td>
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</tbody>
</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 corporations 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.
Surveying Technology

ENTRANCE REQUIREMENTS:
As outlined for Civil Technology Department courses (Page 171).

COURSE OUTLINE

First Year

TERM 1
As outlined for Civil Technology Department courses (Page 171).

TERM 2

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
</tr>
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<tbody>
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<tr>
<td>MATH-209</td>
<td>3 3 5</td>
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<tr>
<td>CIVL -203</td>
<td>3 3 6</td>
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<tr>
<td>CIVL -316</td>
<td>3 3 4</td>
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<td>SURV-204</td>
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<td>SURV-213</td>
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<td>SURV-215</td>
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13 17 25

Second Year

TERM 3

<table>
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<td>SURV -304</td>
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<tr>
<td>SURV -307</td>
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10 16 21

Plus one of the following electives:

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<thead>
<tr>
<th>Subject No.</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SURV -316</td>
<td>2 3 4</td>
<td></td>
</tr>
<tr>
<td>CIVL -317</td>
<td>3 3 6</td>
<td></td>
</tr>
</tbody>
</table>
TERM 4

SURV-403  Control Surveys ......................  2  3  4
SURV-406  Legal Surveying  ......................  2  2  3
SURV-407  Town Planning  .........................  2  2  3
SURV-408  Astronomy  ..........................  2  1  3
SURV-409  Computer Application ...............  0  2  1
SURV-424  Hydrology  ..........................  3  3  5
SURV-415  Survey Camp - 80 hrs. ..............  0  0  2

11  13  21

Plus one of the following electives:
SURV-416  Cartography  .........................  3  3  4
CIVL-425  Stabilization  ......................  2  3  4

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 X or Basic Training for Skill Development Adult TEN.

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 10 months. Successful completion of this course qualifies the graduate for a Certificate of Attainment.

FEES AND EXPENSES:

The tuition fee is $7.00 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $80.00

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 Tradesman Qualification Act and thus become fully qualified journeymen with the Provincial Certificate.
<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Course Title</th>
<th>Subject Credit Hours</th>
<th>Subject Credit Hours</th>
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<tr>
<td>ENGL-503</td>
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<tr>
<td>RESC-517</td>
<td>Science</td>
<td>50</td>
<td>2</td>
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<tr>
<td>DRAF-504</td>
<td>Sketching &amp; Blueprint Reading</td>
<td>120</td>
<td>4</td>
</tr>
<tr>
<td>PDEC-107</td>
<td>Wood finishing</td>
<td>58</td>
<td>2</td>
</tr>
<tr>
<td>WOOD-101</td>
<td>Hand Tools</td>
<td>116</td>
<td>4</td>
</tr>
<tr>
<td>WOOD-102</td>
<td>Woodworking Machines</td>
<td>145</td>
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<tr>
<td>WOOD-103</td>
<td>Concrete Form Construction</td>
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<tr>
<td>WOOD-104</td>
<td>General Framing</td>
<td>87</td>
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<tr>
<td>WOOD-105</td>
<td>Equal Pitch Roofing</td>
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<td>WOOD-106</td>
<td>Stair Building</td>
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<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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<tr>
<td>WOOD-110</td>
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<tr>
<td>WOOD-111</td>
<td>Estimating</td>
<td>60</td>
<td>2</td>
</tr>
</tbody>
</table>

**1320**  **50**

**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 IX, or Basic Training for Skill Development Adult TEN. 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 5 months. Successful completion of this course qualifies the graduate for a Certificate of Attainment.

FEES AND EXPENSES:

The tuition fee is $7.00 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 $65.00 (can be bought over a 5 month period). Textbooks and additional supplies cost $30.00.

COURSE OUTLINE

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Credit Hours</th>
<th>Hours</th>
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<td>DRAF-504</td>
<td>Sketching &amp; Blueprint Reading</td>
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<tr>
<td>MASN-101</td>
<td>Introduction, Materials, Tools</td>
<td>24</td>
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<tr>
<td>MASN-102</td>
<td>Masonry Bonds</td>
<td>28</td>
<td>1</td>
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<tr>
<td>MASN-103</td>
<td>Definitions</td>
<td>28</td>
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<tr>
<td>MASN-104</td>
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<tr>
<td>MASN-105</td>
<td>Estimating</td>
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<tr>
<td>MASN-106</td>
<td>Practical Work</td>
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<td>16.5</td>
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</tbody>
</table>

660 25

EMPLOYMENT OPPORTUNITIES:

The student who completes 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 X or Basic Training for Skill Development Adult TEN.

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 5 months. Successful completion of this course qualifies the graduate for a Certificate of Attainment.

FEES AND EXPENSES:
The tuition fee is $7.00 per month, or fraction thereof. Other expenses include textbooks and supplies totalling approximately $30.00.

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 be 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:

1. Construction Contractors
2. Home Improvement Contractors
3. Civil Service
4. Public Utilities
5. Manufacturing Companies
6. Self employed
## COURSE OUTLINE

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject Description</th>
<th>Hours</th>
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<td>RESC-511</td>
<td>Science</td>
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<tr>
<td>PDEC-101</td>
<td>Introduction, Safety, Study and History of the Trade</td>
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<tr>
<td>PDEC-102</td>
<td>Basic Components of Paint</td>
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<tr>
<td>PDEC-103</td>
<td>Preparation and Application of Coatings, Interior-Exterior</td>
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<tr>
<td>PDEC-104</td>
<td>Tools, Equipment and Safety</td>
<td>20</td>
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<tr>
<td>PDEC-105</td>
<td>Re-Painted Surfaces</td>
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<td>PDEC-106</td>
<td>Paint Failures, Causes and Remedies</td>
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<tr>
<td>PDEC-107</td>
<td>Wood Finishing</td>
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<tr>
<td>PDEC-108</td>
<td>Basic Color Theory and Mixing</td>
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<td>PDEC-109</td>
<td>Paper Hanging and Wall Covering</td>
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<tr>
<td>DRAF-504</td>
<td>Sketching &amp; Blueprint Reading</td>
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<table>
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<tbody>
<tr>
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</table>
Plumbing

ENTRANCE REQUIREMENTS:

Grade X or Basic Training for Skill Development Adult TEN.

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 10 months. Successful completion of this course qualifies the graduate for a Certificate of Attainment.

FEES AND EXPENSES:

The tuition fee is $7.00 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $50.00.

COURSE OUTLINE

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
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<td>RESC-518</td>
<td>Science</td>
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<tr>
<td>DRAF-504</td>
<td>Sketching &amp; Blueprint Reading</td>
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<td>SHOP-505</td>
<td>Machine Shop</td>
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<td>WELD-506</td>
<td>Welding</td>
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<td>PLUM-101</td>
<td>Introduction to Plumbing</td>
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<tr>
<td>PLUM-102</td>
<td>Piping</td>
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<td>PLUM-103</td>
<td>Regulations and Project Installations</td>
<td>459</td>
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<td>PLUM-104</td>
<td>Sheet Lead</td>
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<td>PLUM-105</td>
<td>Torches</td>
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<td>PLUM-106</td>
<td>Pumps</td>
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<td>PLUM-107</td>
<td>Builder's Level</td>
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<td>PLUM-108</td>
<td>Rigging and Signaling</td>
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<td>1320</td>
<td>50</td>
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</table>
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 and possibly become a foreman or an estimator.
Upholstery

ENTRANCE REQUIREMENTS:

Grade X or Basic Training for Skill Development Adult TEN.

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 10 months.

The course is divided into two terms each of five months duration. Students who successfully complete Term I 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 $7.00 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $40.00.

COURSE OUTLINE

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<tr>
<td>MATH-503</td>
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<tr>
<td>RESC-512</td>
<td>Science</td>
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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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<tr>
<td>UPHO-104</td>
<td>Trimmings</td>
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<td>UPHO-105</td>
<td>General Upholstery</td>
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<tr>
<th>TERM 1</th>
<th>Subject</th>
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660 25
TERM 2

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<td>RESC-512</td>
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<td>PDEC-107</td>
<td>Wood Finishing</td>
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<td>UPHO-201</td>
<td>Coverings</td>
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<tr>
<td>UPHO-202</td>
<td>Foam Rubber Applications</td>
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<td>UPHO-203</td>
<td>Advanced General Upholstery</td>
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<td>UPHO-204</td>
<td>Woodworking</td>
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<tr>
<td>UPHO-217</td>
<td>On-Job Training</td>
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</tbody>
</table>

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EMPLOYMENT OPPORTUNITIES:

The employment market served by this course has two major divisions. Completion of Term “I” 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.
Drafting Department

Architectural Drafting

Term I is common. One of the following options may be selected near the end of the first term.

(1) Advanced Architectural Applications
(2) Mechanical Systems

ENTRANCE REQUIREMENTS:

Grade XI with proficiency in Mathematics and Physical Science, or Basic Training for Skill Development Adult ELEV-EN—A.

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 10 months. Successful completion of this course qualifies the graduate for a Certificate of Attainment.

FEES AND EXPENSES:

The tuition fee is $7.00 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $75.00.

EMPLOYMENT OPPORTUNITIES:

Option (1) (Advanced Architectural Applications)

Draftsmen and Draftswomen may be employed in the following concerns: architecture, structural engineering, town planning, building sub-trades. From the position of Draftsmen, with experience gained in that field, there is the possibility of advancement into the following situation: estimating, specification writing, technical representative or salesman of building product lines, and building inspectors.

Option (2) (Mechanical Systems)

Draftsmen and Draftswomen may be employed in the Mechanical Consultant field, or in the related sub-trades. With experience there is the possibility of advancement into the following job situations: estimating, specification writing, technical representative or salesman of allied products and job supervision.
## COURSE OUTLINE

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Option (1)</th>
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<td>ADRA-101 Fundamentals of Delineation</td>
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<td>ADRA-104 Surveying &amp; Topographical Drwg 40</td>
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<td>ADRA-102 Applied (Arch) Drafting I</td>
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<td>MSRA-101 Mechanical Systems</td>
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<td>ADRA-112 Applied (Arch.) Drafting II</td>
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<td>ADRA-105 Specifications</td>
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<td>ADRA-103 Calculating Machine Operation</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
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<td>50</td>
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</tbody>
</table>
Machine Drafting

ENTRANCE REQUIREMENTS:

Grade XI with proficiency in Mathematics and Physical Science, or Basic Training for Skill Development Adult ELEV-EN-A.

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 10 months. Successful completion of this course qualifies the graduate for a Certificate of Attainment.

FEES AND EXPENSES:

The tuition fee is $7.00 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $100.00.

EMPLOYMENT OPPORTUNITIES:

A variety of employment opportunities await the trained student in sheet metal working industries, tool & 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 & salesman's field of metal working equipment and products, and shop inspectors.

COURSE OUTLINE

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject Name</th>
<th>Credit Hours</th>
<th>Hours</th>
</tr>
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<tbody>
<tr>
<td>ENGL-503</td>
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<td>MATH-509</td>
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<td>MDRA-101</td>
<td>Fundamentals of Delineation</td>
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<td>MDRA-102</td>
<td>Applied Drafting</td>
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<tr>
<td>MDRA-103</td>
<td>Calculating Machine Operation</td>
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<tr>
<td>MDRA-104</td>
<td>Surveying &amp; Topographical Drawing</td>
<td>40</td>
<td>2</td>
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</tbody>
</table>

1320 50
Electrical-Electronic Technology Departments

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 XII standing. Candidates who have a complete Grade XII but do not have the required subjects indicated above are invited to apply to the Registrar to have their credentials reviewed by the Admissions Committee, or

2. Successful completion of the Pre-Technology Course.

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 20 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.

COURSE OUTLINE

First Year

TERM 1

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject Name</th>
<th>Lect.</th>
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<th>Credit Hours</th>
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<td>2</td>
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<tr>
<td>RESC-103</td>
<td>Physics</td>
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<td>ERIC-103</td>
<td>Basic Electrical Instruments</td>
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<td>Engineering Drawing</td>
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<td>ERIC-107</td>
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<td>Basic Electronics</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

15  15  25
FLOW CHART SHOWING RELATIONSHIP OF COMPUTER, ELECTRICAL, ELECTRONIC, AND INSTRUMENTATION TECHNOLOGY COURSES

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 pre-requisites.
# Computer Technology

## ENTRANCE REQUIREMENTS:

As outlined for Electrical-Electronic Technology Departments courses (Page 192).

## COURSE OUTLINE

### TERM 1

As outlined for Electrical-Electronic Technology Departments courses (Page 192).

### TERM 2

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL-201</td>
<td>Communications</td>
<td>1 Lect.</td>
<td>2 Lab.</td>
</tr>
<tr>
<td>MATH-202</td>
<td>Calculus</td>
<td>3 Lect.</td>
<td>2 Lab.</td>
</tr>
<tr>
<td>RESC-203</td>
<td>Modern Physics</td>
<td>2 Lect.</td>
<td>2 Lab.</td>
</tr>
<tr>
<td>ERON-207</td>
<td>Electric Circuits</td>
<td>3 Lect.</td>
<td>2 Lab.</td>
</tr>
<tr>
<td>ERON-208</td>
<td>Basic Electronics</td>
<td>2 Lect.</td>
<td>6 Lab.</td>
</tr>
<tr>
<td>ERON-210</td>
<td>Basic Electronic Instruments</td>
<td>2 Lect.</td>
<td>2 Lab.</td>
</tr>
<tr>
<td>COMP-209</td>
<td>Computer Topics</td>
<td>2 Lect.</td>
<td>2 Lab.</td>
</tr>
</tbody>
</table>

**Total:** 15 Weeks 15 Hours 25 Credit Hours

### TERM 3

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH-308</td>
<td>Calculus</td>
<td>3 Lect.</td>
<td>2 Lab.</td>
</tr>
<tr>
<td>ERON-304</td>
<td>Electronic Devices</td>
<td>3 Lect.</td>
<td>3 Lab.</td>
</tr>
<tr>
<td>ERON-306</td>
<td>Electronic Measurements</td>
<td>2 Lect.</td>
<td>3 Lab.</td>
</tr>
<tr>
<td>COMP-307</td>
<td>Control Systems</td>
<td>3 Lect.</td>
<td>3 Lab.</td>
</tr>
<tr>
<td>COMP-309</td>
<td>Logic Circuits &amp; Programming</td>
<td>2 Lect.</td>
<td>2 Lab.</td>
</tr>
<tr>
<td>COMP-311</td>
<td>Pulse Circuits</td>
<td>2 Lect.</td>
<td>2 Lab.</td>
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</table>

**Total:** 15 Weeks 15 Hours 25 Credit Hours

### TERM 4

**MANDATORY SUBJECTS:**

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP-404</td>
<td>Electronic Devices</td>
<td>2 Lect.</td>
<td>3 Lab.</td>
</tr>
<tr>
<td>COMP-408</td>
<td>Computer Interfacing</td>
<td>2 Lect.</td>
<td>3 Lab.</td>
</tr>
<tr>
<td>COMP-409</td>
<td>Computer Circuits</td>
<td>3 Lect.</td>
<td>3 Lab.</td>
</tr>
<tr>
<td>COMP-410</td>
<td>Computer Systems</td>
<td>3 Lect.</td>
<td>3 Lab.</td>
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</tbody>
</table>

**Total:** 19 Credit Hours
ELECTIVE SUBJECTS: (2 required)
MATH-408 Numerical Methods with Fortran .......................... 2 2 3
COMP-401 Computer Peripherals .......... 2 2 3
COMP-403 Computer Projects .............. 0 4 3

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 192).

COURSE OUTLINE

First Year

TERM 1
As outlined for Electrical-Electronic Technology Departments Courses (Page 192).

TERM 2

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Course Title</th>
<th>Lect.</th>
<th>Lab.</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ENGL-201</td>
<td>Report Writing</td>
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<td>2</td>
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</tr>
<tr>
<td>MATH-202</td>
<td>Calculus</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>ERIC-205</td>
<td>Electrical Layout &amp; Design</td>
<td>0</td>
<td>3</td>
<td>2</td>
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<tr>
<td>ERIC-206</td>
<td>Materials</td>
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<td>3</td>
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<td>ERIC-209</td>
<td>Computational Techniques</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>ERIC-210</td>
<td>Basic Electrical Instruments</td>
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<td>2</td>
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<tr>
<td>ERIC-211</td>
<td>Electric Circuits</td>
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<td>2</td>
<td>5</td>
</tr>
<tr>
<td>ERON-208</td>
<td>Basic Electronics</td>
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13 17 25

Second Year

TERM 3

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Course Title</th>
<th>Lect.</th>
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<tbody>
<tr>
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<tr>
<td>ERIC-304</td>
<td>Electric Circuits</td>
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<tr>
<td>ERIC-305</td>
<td>Electrical Machines</td>
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<td>3</td>
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</tr>
<tr>
<td>ERIC-306</td>
<td>Digital &amp; Computer Control Techniques</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>ERIC-308</td>
<td>Industrial Electronics</td>
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<td>3</td>
<td>4</td>
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<tr>
<td>ERIC-313</td>
<td>Electrical Measurements</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>ERIC-317</td>
<td>Electrical Practices &amp; Design</td>
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<td>3</td>
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15 16 25
TERM 4

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>ERIC-405</td>
<td>Electrical Machines</td>
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<tr>
<td>ERIC-406</td>
<td>Control Systems</td>
<td>2</td>
</tr>
<tr>
<td>ERIC-408</td>
<td>Industrial Electronics</td>
<td>2</td>
</tr>
<tr>
<td>ERIC-412</td>
<td>Electrical Transmission and Measurements</td>
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<tr>
<td>ERIC-414</td>
<td>Switchgear &amp; Protection</td>
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<tr>
<td></td>
<td>plus one of the following electives</td>
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</table>

**Total Credits:** 29

**Electives:** 25

MATH-408  Numerical Methods with Fortran.
ADMN-312  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 192).

**COURSE OUTLINE**

**TERM 1**
As outlined for Electrical-Electronic Technology Departments Courses (Page 192).

**TERM 2**

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Hours</th>
<th>Credit Hours</th>
<th>Lect.</th>
<th>Lab.</th>
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<tbody>
<tr>
<td>ENGL-201</td>
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<td>3</td>
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<td>1</td>
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<tr>
<td>MATH-202</td>
<td>Calculus</td>
<td>3</td>
<td>4</td>
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<tr>
<td>RESC-203</td>
<td>Modern Physics</td>
<td>2</td>
<td>4</td>
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<td>1</td>
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<td>ERON-207</td>
<td>Electric Circuits</td>
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<td>5</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>ERON-208</td>
<td>Basic Electronics</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>ERON-209</td>
<td>Logic &amp; Computations</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>ERON-210</td>
<td>Basic Electronic Instruments</td>
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<td>3</td>
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<td>1</td>
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**TERM 3**

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<th>Subject</th>
<th>Hours</th>
<th>Credit Hours</th>
<th>Lect.</th>
<th>Lab.</th>
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<tbody>
<tr>
<td>MATH-302</td>
<td>Calculus</td>
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<tr>
<td>ERON-303</td>
<td>Electronic Circuits</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>ERON-304</td>
<td>Electronic Devices</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>ERON-306</td>
<td>Electronic Measurements</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>ERON-307</td>
<td>Control Systems</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>ERON-309</td>
<td>Logic and Pulse Circuits</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15</td>
<td>25</td>
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</tbody>
</table>

**TERM 4**

**MANDATORY SUBJECTS:**

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Hours</th>
<th>Credit Hours</th>
<th>Lect.</th>
<th>Lab.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH-402</td>
<td>Numerical Methods with Fortran</td>
<td>3</td>
<td>4</td>
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<tr>
<td>ERON-403</td>
<td>Electronic Circuits &amp; Fields</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>ERON-404</td>
<td>Electronic Devices</td>
<td>2</td>
<td>4</td>
<td>3</td>
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<tr>
<td>ERON-411</td>
<td>Communication Theory</td>
<td>2</td>
<td>4</td>
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ELECTIVE SUBJECTS:

<table>
<thead>
<tr>
<th>Course</th>
<th>Subject</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERON-405</td>
<td>Radio Systems</td>
<td>2</td>
</tr>
<tr>
<td>ERON-406</td>
<td>Microwave Systems</td>
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</tr>
<tr>
<td>ERON-407</td>
<td>Control Systems</td>
<td>2</td>
</tr>
<tr>
<td>ERON-408</td>
<td>Integrated Circuits</td>
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</tr>
<tr>
<td>ERON-409</td>
<td>Systems Project</td>
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</tr>
<tr>
<td>ERON-410</td>
<td>Business Topics</td>
<td>2</td>
</tr>
<tr>
<td>ERON-412</td>
<td>T.V. Theory &amp; Servicing</td>
<td>2</td>
</tr>
<tr>
<td>ERON-413</td>
<td>Audio Systems</td>
<td>2</td>
</tr>
<tr>
<td>ERON-414</td>
<td>Manufacturing Techniques</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 192).

COURSE OUTLINE

First Year

TERM 1

As outlined for Electrical-Electronic Technology Departments Courses (Page 192).

TERM 2

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject Name</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL-201</td>
<td>Report Writing</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>MATH-202</td>
<td>Calculus</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>RESC -204</td>
<td>Instrumentation Physics</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>INST -203</td>
<td>Basic Instrumentation</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>INST -204</td>
<td>Instrumentation Layout &amp; Design</td>
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</tr>
<tr>
<td>INST -207</td>
<td>Electric Circuits</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>INST -209</td>
<td>Computational Techniques</td>
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<td>1</td>
</tr>
<tr>
<td>ERON-208</td>
<td>Basic Electronics</td>
<td>2</td>
<td>3</td>
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</table>

16 14 25

Second Year

TERM 3

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject Name</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH-305</td>
<td>Calculus</td>
<td>2</td>
<td>3</td>
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<tr>
<td>INST -301</td>
<td>Fluid Mechanics</td>
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<td>4</td>
</tr>
<tr>
<td>INST -302</td>
<td>Process Measurements</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>INST -305</td>
<td>Industrial Hydraulics</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>INST -306</td>
<td>Digital &amp; Computer Control Techniques</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>INST -307</td>
<td>Electrical Practices &amp; Design</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>INST -309</td>
<td>Industrial Electronics</td>
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<td>4</td>
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14 17 25
TERM 4

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>INST-402</td>
<td>Process Measurements</td>
<td>2</td>
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<tr>
<td>INST-403</td>
<td>Industrial Control Applications</td>
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</tr>
<tr>
<td>INST-404</td>
<td>Chemical Instrumentation</td>
<td>3</td>
</tr>
<tr>
<td>INST-405</td>
<td>Process Analysis</td>
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<td>INST-409</td>
<td>Industrial Electronics</td>
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<td>Plus one elective:</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

| Total Credits | 30 | 25 |

**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.
Industrial Electrical Department
Electrical Appliance Servicing

ENTRANCE REQUIREMENTS:

Grade X or Basic Training for Skill Development Adult TEN.

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 10 months. Successful completion of this course qualifies the graduate for a Certificate of Attainment.

FEES AND EXPENSES:

The tuition fee is $7.00 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $80.00.

COURSE OUTLINE

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Hours</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH-509</td>
<td>Mathematics</td>
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<td>RESC -522</td>
<td>Science</td>
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<tr>
<td>SHOP -505</td>
<td>Machine Shop</td>
<td>30</td>
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<td>MARK-504</td>
<td>Marketing</td>
<td>60</td>
<td>3</td>
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<tr>
<td>OSPR -506</td>
<td>Office Systems &amp; Procedures</td>
<td>60</td>
<td>3</td>
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<tr>
<td>APPL -101</td>
<td>Elementary Circuitry</td>
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<td>APPL -102</td>
<td>D.C. Fundamentals</td>
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<td>APPL -103</td>
<td>A.C. Fundamentals</td>
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<td>3</td>
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<td>A.C. Motors</td>
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<td>Electrical Code</td>
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<td>APPL -106</td>
<td>Electrical Ranges</td>
<td>80</td>
<td>3</td>
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<td>APPL -107</td>
<td>Electric Dryers</td>
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<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>

1320 50
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:

1. Field service for national manufacturers.
2. Independent service companies.
3. Dealer operated service departments.
Electrical

ENTRANCE REQUIREMENTS:

Grade X, or Basic Training for Skill Development Adult TEN. Grade XI 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 10 months. Successful completion of this course qualifies the graduate for a Certificate of Attainment.

NOTE: This course is divided into two 5 months 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 $7.00 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $120.00.

COURSE OUTLINE

TERM 1

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Credit Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL-501</td>
<td>Communications</td>
<td>20</td>
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<tr>
<td>MATH-509</td>
<td>Mathematics</td>
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<tr>
<td>RESC-523</td>
<td>Science</td>
<td>40</td>
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<tr>
<td>SHOP-505</td>
<td>Machine Shop</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>TRIC-101</td>
<td>Direct Current Fundamentals</td>
<td>120</td>
<td>4</td>
</tr>
<tr>
<td>TRIC-102</td>
<td>Residential Blueprint Reading</td>
<td>160</td>
<td>6</td>
</tr>
<tr>
<td>TRIC-103</td>
<td>Direct Current Machines &amp; Controls</td>
<td>80</td>
<td>3</td>
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<tr>
<td>TRIC-151</td>
<td>Residential Wiring</td>
<td>110</td>
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<tr>
<td>TRIC-152</td>
<td>Electrical Lab. (D.C.)</td>
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Total: 660 25
TERM 2

<table>
<thead>
<tr>
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<td>Science</td>
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<td>1</td>
</tr>
<tr>
<td>TRIC-201</td>
<td>Alternating Current Fundamentals</td>
<td>80</td>
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<tr>
<td>TRIC-202</td>
<td>3-Phase Systems &amp; Transformers</td>
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<tr>
<td>TRIC-203</td>
<td>Alternating Current Machines &amp; Controls</td>
<td>80</td>
<td>2</td>
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<tr>
<td>TRIC-204</td>
<td>Electric Motor Repair</td>
<td>60</td>
<td>3</td>
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<tr>
<td>TRIC-205</td>
<td>Commercial Blueprint Reading</td>
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<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>
<td>3</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>660</td>
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</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 I 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 I and II of the Apprenticeship program sponsored by the Department of Labour.
Refrigeration and Air Conditioning

ENTRANCE REQUIREMENTS:

Grade XI or Basic Training for Skill Development Adult ELEVEN - A.

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 10 months. Successful completion of this course qualifies the graduate for a Certificate of Attainment.

FEES AND EXPENSE:

The tuition fee is $7.00 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $80.00.

COURSE OUTLINE

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Hours</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ENGL-503</td>
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<tr>
<td>MATH-509</td>
<td>Mathematics</td>
<td>80</td>
<td>2</td>
</tr>
<tr>
<td>RESC-521</td>
<td>Science</td>
<td>80</td>
<td>2</td>
</tr>
<tr>
<td>DRAF-504</td>
<td>Sketching &amp; Blueprint Reading</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>SHOP-505</td>
<td>Machine Shop</td>
<td>60</td>
<td>2</td>
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<tr>
<td>WELD-506</td>
<td>Welding</td>
<td>60</td>
<td>3</td>
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<tr>
<td>FRIG-101</td>
<td>Safety and Fundamentals</td>
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<tr>
<td>FRIG-102</td>
<td>Basic Refrigeration Systems</td>
<td>180</td>
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<td>FRIG-103</td>
<td>Commercial Systems</td>
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<td>FRIG-104</td>
<td>Calculations</td>
<td>100</td>
<td>5</td>
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<tr>
<td>FRIG-105</td>
<td>Basic Air Conditioning Systems</td>
<td>40</td>
<td>1</td>
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<tr>
<td>FRIG-106</td>
<td>Refrigeration Electrical</td>
<td>180</td>
<td>8</td>
</tr>
</tbody>
</table>

1320 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.
Industrial Electronics Department

Domestic Electronics
(with 2 month color T.V. option)

ENTRANCE REQUIREMENTS:

Grade XI or Basic Training for Skill Development Adult ELEVEN-A.

Those who do not have the above prerequisites may apply to the Admissions Committee on an individual basis.

DURATION OF COURSE:

Approximately 10 months. Successful completion of the 12 month program qualifies the graduate for a Certificate of Attainment in Color Television.

FEES AND EXPENSES:

The tuition fee is $7.00 per month or fraction thereof. Other expenses including textbooks and supplies total approximately $60.00.

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>
<th>Hours</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MATH-514</td>
<td>Mathematics</td>
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<tr>
<td>RESC -525</td>
<td>Science</td>
<td>40</td>
<td>2</td>
</tr>
<tr>
<td>TVES -112</td>
<td>Direct Current Fundamentals</td>
<td>70</td>
<td>3</td>
</tr>
<tr>
<td>TVES -113</td>
<td>Alternating Current Fundamentals</td>
<td>100</td>
<td>4</td>
</tr>
<tr>
<td>TVES -114</td>
<td>Electronic Fundamentals</td>
<td>100</td>
<td>4</td>
</tr>
<tr>
<td>TVES -115</td>
<td>AM and FM Transmitters</td>
<td>40</td>
<td>3</td>
</tr>
<tr>
<td>TVES -116</td>
<td>Radio Receivers and Servicing</td>
<td>150</td>
<td>6</td>
</tr>
<tr>
<td>TVES -117</td>
<td>FM, Stereo, Hi-Fi, TV Basics</td>
<td>120</td>
<td>2</td>
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<td></td>
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## TERM 2

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Program Credits</th>
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<tbody>
<tr>
<td>MARK-504</td>
<td>Marketing</td>
<td>40</td>
<td>2</td>
</tr>
<tr>
<td>ENGL-614</td>
<td>Communications</td>
<td>40</td>
<td>2</td>
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<tr>
<td>TVES-201</td>
<td>Television Standards and Fundamentals</td>
<td>30</td>
<td>2</td>
</tr>
<tr>
<td>TVES-202</td>
<td>Antennas and Master Antenna Systems</td>
<td>20</td>
<td>2</td>
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<tr>
<td>TVES-203</td>
<td>Television Receivers and 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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<tr>
<td>DRAF-504</td>
<td>Electronic Drafting</td>
<td>30</td>
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</table>

| Total       |                                      | 660     | 25              |

## TERM 3 (Optional)

<table>
<thead>
<tr>
<th>Course Code</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>
</tbody>
</table>

| Total       |                                      | 270     | 10              |
Industrial Electronics

ENTRANCE REQUIREMENTS:
This is a demanding course and candidates should have a minimum of Grade XI with proficiency in Mathematics and Physics or Basic Training for Skill Development Adult ELEVEN-A.

Those who do not have the above prerequisites may apply to the Admissions Committee on an individual basis.

DURATION OF COURSE:
Approximately 10 months. Successful completion of this course qualifies the graduate for a Certificate of Attainment.

FEES AND EXPENSES:
The tuition fee is $7.00 per month or fraction thereof. Other expenses including textbooks and supplies total $80.00.

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>
<th>Subject</th>
<th>Hours</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>IRON-109</td>
<td>DC Fundamentals</td>
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<td>2</td>
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<tr>
<td>IRON-110</td>
<td>AC Fundamentals</td>
<td>75</td>
<td>3</td>
</tr>
<tr>
<td>IRON-111</td>
<td>Test Equipment</td>
<td>25</td>
<td>1</td>
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<tr>
<td>IRON-112</td>
<td>Transistors and tubes</td>
<td>100</td>
<td>4</td>
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<tr>
<td>IRON-113</td>
<td>Power Supplies</td>
<td>50</td>
<td>1</td>
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<tr>
<td>IRON-114</td>
<td>Amplifiers</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>IRON-115</td>
<td>Oscillators, Multivibrators and Flip-Flops</td>
<td>50</td>
<td>3</td>
</tr>
<tr>
<td>IRON-116</td>
<td>Introduction to Logic and Switching</td>
<td>40</td>
<td>2</td>
</tr>
<tr>
<td>MATH-513</td>
<td>Mathematics</td>
<td>80</td>
<td>3</td>
</tr>
<tr>
<td>RESC-525</td>
<td>Science</td>
<td>40</td>
<td>2</td>
</tr>
<tr>
<td>DRAF-504</td>
<td>Drafting</td>
<td>30</td>
<td>1</td>
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<tr>
<td>ENGL-513</td>
<td>Communications</td>
<td>20</td>
<td>1</td>
</tr>
</tbody>
</table>

**Total:** 660 hours, 25 credit hours

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>Hours</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRON-201</td>
<td>Timing Fundamentals</td>
<td>20</td>
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<tr>
<td>IRON-202</td>
<td>Gaseous Electron Tubes</td>
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</tr>
<tr>
<td>IRON-203</td>
<td>Phase Shift Circuits</td>
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<td>1</td>
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<tr>
<td>IRON-204</td>
<td>Electron Tube Time Delay Circuits</td>
<td>20</td>
<td>1</td>
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<tr>
<td>IRON-205</td>
<td>Semiconductors</td>
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<tr>
<td>IRON-206</td>
<td>Photosensitive Devices</td>
<td>30</td>
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<tr>
<td>IRON-207</td>
<td>Relays</td>
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<td>1</td>
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<tr>
<td>IRON-208</td>
<td>Motor Control Circuits</td>
<td>30</td>
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<tr>
<td>IRON-209</td>
<td>Pulse and Gating Circuits</td>
<td>150</td>
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<tr>
<td>MATH-613</td>
<td>Mathematics</td>
<td>80</td>
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<td>Communications</td>
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<tr>
<td>IRON-210</td>
<td>Closed Circuit Television</td>
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</tbody>
</table>

**Total:** 660 hours, 25 credit hours
Radio Operating and Electronic Communications

**ENTRANCE REQUIREMENTS:**

Grade XI with proficiency in Mathematics and Physics, or Basic Training for Skill Development Adult ELEVEN-A.

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 10 months. Successful completion of this course qualifies the graduate for a Certificate of Attainment.

**FEES AND EXPENSES:**

The tuition fee is $7.00 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $70.00.

**COURSE OUTLINE**

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<thead>
<tr>
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<th>Subject Description</th>
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<td>Mathematics</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>RESC-523</td>
<td>Science</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>RADO-101</td>
<td>DC and AC Fundamentals</td>
<td>100</td>
<td>3</td>
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<tr>
<td>RADO-102</td>
<td>Tubes and Transistors</td>
<td>60</td>
<td>2</td>
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<tr>
<td>RADO-103</td>
<td>Oscillators</td>
<td>30</td>
<td>1</td>
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<tr>
<td>RADO-104</td>
<td>Receivers</td>
<td>50</td>
<td>2</td>
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<tr>
<td>RADO-105</td>
<td>Test Equipment (Marine)</td>
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<tr>
<td>RADO-106</td>
<td>Communication Receivers (Marine)</td>
<td>50</td>
<td>2</td>
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<tr>
<td>RADO-107</td>
<td>Communication Transmitters (Marine)</td>
<td>50</td>
<td>2</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>
<td>2</td>
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<tr>
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<td>Direction Finding Systems</td>
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<td>RADO-111</td>
<td>Emergency Equipment (Marine)</td>
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<td>Antenna &amp; Propagation Fundamentals</td>
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<td>RADO-113</td>
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<td>RADO-114</td>
<td>Normal Traffic Procedure</td>
<td>120</td>
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<td>RADO-115</td>
<td>Special Service Procedure</td>
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<td>2</td>
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<tr>
<td>RADO-116</td>
<td>Toll Computation</td>
<td>80</td>
<td>2</td>
</tr>
<tr>
<td>RADO-117</td>
<td>Typing &amp; Teletype</td>
<td>60</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1320</strong></td>
<td><strong>50</strong></td>
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</tr>
</tbody>
</table>
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 Basic Training for Skill Development Adult ELEVEN-A, 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 10 months. Successful completion of this course qualifies the graduate for a Certificate of Attainment.

FEES AND EXPENSES:

The tuition fee is $7.00 per month or fraction thereof. Other expenses including textbooks and supplies total approximately $75.00.

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-513</td>
<td>Communications</td>
<td>20</td>
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<td>MATH-513</td>
<td>Mathematics</td>
<td>80</td>
<td>3</td>
</tr>
<tr>
<td>RESC-525</td>
<td>Science</td>
<td>40</td>
<td>2</td>
</tr>
<tr>
<td>RADO-117</td>
<td>Typing and Teletype</td>
<td>30</td>
<td>2</td>
</tr>
<tr>
<td>TCOM-101</td>
<td>Electrical Fundamentals</td>
<td>250</td>
<td>8</td>
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<td>TCOM-102</td>
<td>Semiconductors and Vacuum Tubes</td>
<td>100</td>
<td>4</td>
</tr>
<tr>
<td>TCOM-103</td>
<td>Radio Receivers and Transmitters</td>
<td>140</td>
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Total = 660  25

TERM 2

<table>
<thead>
<tr>
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<th>Subject</th>
<th>Hours</th>
<th>Credit Hours</th>
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<td>Mathematics</td>
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<td>Communications</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>
<td>2</td>
</tr>
<tr>
<td>TCOM-202</td>
<td>Introduction to Microwave</td>
<td>80</td>
<td>2</td>
</tr>
<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>
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<tr>
<td>TCOM-205</td>
<td>Introduction to Data Communication</td>
<td>60</td>
<td>3</td>
</tr>
</tbody>
</table>

Total = 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.
Mechanical 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 XII standing. Candidates who have a complete Grade XII but do not have the required subjects indicated above are invited to apply to the Registrar to have their credentials reviewed by the Admissions Committee, or

2. Successful completion of the Pre-Technology Course.

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 20 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 I

Heat & Power  \[\rightarrow\]  Production

TERM II

Heat & Power  \[\rightarrow\]  Production

TERM III

Heat & Power  \[\rightarrow\]  Production

TERM IV

Heat & Power  \[\rightarrow\]  Production
# COURSE OUTLINE

## FIRST YEAR

### TERM 1

<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-101</td>
<td>Communications</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>MATH-106</td>
<td>Mathematics</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>MECH-102</td>
<td>Electrical Fundamentals</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>MECH-103</td>
<td>Manufacturing Processes</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>MECH-104</td>
<td>Mechanical Drafting</td>
<td>0</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>MECH-105</td>
<td>Applied Mechanics</td>
<td>2</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>MECH-106</td>
<td>Management Methods</td>
<td>2</td>
<td>0</td>
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<tr>
<td>MECH-107</td>
<td>Industrial Materials</td>
<td>3</td>
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<thead>
<tr>
<th></th>
<th>Lect.</th>
<th>Lab.</th>
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### TERM 2

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<thead>
<tr>
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<th>Subject</th>
<th>Lect.</th>
<th>Lab.</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH-206</td>
<td>Mathematics</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>ENGL-201</td>
<td>Report Writing</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>MECH-205</td>
<td>Applied Mechanics</td>
<td>2</td>
<td>1</td>
<td>4</td>
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<tr>
<td>MECH-206</td>
<td>Industrial Electronics</td>
<td>2</td>
<td>2</td>
<td>2</td>
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<tr>
<td>MECH-207</td>
<td>Production Welding</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>MECH-208</td>
<td>Stress Analysis</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>MECH-209</td>
<td>Industrial Fluid Mechanics</td>
<td>2</td>
<td>2</td>
<td>4</td>
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</table>

<table>
<thead>
<tr>
<th></th>
<th>Lect.</th>
<th>Lab.</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>Total</td>
<td>16</td>
<td>14</td>
<td>25</td>
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</tbody>
</table>
Heat and Power Technology

ENTRANCE REQUIREMENTS:
As outlined for Mechanical Technology Department Courses (Page 216).

COURSE OUTLINE

FIRST YEAR
As outlined for Mechanical Technology Department Courses (Page 216).

SECOND YEAR

TERM 3

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH-306</td>
<td>Mathematics</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>MECH-309</td>
<td>Work Study</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>MECH-321</td>
<td>Machine Design</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>HEPR-310</td>
<td>Instrumentation &amp; Controls</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>HEPR-311</td>
<td>Fluid Power</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>HEPR-313</td>
<td>Heating &amp; Ventilation</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>HEPR-326</td>
<td>Thermodynamics</td>
<td>2</td>
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<tr>
<td>HEPR-327</td>
<td>Library Research</td>
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</table>

| Total       |                                       | 17             | 13           | 25           |

TERM 4

<table>
<thead>
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<th>Subject No.</th>
<th>Subject</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
<td>MECH-405</td>
<td>Automation</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>HEPR-407</td>
<td>Human Relations &amp; Technical Report</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>HEPR-412</td>
<td>Mechanical Equipment</td>
<td>2</td>
<td>2</td>
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<tr>
<td>HEPR-413</td>
<td>Heating &amp; Ventilation</td>
<td>3</td>
<td>5</td>
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<tr>
<td>HEPR-414</td>
<td>Refrigeration</td>
<td>1</td>
<td>2</td>
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<tr>
<td>HEPR-415</td>
<td>Internal Combustion Engines</td>
<td>3</td>
<td>5</td>
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<tr>
<td>HEPR-421</td>
<td>Machine Design</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>HEPR-426</td>
<td>Thermodynamics</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

| Total       |                                       | 15             | 15           | 25           |
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 particularly adaptable to the heating, air conditioning, and refrigeration areas. 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 216).

COURSE OUTLINE

FIRST YEAR
As outlined for Mechanical Technology Department Courses (Page 216).

SECOND YEAR

TERM 3

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
<td>RESC-303</td>
<td>Chemical Physics</td>
<td>2</td>
<td>3</td>
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<tr>
<td>MATH-306</td>
<td>Mathematics</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>MECH-309</td>
<td>Work Study</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>MECH-321</td>
<td>Machine Design</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>PROD-302</td>
<td>Metallurgy</td>
<td>2</td>
<td>4</td>
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<tr>
<td>PROD-312</td>
<td>Non-Destructive Testing</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>PROD-331</td>
<td>Tool Design</td>
<td>1</td>
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TERM 4

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH-427</td>
<td>Statistics &amp; Quality Control</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>MECH-405</td>
<td>Automation</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>MECH-407</td>
<td>Technical Research &amp; Report</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>PROD-403</td>
<td>Advanced Manufacturing Processes</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>PROD-411</td>
<td>Production Planning &amp; Layout</td>
<td>3</td>
<td>5</td>
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<tr>
<td>PROD-429</td>
<td>Accounting</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>PROD-430</td>
<td>Management Studies</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

15  15  25
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 practitioner in the production field requires a comprehensive knowledge of business administration, report writing, industrial materials, design, automation, machinery, and manufacturing processes. Previous graduates have become established in nuclear power, X-ray radiography, product design, plant management, work study, production control, welding technology, industrial marketing, customer liaison, materials technology, in the aerospace industry and a wide spectrum of other responsibilities.
Operating Engineers

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 XII standing. Candidates who have a complete Grade XII but who do not have the required subjects indicated above are invited to apply to the Registrar to have their credentials reviewed by the Admissions Committee, or

2. Basic Training for Skill Development Adult ELEVEN-A 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 20 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:

Operating 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 Operating 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, Operating 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 year 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 an Operating 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 Per Week</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESC-106</td>
<td>Chemistry</td>
<td>2 L 1 2</td>
<td></td>
</tr>
<tr>
<td>ENGL-101</td>
<td>Communications</td>
<td>3 L 0 3</td>
<td></td>
</tr>
<tr>
<td>MATH-104</td>
<td>Mathematics</td>
<td>3 L 0 2</td>
<td></td>
</tr>
<tr>
<td>RESC-105</td>
<td>Physics</td>
<td>1 L 2 2</td>
<td></td>
</tr>
<tr>
<td>OPER-101</td>
<td>Power Plant Theory &amp; Practice</td>
<td>6 L 5 9</td>
<td></td>
</tr>
<tr>
<td>OPER-102</td>
<td>Electricity</td>
<td>2 L 1 2</td>
<td></td>
</tr>
<tr>
<td>OPER-103</td>
<td>Instruments &amp; Controls</td>
<td>2 L 1 2</td>
<td></td>
</tr>
<tr>
<td>OPER-108</td>
<td>Drafting</td>
<td>0 L 2 1</td>
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</tr>
<tr>
<td>OPER-111</td>
<td>Refrigeration</td>
<td>2 L 0 2</td>
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</table>

|          | Total                              | 21 L 12 25    |

**TERM 2**

<table>
<thead>
<tr>
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<th>Subject</th>
<th>Hours Per Week</th>
<th>Credit Hours</th>
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</thead>
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<tr>
<td>RESC-206</td>
<td>Chemistry</td>
<td>2 L 1 2</td>
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<td>MATH-204</td>
<td>Mathematics</td>
<td>2 L 1 2</td>
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</tr>
<tr>
<td>RESC-205</td>
<td>Physics</td>
<td>1 L 2 2</td>
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</tr>
<tr>
<td>ENGL-201</td>
<td>Report Writing</td>
<td>3 L 0 2</td>
<td></td>
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<tr>
<td>OPER-201</td>
<td>Power Plant Theory &amp; Practice</td>
<td>4 L 4 8</td>
<td></td>
</tr>
<tr>
<td>OPER-202</td>
<td>Electricity</td>
<td>2 L 1 3</td>
<td></td>
</tr>
<tr>
<td>OPER-203</td>
<td>Instruments &amp; Controls</td>
<td>2 L 1 2</td>
<td></td>
</tr>
<tr>
<td>OPER-208</td>
<td>Drafting</td>
<td>0 L 2 1</td>
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<tr>
<td>OPER-211</td>
<td>Refrigeration</td>
<td>2 L 0 2</td>
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<tr>
<td>OPER-210</td>
<td>Welding (Practical)</td>
<td>(35 hrs.) 1</td>
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</table>

|          | Total                              | 18 L 12 25    |

223
ENTRANCE REQUIREMENTS:

Grade X or Basic Training for Skill Development Adult TEN.

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 10 months. Successful completion of this course qualifies the graduate for a Certificate of Attainment.

This course is divided into two parts of 5 months each. To continue into Term 2 the student must successfully complete Term 1.

FEES AND EXPENSES:

The tuition fee is $7.00 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $65.00.

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>Hours</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRAF-504</td>
<td>Sketching &amp; Blueprint Reading ..........</td>
<td>60</td>
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<tr>
<td>MATH-509</td>
<td>Mathematics ................................</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>RESC-516</td>
<td>Science ....................................</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>SHOP-101</td>
<td>Bench Work ..................................</td>
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<tr>
<td>SHOP-102</td>
<td>General Operation and Control of Machine Tools</td>
<td>370</td>
<td>16</td>
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<td></td>
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<td>25</td>
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### TERM 2

<table>
<thead>
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<tbody>
<tr>
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<td>Communications ................................</td>
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<tr>
<td>DRAF-504</td>
<td>Sketching &amp; Blueprint Reading ..........</td>
<td>60</td>
<td>2</td>
</tr>
<tr>
<td>MATH-509</td>
<td>Mathematics ................................</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>RESC-516</td>
<td>Science ....................................</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>WELD-506</td>
<td>Welding ....................................</td>
<td>60</td>
<td>2</td>
</tr>
<tr>
<td>SHOP-201</td>
<td>Measuring Devices ........................</td>
<td>20</td>
<td>1</td>
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<tr>
<td>SHOP-202</td>
<td>Power Saws .................................</td>
<td>25</td>
<td>1</td>
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<tr>
<td>SHOP-203</td>
<td>Lathe Operation ..........................</td>
<td>180</td>
<td>7</td>
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<tr>
<td>SHOP-204</td>
<td>Milling Machine Operation ..............</td>
<td>100</td>
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<td>SHOP-205</td>
<td>Jig Borer Operation .....................</td>
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<tr>
<td>SHOP-206</td>
<td>Horizontal Boring Mills .................</td>
<td>30</td>
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<tr>
<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>1</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td>660</td>
<td>25</td>
</tr>
</tbody>
</table>

**Note:** Approximately 30% of time allotted to classroom and shop lectures.
Sheet Metal

ENTRANCE REQUIREMENTS:

Grade X or Basic Training for Skill Development Adult TEN.

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 8 months. Successful completion of this course qualifies the graduate for a Certificate of Attainment.

FEES AND EXPENSES:

The tuition fee is $7.00 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $60.00.

COURSE OUTLINE

<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>40</td>
<td>1</td>
</tr>
<tr>
<td>DRAF-504</td>
<td>Sketching &amp; Blueprint Reading</td>
<td>70</td>
<td>3</td>
</tr>
<tr>
<td>SHOP-505</td>
<td>Machine Shop</td>
<td>40</td>
<td>2</td>
</tr>
<tr>
<td>MATH-505</td>
<td>Mathematics</td>
<td>60</td>
<td>2</td>
</tr>
<tr>
<td>RESC-513</td>
<td>Science</td>
<td>60</td>
<td>2</td>
</tr>
<tr>
<td>WELD-506</td>
<td>Welding</td>
<td>40</td>
<td>2</td>
</tr>
<tr>
<td>SMET-101</td>
<td>Sheet Metal Hand Tools</td>
<td>80</td>
<td>4</td>
</tr>
<tr>
<td>SMET-102</td>
<td>Hand Operated Sheet Metal Machines</td>
<td>130</td>
<td>5</td>
</tr>
<tr>
<td>SMET-103</td>
<td>Power Hand Tools</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>SMET-104</td>
<td>Power Operated Machines</td>
<td>30</td>
<td>2</td>
</tr>
<tr>
<td>SMET-105</td>
<td>Sheet Metal Sciences &amp; Techniques</td>
<td>110</td>
<td>4</td>
</tr>
<tr>
<td>SMET-106</td>
<td>Soldering</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>SMET-107</td>
<td>Pattern Development</td>
<td>320</td>
<td>9</td>
</tr>
</tbody>
</table>

1060 40
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 will be required to take a series of tests to determine their suitability for training. Characteristics for which applicants will be tested are mechanical aptitude, manual dexterity and an ability to benefit from the training offered.

DURATION OF COURSE:

Approximately 12 months. Successful completion of this course qualifies the graduate for a Certificate of Attainment.

FEES AND EXPENSES:

The tuition fee is $7.00 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $260.00 as follows: Texts and supplies $30.00, basic tools $40.00 required to start the course, additional tools required each subsequent month approximately $18.00.

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>COURSE OUTLINE</th>
<th>Subject Hours</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ENGL-503</td>
<td>Communications</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>DRAF-504</td>
<td>Sketching &amp; Blueprint Reading</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>SHOP-505</td>
<td>Machine Shop</td>
<td>35</td>
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</tr>
<tr>
<td>MATH-505</td>
<td>Mathematics</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>WACH-101</td>
<td>Basic-Exercises - Screwplates and 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>
</tr>
<tr>
<td>WACH-103</td>
<td>Hairspring - Preparation Blanks for Service</td>
<td>200</td>
<td>8</td>
</tr>
<tr>
<td>WACH-104</td>
<td>Fundamentals Construction of Watches</td>
<td>150</td>
<td>5</td>
</tr>
<tr>
<td>WACH-105</td>
<td>Repairing of Watches</td>
<td>555</td>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EMPLOYMENT OPPORTUNITIES:</th>
</tr>
</thead>
</table>

Students successfully completing the twelve 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.
Welding

ENTRANCE REQUIREMENTS:

Grade X or Basic Training for Skill Development Adult TEN.

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 6 months. Successful completion of this course qualifies the graduate for a Certificate of Attainment.

FEES AND EXPENSES:

The tuition fee is $14.00 per month, or fraction thereof. Other expenses including textbooks and supplies total approximately $90.00.

COURSE OUTLINE

TERM 1

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Subject No.</th>
<th>Subject</th>
<th>Credit</th>
<th>Hours</th>
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<tbody>
<tr>
<td>ENGL-501</td>
<td>Communications</td>
<td>.................</td>
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<tr>
<td>MATH-507</td>
<td>Mathematics</td>
<td>.................</td>
<td>16</td>
<td>1</td>
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<tr>
<td>RESC-514</td>
<td>Science</td>
<td>.................</td>
<td>16</td>
<td>1</td>
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<tr>
<td>WELD-101</td>
<td>General Principles of the Oxy-Acetylene Process</td>
<td>..........</td>
<td>40</td>
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</tr>
<tr>
<td>WELD-102</td>
<td>Oxy-Acetylene Cutting</td>
<td>..........</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>WELD-103</td>
<td>Miscellaneous Application, Inspection and Management</td>
<td>......</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>WELD-151</td>
<td>Oxy-Acetylene Welding of Ferrous Alloys</td>
<td>.............</td>
<td>120</td>
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</tbody>
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280  10
TERM 2

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Hours</th>
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<tr>
<td>DRAF-504</td>
<td>Sketching &amp; Blueprint Reading</td>
<td>60</td>
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<td>MATH-507</td>
<td>Mathematics</td>
<td>30</td>
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<tr>
<td>RESC-514</td>
<td>Science</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>WELD-201</td>
<td>Safety Precautions in Arc Welding</td>
<td>5</td>
<td>1</td>
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<tr>
<td>WELD-202</td>
<td>Arc Welding Theory</td>
<td>25</td>
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<tr>
<td>WELD-205</td>
<td>Miscellaneous Welding Theory</td>
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<tr>
<td>WELD-251</td>
<td>Basic Welding Procedures</td>
<td>40</td>
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<tr>
<td>WELD-252</td>
<td>General Arc Welding Techniques</td>
<td>250</td>
<td>7</td>
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<tr>
<td>WELD-253</td>
<td>Light Gauge (Sheet Metal) Welding</td>
<td>20</td>
<td>1</td>
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<tr>
<td>WELD-254</td>
<td>Semi-Automatic (M.I.G.) Welding</td>
<td>20</td>
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<tr>
<td>WELD-255</td>
<td>Miscellaneous Welding &amp; Application</td>
<td>30</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>530</td>
<td>20</td>
</tr>
</tbody>
</table>

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.
Pre-Technology Course

ENTRANCE REQUIREMENTS: (one of)

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

2. Students successful in B.T.S.D. Adult ELEVEN and with a demonstrated proficiency in English, Mathematics and Physical Science.

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 20 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 five months duration starting in February and ending in June. The successful completion of this course will allow a candidate academic admission into any course in Technology at the Red River Community College. The subject material offered will prepare a student for final examinations in the General Course Mathematics 301, English 301, and Physical Science 301. Department of Education standing will be awarded to all students who are successful in the examinations.

FEES AND EXPENSES:

The tuition fee for the Pre-College course is $100.00 for the 5 month term. Other expenses include textbooks, incidentals, board and lodging.

COURSE OUTLINE

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours Per Week</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lect.</td>
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<td>English</td>
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<tr>
<td>Mathematics</td>
<td>4</td>
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<tr>
<td>Physical Science</td>
<td></td>
</tr>
<tr>
<td>Physics</td>
<td>2</td>
</tr>
<tr>
<td>Chemistry</td>
<td>2</td>
</tr>
</tbody>
</table>
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 co-ordinated program of practical experience and related technical instructions.

In all trades but one, at least a complete Grade Nine is required, the exception being the electrical construction trade where a minimum of Grade Ten 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.

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## Apprenticeship Courses
(Offered in Co-operation with the Department of Labour)

<table>
<thead>
<tr>
<th>Designated Trade</th>
<th>No. of Years</th>
<th>Length of Course (in Weeks)</th>
<th>Levels</th>
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</thead>
<tbody>
<tr>
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<td></td>
<td></td>
<td>I</td>
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<td>III</td>
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<td></td>
<td></td>
<td></td>
<td>IV</td>
</tr>
<tr>
<td>Red River Community College, Winnipeg</td>
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<td></td>
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</tr>
<tr>
<td>Auto Body Repair (Paint Section)</td>
<td>3</td>
<td>8 4 4</td>
<td></td>
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<tr>
<td>Auto Body Repair (Metal Section)</td>
<td>3</td>
<td>8 4 8</td>
<td></td>
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<tr>
<td>Auto Body Repair (Paint &amp; Metal Section)</td>
<td>4</td>
<td>8 4 8 8</td>
<td>(Metal)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>(Paint)</td>
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<tr>
<td>Auto Mechanical Repair</td>
<td>4</td>
<td>6 6 6 4</td>
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<tr>
<td>Bricklaying</td>
<td>4</td>
<td>8 6 4</td>
<td></td>
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<tr>
<td>Carpentry</td>
<td>4</td>
<td>8 6 8</td>
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<tr>
<td>Glazing</td>
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<td>6 4 4 4</td>
<td></td>
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<tr>
<td>Electrical Motor Winding</td>
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<td>4 4 4 4</td>
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<tr>
<td>Lathing</td>
<td>4</td>
<td>6 6 6</td>
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<tr>
<td>Machinist</td>
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<td>8 6 6 6</td>
<td></td>
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<tr>
<td>Painting &amp; Decorating</td>
<td>4</td>
<td>6 6 6 6</td>
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<td>Plumbing</td>
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<td>10 8 6 4</td>
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<tr>
<td>Refrigeration</td>
<td>4</td>
<td>8 6 4</td>
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<td>Sheet Metal</td>
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<td>6 6 6</td>
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<tr>
<td>Steamfitting</td>
<td>5</td>
<td>10 8 6 4</td>
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<tr>
<td>Assiniboine Community College, Brandon</td>
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<tr>
<td>Heavy Duty Repair</td>
<td>5</td>
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<td>Keewatin Community College, The Pas</td>
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<td></td>
</tr>
<tr>
<td>Industrial Electrical</td>
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</tr>
<tr>
<td>Industrial Mechanical</td>
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<td>8 8 8</td>
<td></td>
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<tr>
<td>Industrial Welding</td>
<td>3</td>
<td>8 8 8</td>
<td></td>
</tr>
</tbody>
</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

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"SKILL FOR SECURITY"
Subject Descriptions

AART-101
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
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
Fundamentals of Drawing

An introduction to the five elements of form through analysis and drawing. The co-ordination 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.

AART-105
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
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
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
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
Mechanical Drawing

Problems involving the application of the fundamentals covered in course AART-103. Photo retouching, mechanical illustration, etc. Prerequisite AART-103.

AART-204
Drawing

Fundamentals of drawing from life (nude and costumed models). Approaches to anatomical and proportional analysis. Students are exposed to various attitudes and disciplines, both as to medium and concept. Prerequisite AART-104.

AART-205
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
Fundamentals of Photography

Application of photographic principles. Reflection, distortion, multiple images, lighting control, motion studies, etc. Recording and interpretation of complex objects. Additional darkroom 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 proce-
dures. 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. 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. Arts to simulate the commercial situation as closely as possible. Prerequisite AART-206.

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.

ABOD-101
Oxy-Acetylene Welding and Cutting
Equipment, fusion welding, brazing, 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: 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 & 264  
**Business Mathematics**  
Review of basic fundamentals; application of percentage; profit and loss; trade discounts; retail selling; banking; discounting notes and drafts; collection charges; cheques; installment buying; foreign exchange; partnership; annuities; amortization; custom duty; sales tax; insurance and finance; the stock market. Prerequisite ACNT-164.

ACNT-167  
**Business Machines**  
The function and use of ten key adding machines and printing calculators and their applications to business calculations.

ACNT-168  
**Basic Typewriting**  
Basic Typewriting I: 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; and analysis of cost variances. 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
The purpose of this course is to introduce the concepts of the punched card, punched card data processing and computer data processing. Punched card data processing includes duplicating, interpreting, sorting and collating of punched cards. Computer data processing is illustrated by means of computer augmented accounting.

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-105
Business Law
This course will be a study of the Canadian Legal system, contracts, sales of goods, real property, forms of business organizations, credit transactions, mortgages, conditional sales, and bills of exchange.

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
An introduction to the basic principles of economics; theory of output and prices; various degrees of competition; principles of income determination.

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 pro-
cedures, methods, and techniques as they apply to fixed assets; partnerships; formation of limited companies; share capital and surplus; payroll; departmental operations; manufacturing concerns; elementary cost accounting; and income taxes. Prerequisite ADMN-101

ADMN-202 Economic Principles
This is a continuation of course ADMN-102, including the theory of wage termination, history of trade unions and trade union activities, the theory of rent, interest, and profit as a price; public finance; money and banking; national income and national product, business cycles; theory of economic stabilization by government action; economic growth and progress. Prerequisite ADMN-102.

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. Macro economics 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-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 per-
sonnel 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-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-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
The course is an introduction to the problems involved in accounting for a manufacturing concern. Areas covered are financial statement preparation, job order, cost accounting system, process cost accounting system, control of material, labor and overhead costs and analysis of cost variances. Topics are developed through lecture, classroom discussion 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 concept 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, revaluation; 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 Program.

ADMN-420
Risk and Insurance
Principles of risk management and insurance; nature of risk; economic effects; law of large numbers and theory of insurance; the various types of insurance contracts and their interpretation; risk management.

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.

ADMN-422
Computer Programming
This is a study of the Cobol programming language. Students are required to write several business oriented programs in COBOL and prove them on the I.B.M. 360. Tape and disk 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 forecasting and scheduling methods. Specific topics covered include linear programming simplex method, P.E.R.T. and Critical Path. This course will be of particu-
lar interest and use to those who intend to pursue a professional accounting designation. Pre-requisites are ADMN 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 pre-requisites.

ADMN-425
Business Law II
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 Creditor’s Rights.
Pre-requisite ADMN-106, Business Law 1.

ADRA-101
Fundamentals
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 Drafting
A study of common building practices, and the production of working drawings for "Residential Dwellings", and "Industrial, Commercial and Institutional Buildings". Included is 1) the interpretation and application of simple structural steel frame design & detailing according to the C.I.S.C. practices, 2) the interpretation and application of heat loss calculations as applied to simple mechanic systems.

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 transite 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 Drafting
A study of “Residential” and “Commercial” building construction practices and the production of working drawings for the same.

APPL-101
Elementary Circuity
Theory and practice of circuits containing switches, relays, pilot devices, etc.

APPL-102
D.C. Fundamentals
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 relations 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 licence.

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.
Fundamental service, maintenance and overhaul methods and procedures, precision measuring, diagnosis and correction of automotive engine problems.

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 assem-
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: antiseptics 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; bones; strops; accessory implements. Purpose of honing: preparation for honing; how to hold razor and bone; how to stroke razor; testing razor edge; care of bones. 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 moustache; styles of moustaches; 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; eczema; types of alopecia; parasitic affections; non-contagious hair affections; skin pigmentation; skin growths; the control of venereal diseases.

BARB-109
Shampoos, Tonics, Massages
Preparation of supplies; preparing a customer; step-by-step procedure for a plain shampoo; inclining method; reclining 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, Cosmetology
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 regulations 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; uses 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.

BCHM-307 & BCHM-407
Biochemistry

BCHM-314 and BCHM-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

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studies on basic biochemical compounds and modern biochemical techniques. Prerequisite CHEM-204 for BCHM-314.

BCHM-315 and BCHM-415

Microbiology
This course deals with microorganisms with respect to their 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 BCHM-315.

BCHM-410

Biochemical Project
Similar to CHEM-410. Dept., Head approval and concurrently BCHM-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 subsiences; 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-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
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 ultra-
violet, 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

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, BIOL-419, BIOL-420, BIOL-421, BIOL-423 (tentatively in the planning stage).

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 designed 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 simple beams, floor slabs and column design. 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.

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.

Labs to consist of tours to manufacturing plants and construction sites. Prerequisite ENGL-206, STRL-308.

BLDG-404
Construction Administration

Construction company management and control, both in Head Office and field. Relationship between owners, designers, company personnel, public bodies and sub-contractor.

Canadian construction contract law including formation of contract, breach of contract, mechanics liens etc. Construction company financing and insurance. 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, air-conditioning 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.

BUTE-101
Typewriting

Basic Typewriting I: The basic fundamentals and techniques are stressed. Instruction is given in letter styles, addressing envelopes, tabulating, preparing of manuscripts, and the care of the typewriter. Speed range 25-35 w.p.m.

Basic Typewriting II: Stress on speed and accuracy in additional skill-building exercises and practical use of these skills. Speed range 35-50 w.p.m.

BUTE-102
Shorthand

Basic Shorthand I: Training in the elementary principles and practices of Pitman Shorthand. Instruction in reading, writing and transcribing shorthand daily.

Basic Shorthand II: A continuation of Basic Shorthand I with introduction of light dictation and transcription and reemphasis of the basic fundamentals and of the important short forms, contractions, and phrases. Speed range 80-100 w.p.m.

BUTE-104
Accounting I

A course in double entry bookkeeping routine, including special
journals, subsidiary ledgers and control accounts, adjustments for the preparation of financial statements, and the preparation of financial statements pertaining to sole proprietorship and partnership.

BUTE-105
Business Mathematics and Office Machines

A course designed to develop knowledge of and skill in the use of office calculating machines. The application of this knowledge and skill is then applied to the solving of Business Mathematical problems. The course is designed to enable the student teacher to present meaningfully the Business Mathematics course taught in the High Schools and Vocational Schools.

BUTE-106
Office Experience

A period during which students will be sent to various business offices to participate in the daily routines. Students will be supervised by experienced office personnel.

BUTE-107
Introduction to Business

A course which introduces future business education teachers to the Canadian business sector. The course concentrates on various aspects of consumer economics such as investing, savings, budgeting, credit bymanship, insurance, home ownership, and government spending and taxation.

BUTE-108
Business Law

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

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.

BUTE-110
Introductory Psychology

This course is concerned with the adjustment concept, understanding the individual's behaviour, personal problems, personality development, the psychology of supervision and group dynamics, and psychological aspects of labour unions and automation in business and industry.

BUTE-111
Data Processing I

This course will acquaint teachers with the basic concepts of data processing, punched cards, flow-charting, programming, and electronic computers. Teachers will be required to teach similar course in Manitoba high schools.

BUTE-112
Data Processing II

A continuation of Data Processing I. In this course, the principles and practices of programming are stressed using a student language. The application of data processing to accounting is a major part of the course.

BUTE-201
Shorthand Transcription and Typewriting

Emphasis on efficient techniques of taking dictation, proper methods of transcribing, and business vocabulary. Speed range 100-120 w.p.m.

BUTE-202
Office Practice

Students review the various office tasks and become proficient in their performance. The various aspects of the Office Practice course taught at the High School and Vocational School levels are reviewed and discussed. Activities to make the teaching of the courses more meaningful
are planned and assessed. Simulated office situations and their application to the classroom are considered.

BUTE-204
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
Marketing I
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.

BUTE-207
Marketing
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 in Teaching Skill Subjects
This course is designed to prepare the prospective teacher to instruct in the skill subjects of typewriting and shorthand. Opportunity is provided for the student teacher to observe teaching techniques and to demonstrate teaching techniques.

BUTE-209
Methods of Teaching Basic Business and Accounting
This course is designed to prepare the prospective business education teacher to teach basic business and economics subjects, accounting, and business mathematics. Opportunity is given to participate in micro teaching.

BUTE-210
Principles of Business Education
A course designed to introduce students to the field of Business Education. A basic philosophy of Business Education is developed through a study of the history and legislation relating to vocational business education and of present business education offerings in junior, senior and post-high school institutions. Current trends in education and the professional status of teachers are discussed.

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 an 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
A study of how to construct, conduct, and evaluate tests. Purpose of testing. Use of standardized tests. Methods of evaluation of student progress during the school year. Meaning of terminology.

BUTE-216
Methods in Teaching Typewriting
This course is designed to prepare the prospective teacher to instruct in typewriting. Opportunity is provided for the student teacher to observe teaching techniques and to demonstrate teaching techniques.
BUTE-217
Business Organization and Management

This course is designed to prepare students to teach General Business 101 and Business Principles 201 in the Manitoba high schools. The topics taught in these courses will be examined extensively.

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-219
Accounting II

A continuation of Accounting I. The objectives of the course are to master basic accounting procedures and to become familiar with and to appreciate the principles of accounting as applied to the sole proprietorship, partnership and corporation.

BUTE-220
Accounting III

The prerequisite is standing in a recognized course in Bookkeeping. The objectives of the course are to master basic accounting procedures and to become familiar with the use and kinds of accounts, journals, ledgers, and statements required in the operation of a sole proprietorship, partnership, and a corporation: and to become familiar with accepted accounting principles.

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.

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 Purchases 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.

CBOM-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 Fraudes: 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 & 202 Child Care Forum & Field Placement
To provide a methodology for observation and participation in the pre-school setting. To integrate the theoretical with the practical aspects to child care that is, attempt to relate the principles of child development to actual care procedures according to the philosophy of programs studied. To investigate the roles of the teacher and program in relation to the needs of the child.
The student will spend one morning per week in child care centres. In Term 1, the pattern will be observation in various centres. Term 11, the pattern will be one of more involvement with children and extended placement at a given centre.

CCSC-107 & 207 Philosophy of Child Care and Its Implementation
To introduce the student to child care services as they exist in Canadian society, to study the methods and theories of pre-school 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. To study child care centres in terms of their program and facilities, focusing on the planning and teaching of a curriculum set out to meet the needs of the child care.

CCSC-104 & 204 Creative Activities
Instructional help from the Creative Arts Department will be available for a non-structured exploration of creative activities for children of Pre-school age.

CCSC-105 Community 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-109 & 209 Child Behavior & 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. Part II continues the themes of Part I and includes particular attention to the family and the child - family relationship.

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 Child Care Services Resources
To study child care centres in terms
of their program and facilities, focusing on the planning and teaching of a curriculum set out to meet the needs of the child in care.

CCSC-300 & CCSC-400  
Independent Studies and Seminar in Child Care  
A chance for each individual student to research a topic of his or her interest under the supervision of an instructor. Strengthening any weak areas of knowledge. Discussion of career goals and plans. Maximum of 3 credit hours.

CCSC-301 & CCSC-401  
Curriculum Planning  
Learning to deal wisely with the various events of the preschool day and how to organize them and eventually organize weeks' events. The administration of a preschool will be dealt with.

CCSC-302 & CCSC-402  
Child Care Forum & Field Placement  
Continued integration of the practical and theoretical aspects of child care on a more individual basis. Helping the student refine skills of working with children.

During Term III, students will spend one day a week plus one full week in a pre-school centre, observing and then participating under supervision. In the Fourth Term the time spent in a preschool centre will be one day a week plus 4 full weeks.

CCSC-306  
The Family System  
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.

CCWC-321 & CCSC-322  
Elements of Music For Children  
Learning about the use of music in the preschool, songs, rhythm activities, instruments for children.

The purpose of the course is to have the student learn to read music, play an instrument suitable for use in a preschool and consider the role of the instruments in the preschool.

CCSC-326  
Guidance of the Child  
The purpose of the course is to give the student an awareness of theoretical principles and methods of guiding the young child toward positive behavioral patterns. The course will cover general philosophy of child guidance, practical methods of guidance, specific areas of discipline and the role of the adult. Discussion will centre around the normal child with some consideration given to the problem child.

CCSC-341  
Creative Drama  
Learning about physical activities that children can experience and learn for including dance and the appropriate equipment for such activities.

CCSC-425  
Physical Science for the Child  
The purpose of the course is to have the student know basic science facts in biology, physics, chemistry, geology and various other fields; and to plan appropriate means by which such information can be introduced into the preschool setting.

CCSC-431  
Children’s Literature and Language Skills  
The purpose is to explore the literature available for children and to plan for its use in the preschool. Experiences which contribute to a child’s language skills will be studied.

CHEF-301  
Kitchen Management  
Review of subject 101 - quality control, purchasing methods, equipment and layout.

CHEF-302  
Garde Manger  
Advanced Buffet work, planning, setting up and supervising of projects.

CHEF-303  
Patisserie  
Desserts, fancy pastries, decorating and baking a variety of foods.

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; thermo-dynamics.

CHEM-108
Mechanics, Heat & Electricity
Statics; kinematics; dynamics; energy; rotary motion; hydrostatics; elasticity; temperature; thermal expansion; radiation, conduction and convection; thermo-dynamics; basic electricity, Kinshoff Laws, electrical currents, electric fields and magnetism.

CHEM-115
Microbiology
The characteristics of microorganisms, with emphasis on those which cause disease. Included are the effects of microbes in the body, immunity, allergy, as well as an introduction to epidemiology.

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-carboxic acids; esters and fats; proteins; carbohydrates; amino compounds; polynuclear hydrocarbons; etc. The fundamentals of stereochemistry; 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 train, 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 raman 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; spec-
trophotometry; electronic instrumentation related to chemical instruments, etc. 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, DTZ, 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 or 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 plastics; 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.

CHEM-411
Chemical Data Handling

Course deals with the methods for collecting, 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 Relation 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 pol-

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olution, 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; charts, graphs and diagrams; maps and topographic drawing; applied descriptive geometry.

CIVL-202 Mechanics

CIVL-203 Surveying
Cross-section and calculation of areas. Determination of areas and volumes by formula, pick & scale and the polar planimeter. 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
Development of photogrammetry.

CIVL-317  
Soil Mechanics  

CIVL-320  
Structural Design  
Steel — Analysis and design of tension members, columns and beams.  
Timber — Design of sawn and glu-lam 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, superelevation, 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 and specifications required for tendering. Soil considerations including, subgrade, subbase, base course and load carrying capacity of various pavers. 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  
Geology  

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 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 fault; 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, Norton theorem, Reciprocity 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-308, Corequisite ERON-304.

COMP-401
Computer Peripherals

In-depth study of peripheral devices
available at RRCC; the RF/RS-08 1/4 M word dish, the TUS6 DEC tape system and graphics systems. Prerequisite COMP-309, Corequisite COMP-408, COMP-409.

COMP-403
Computer Projects

Investigation of an approved topic followed by any required construction, testing and the submission of a formal report.

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-408
Computer Interfacing

Theory and practice of interfacing peripheral devices to a computer. Prerequisite COMP-309, COMP-311, Corequisite COMP-404, COMP-409.

COMP-409
Computer Circuits

A continuation of the logic circuits presented in Term III; 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 COME-404.

COMP-410
Computer Systems

Computer control theory and various applications such as relay control, furnace control, parallel generators, etc. Prerequisite COMP-307, COMP-309.

COOK-102
Basic Cookery

Sanitation, safety, measures and recipes, meal planning, stocks, soups, sauces and vegetable cookery.

COOK-201
Garde Manger

Salads, sandwich making, appetizers, buffetwork and meats (Hotel style).

COOK-202
Pastry Shop

Breads, pies, pastries and desserts.

COOK-203
Restaurant Cooking

Beverages, fountain work and breakfast cookery and cooking to order.

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 advertisement, 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 newsgathering 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 and programs. Prerequisite CRCO-203.
CRCO-304
Creative Writing

The student will pursue whatever creative writing field seems best for him, based on the previous year's work. From human interest, humor and social comment features to long narratives and plays - the range of choices is wide, and each student will arrange his term program individually. If he chooses, the student may pursue a further study of modern and contemporary literature. Prerequisite CRCO-201.

CRCO-305
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. Prerequisite CRCO-202 and CRCO-204.

CRCO-401
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. Prerequisite CRCO-301, CRCO-302 and CRCO-304.

CRCO-402
Advanced Writing Projects

Major work projects done in the student's chosen field. At this stage, the entire project situation will simulate a typical job that the student might be responsible for as a full-fledged copywriter or reporter, complete with intensive research, planning, budgeting, writing and supporting visual materials. All attempts will be made to have this work carried out in connection with a specific company. Prerequisite CRCO-301, 302, 303, 304 and 305.

CRCO-403
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.

CRCO-404
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.

CRCO-405
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.

CRCO-406
Economics and Law

Canada's court system and laws, with particular emphasis on libel and other statutes affecting writers; labor and management; public finance; money; banking and financial structure, consumer price and other indices, types of businesses.

CRCO-407
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 arti-
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.

CRCO-408
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 editing copy by working with the Term II 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 II 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 Arts Lab

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.

DEDR-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.

Students and techniques for architectural and structural working drawings for a simple office warehouse, complete with design and structural techniques. Prerequisite CIVL-106.

DEDR-207
Mechanical Drafting

Screw threads, fasteners, keys, rivets, and springs; limits and precision welding drawings; design practices; power transmission. Prerequisite CIVL-106.

DEDR-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.

DEDR-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.

DEDR-212
Theory of Systems

Light—Light Sources and their characteristics; light and illuminations.
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 & DEDR-405
Architectural Detailing & Design

Study of styles and techniques for advanced architectural working drawings; technical drawings that provide graphic description of basic building design, graphic presentation and practical application of building construction and strength of material principles; renovation and surveying of existing buildings. Prerequisite DEDR-205, DEDR-208, DEDR-308, Concurrent DEDR-311, DEDR-305, DEDR-322 for DEDR-405.

DEDR-308
Structural Design


DEDR-311
Building Construction

Basic methods of construction; qualitative aspects of structural design; code engineering; cost estimates; foundations, structural members and masonry construction; wood, steel and cast in place concrete construction; wall sections; precast and prestressed concrete.

DEDR-312 & DEDR-412
Theory of Systems

Basic principles of architectural structures; loads on structures; structural requirements; psychrometry; heating and air conditioning; plumbing and sprinkler systems; electric power and lighting; vertical transportation. Prerequisite DEDR-212, DEDR-208 and DEDR-312 for DEDR-412.

DEDR-321 & DEDR-421
Mechanical Drafting and Design

Introduction to and practical advanced detail design of manufactured machine components, tugs and fixtures, mechanisms, manufacturing controls and methods. A study of industrial processing plants, fluidics and control systems. Detail design of mechanical and electrical systems and components for buildings. This course is related to DEDR-212 and DEDR-412. DEDR-420 and DEDR-423 in as much as design projects utilize information from these courses. Prerequisite ENGL-201 DEDR-207, DEDR-210. DEDR-321 & DEDR-421 DEDR-312 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, plastic, 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; quantity surveying; material specifications and contracts. Prerequisite ENGL-201, DEDR-212 for DEDR-422. DEDR-321, DEDR-322 for DEDR-421.

DEDR-423
Tool and Die Design

Study of tool and die design as related to manufacturing methods. Subjects include: fundamentals of metal cutting tools, standard tooling components, and accessories, pressing and breaking dies, drill jigs, punches, gauges, gauge blocks, work measurement.

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 & 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 & Physiology, CHEM 115 Microbiology.

DNUR-201  
**Anatomy & Physiology**  
Continuation of DNUR 101, with increased emphasis on physiology and the pathological changes associated with illness and disease. Prerequisite DNUR 101 Anatomy & 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 & 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 & Physiology, PSYC 212 Development Psychology, SOCL 103 Sociology.

DNUR-204
Basic Sciences
Study of the procedures and equipment utilized in medical and nursing care of the patient and the basic principles of physics and chemistry which underlie their purpose and function. Included are principles of tractions, monitors, gaseous pressures, suction. Prerequisite DNUR 102 Nursing Fundamentals, DNUR 103 Nursing Techniques, prerequisite or concurrent enrollment - DNUR 201 Anatomy & Physiology.

DNUR 301
Nursing of Adults & Children in Illness Part A
This course is concerned with the nursing concepts related to illness originating from hormonal disturbances and deprivation of oxygen. 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 - Term II subjects.

DNUR 302
Nursing of Adults & Children in Illness Part B
The course is concerned with the nursing concepts related to illness originating from immobility and nutrition. Common clinical manifestations of the illness in both adults and children are presented, with incorporation of general and specific nursing actions, related technical skills, dietary modifications and drug therapy. Prerequisite - Term II subjects.

DNUR-305
The Practice of Nursing
The focus in clinical practice is on the application of theoretical knowledge to nursing care of patients. It concentrates on the students ability to plan, to give, and to evaluate the nursing care of patients. Experiences with adults and children are arranged in several hospitals and in the community. Included are the Victoria General, Children's, Winnipeg General, Rehabilitation and D.A. Stewart Hospitals. Concurrent with DNUR 301 Nursing of Adults and Children in Illness Part A, DNUR 302 Nursing of Adults and Children in Illness Part B.

DNUR-306
Nursing the Mentally III
This course deals with mental and emotional health and illness problems of the world with particular focus on the problems prevalent in North America. It is designed to assist the student to understand his/her behavior as well as the needs of the "normal", the mentally or the physically ill individual. It views individuals in terms of behavior with emphasis on observations and interpretation of same. Prerequisite Term II subjects.

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 & Children in Illness Part A, DNUR 302 Nursing of Adults & 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 students knowledge in nursing care and treatment of patients.

DNUR 408
Practice of Nursing
This course is a continuation of DNUR 305 with increasing focus on the organization, provision and evaluation of direct care to a group of patients. It is designed to assist the student to as-
sume the responsibility to function as a member of the nursing staff and the health team. In the final weeks of the term clinical experience increases to the equivalent of 4 shifts per week, which will include, where possible, day, evening and night experience. Opportunity is provided for the student to have an elective in a clinical area of choice. Concurrent with DNUR 401, DNUR 402 and DNUR 405.

DNUR-409
Nursing the Mentally Ill

This subject is a continuation of DNUR 304 dealing with the major health problems and their treatment. Emphasis is increased on the community agencies and their role in maintaining people in the community as contrasted to active treatment centres. Prerequisite DNUR 305 Nursing the Mentally Ill.

DNUR-410
Providing Nursing Care

This seminar course is designed to increase the nurse's skill at planning, organizing and evaluating the nursing measures and in looking critically at the organization and delivery of nursing care within the health care system. Prerequisite Term III and concurrent with DNUR 403 Practice of Nursing.

DNUR-406
Nursing & Its Social Setting

The historical development of the nursing profession is discussed, with major emphasis on its responsibilities to contemporary society. Various areas of nursing service, including functions and activities, are presented.

DRAF-504
Sketching & Blueprint Reading

Applied Drafting and Blueprint Reading as applied to the trade.

DRAF-504
Electronic Drafting

Drafting and circuit reading applied to industrial electronics.

DRAF-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 type likely to be encountered in industry.

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 examina-
tion 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**  
Child Care Literature  
The aim of the course is to provide an understanding of how the child responds to and is affected by reading material, television and films. Various examples of all three media will be studied in relation to the theories of John Holt, F. Wertham and other social commentators.

**ENGL-157**  
Communication  
The basic purpose of the course is to create an awareness of the communication process. A second major objective is to train students to communicate effectively both in their work and off-the-job. Additional emphasis is placed on application of these concepts through the development of specific communications skills e.g. reading, writing, listening and speaking.

**ENGL-201**  
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 or briefings, informal and formal speeches.

**ENGL-310**  
Report Writing  
This course examines in depth (60 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 (80 hours)
An advanced course in the effective use of language with special emphasis on the preparation, writing and editing of all types of business correspondence. The majority of the work will involve business letters.

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-513
Communications
Business writing.

ENGL-613
Communications
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-104
Engineering Drawing
Covers the principles of Engineering drawing including the necessary working knowledge in the care and use of instruments. Provides training in the preparation of drawing and sketches of working quality. Provides an awareness of materials, standards and components.

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-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, Wattmeters, 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 unbalances 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 202, 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 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, Corequisite Math - 303.

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;


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 - 205, Eric - 211, Corequisite, Eric - 304.

ERIC-405
Electrical Machines


ERIC-406
Control Systems

Linear systems; frequency response; feedback concepts; bode diagrams; stability, transfer functions; block diagram algebra; control system components; example systems. Prerequisite Eric-304, Eric-305, Math 303.

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-308.

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 telemetry systems; digital telemetry systems; power system grounding considerations. Prerequisite Eric - 313, Eric - 304.

ERIC-144
Switchgear & Protection
Various types of switches; various types of relays; various types of circuit breakers; fault current calculations; protective devices. Prerequisite Eric - 304, Eric - 317, Corequisite Eric - 405.

ERIC-148
Technical Research and Report
A project is required to be satisfactorily completed by all graduating students. This project is to include: (a) preliminary investigation, (b) practical work, (c) written report.

ERIC-149
High Voltage DC Systems
General aspects of DC transmission & comparison of it with AC transmission converter circuits and characteristics, basics & operations of mercury arc valves, control of HVDC systems, harmonics & filters, ground return with the design of HVDC electrodes, presentations of existing HVDC schemes in the world today.

ERIC-104
Electricity & Magnetism
Comprises basic electricity; DC and AC circuit analysis; frequency spectrum; use of test instruments; basic magnetism; magnetic circuits.

ERIC-108
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

ERIC-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 Math-102, Eric-103, Eron-Corequisite Eron-207.

ERON-303
Electronic Circuits
Analysis of communication circuits using transform techniques. Prerequisite MATH 202, ERON 207, COREQUISITE MATH 302.

ERON-304
Electronic Devices

ERON-306
Electronic Measurements

ERON-307
Control Systems
Equations of physical systems; hydraulic pneumatic, mechanical and electrical, components of physical sys-
tems; transfer functions, Electronic Circuits, Prerequisite Math-202, Resc-203.

ERON-309
Logic Pulse Circuits
Linear waveshaping of RLC networks; switching characteristics of devices; clipping, clamping and comparator circuits; multivibrators; sampling gates; counting and timing. Prerequisite ERON-207, ERON-209.

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 antennae 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

ERON-407
Control Systems

ERON-408
Integrated Circuits
Monolithic and Film Technology, Linear Circuits (OP amps, Comparators, Voltage Regulator, Multipliers, modems), Digital Circuits (Flip-Flops, Counters, Shift Registers, Parity Checkers), Optical Display (7-segment, 5x7 matrix), A/D and D/A Converters, ROM, RAM, PROM circuits, MSI & LSI Circuits. Prerequisite ERON-309, ERON-304.

ERON-409
Electronic Projects
Investigation of 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-411
Communication Theory
Resonant Circuits
RF Amplifiers
RF Oscillators
Amplitude Modulation
Frequency Modulation
Single Sideband
Pulse Modulation
Multiplex Transmissions
Pre-requisite Eron - 306.

ERON-412
T.V. Theory & Servicing

ERON-413
Audio Systems
Design of preamplifiers, power amplifiers, mixers and equalizers Analysis of tuners, tape recorders, turntables, microphones, cartridges. Design of speakers and enclosures acoustics.

ERON-414
Manufacturing Techniques
Double sides and multilayer printed circuit techniques. Plating, drilling, punching, soldering, cleaning and finishing. Panel etching.
Assembly techniques, human engineering, maintenance, environmental and economic consideration, component selection, potting materials and techniques.

FOTO-100, FOTO-200
Photographic Theory
Evolution and development of Photography. Optical theory and applica-

Photographic printing, contact and projection. Darkroom equipment and design.

Colour photography: trichromatic theory, development of additive processes, subsequent development of contemporary subtractive processes, principles and processing of negative, reversal and positive print colour stock, colour negative assessment, process control.

FOTO-101, FOTO-201
Practical Photography-Monochrome

Processing: processing of 35 mm. roll and sheet films, specialized development techniques, elementary process control, post development process.


Printing: production of prints by contact and projection from 35 mm. roll and sheet film negatives, printing paper types, control methods, specialized techniques, e.g. multiple printing, giant enlargements. Retouching and Finishing: negative and positive dye and knife techniques for monochrome and colour, mounting and presentation of photographic work.

FOTO-102, FOTO-202
Related Sciences (Physics)

Properties of matter, definitions of units of measurement: Metric, British, U.S. weights and measures.


Electricity: simple circuitry, conductors and insulators, secondary cells, units of electrical energy. Electro-magnetics. Phototubes, Photo-electric cells.

Related Sciences (Chemistry)


FOTO-104
Composition and Design

Introduction to letter forms and type suitabilities, experimental analysis in two dimensional design. Layout and designing of brochures, mailing shots, show cards. Suitability of photography and designing for a specific purpose. Principles of composition and perspective.

FOTO-203
English and Related Business Studies


FOTO-204
Graphic Arts


FOTO-205
Practical Photography Colour

Studio work: lighting for colour photography, measurement and control of colour temperature. Exposure control for negative and reversal.

Processing, processing of negative, in consideration, followed by submission of a formal report.

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 type; 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 proofreading.

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 de-

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; teleotypesetter 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; lithographic inks; paper for lithography; chemistry of lithography.

GART-112, Bindery Operations
- Specification of paper; cutting; folding; binding; basic bindery operations.

HAIR-125 Introduction to Cosmetology
- Duties, Responsibilities and grooming.

HAIR-126 Bacteriology, Sterilization and Sanitation
- Methods of sterilizing, use of sterilizers.

HAIR-127 Anatomy and Physiology
- Cells, organs, muscles, tissues, bones, and systems.

HAIR-128 Shampoos and Rinses
- Types of shampoos and rinses, applications of shampoos and rinses.

HAIR-129 Hair and Scalp
- Histology of hair, treatment of hair, treatments of scalp, commercial products.

HAIR-130 Hairstyling
- Use of equipment, types of styles, wigs and hairpieces.

HAIR-131 Hair Shaping
- Use of equipment, techniques.

HAIR-132 Permanent Waving
- History of permanent waving, use of equipment, types of cold waves, commercial products, hair straightening.

HAIR-133 Manicuring
- Structure and diseases of nail, massages, types of manicuring.

HAIR-134 Tinting and Bleaching
- Introduction to tinting and bleaching, methods of application, commercial products, tipping and blending, reconditioning and corrective work.

HAIR-135 Skin and Facial Treatments
- Care of skin, application of treatments and massage, masks and packs, special equipment, make-up and eyebrow arching.

HAIR-136 Beauty Salon Management
- Salesmanship and shop management.

HAIR-137 Beauty, Charm and Poise
- Skin Care and Cosmetic Application - Cleaning, lubricating, stimulating, protection, face shapes, complexions, cosmetic inventory, makeup techniques. Visual Poise - standing, walking, and sitting techniques.
- Personality Development - developing a self-image and good working relationships.
- Public Speaking - techniques, voice projection, voice control, work pronunciation.
- Job Success - attitudes, business techniques, job interviews, resignations.

HEPR-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 control systems.

Prerequisite MATH-206, MECH-209.

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 MA1H-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 portion 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
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-101-201
Food and Beverages


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 Linens.

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-109
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
Departmental Cost Controls

This course is an introduction to solving problems involved in cost controls for hospitality firms and institutions. Areas covered are financial statement preparation, special function costing, production costing, controls for material, labour and overhead costs, and analysis of cost variances. Topics are developed through lectures, classroom discussion, problem solving, and cases. Prerequisite HOTL-104.

HOTL-206
Special Catering; Waitress Service

Basic principles for the organization and service requirements for receptions, buffets, luncheons and banquets. The principle 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-304
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
Materials control

The purpose of this course is to train 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.

Food and Beverage Service.

Planning menus, purchasing, preparing and serving complete meals and beverages using specialized facilities. Prerequisite HOTL-310.

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 remuneration. Case studies allow the student to gain familiarity with contemporary programs, policies and procedures.

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.

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.

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.

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.

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.

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.

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.

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.

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-410
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.

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, fibreglass 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-205
Laboratory Methods in Industrial Arts
Special laboratory methods of industrial arts education with emphasis on mass production, group projects, and research and experimentation. Innovative programs in general industrial education. Class participation in organizing and implementing special laboratory methods. Class discussion. Individual reports.

IATE-207
General Science
Study and application of scientific principles basic to each area of industrial education. Metric and international systems of measurement, use of slide rule, mechanics, properties of matter, properties and application of materials, science of computers.

IATE-209
Organizing Industrial Education Facilities
Principles of effective and safe planning of industrial education facilities in relation to the objectives to be fulfilled. Emphasis on location, size, shape of laboratory, and its physical requirements: specifications, purchasing and placement of required equipment and supplies.

IATE-210
Principles of Education
Basic philosophies of education in general and industrial education in particular. Overview of the history and development of industrial education. Role of industrial education in Canada. Federal and provincial programs. Current trends. Emphasis will be placed on vocational industrial or industrial arts education as required. Student research and reports, Seminars.

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-105.

INST-207 Electric Circuits

AC circuit analysis, power in AC circuits; magnetism; transformers; charging and discharging of RC and RL circuits; 3 phase circuits; basic electrical machines. 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. 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. Prerequisite RESC-103, RESC-204, 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.

INST-306 Digital and Computer Control Techniques


INST-307 Electrical Practices and Design


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. Corequisite MATH-305.

INST-402 Process Measurements

Pressure measurement; mechanical pressure elements; strain gage pressure transducers; electrical pressure transducers; high vacuum measurement. Telemetering; frequency shift; impulse duration. Levels measurement; float type mechanisms; force balance diaphragm systems; sonic level detectors; solids level detectors. Moisture and humidity measurement; psychrometric properties of air; drywet bulb humidity measurement. Industrial weighers: viscosity and consistency measurement. Prerequisite INST-302.
INST-403
Industrial Control Application

Control system design; flow diagrams; control schematics; wiring drawings; electrical code governing installations. Control valves; control valve bodies; plug characteristics; actuators; positioners; control valve sizing; sample calculations. Applications in industry-refinery; pulp and paper; textiles; waste disposal. 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; radio control. Prerequisite MATH 305. Corequisite INST 402, INST 403.

INST-406
Control Systems

Control of linear systems involving modern feedback control theory. Analysis of Bode diagrams, stability transfer functions, block diagrams, and control system components. Use of C.S.M.P. and the analog computer for control system analysis. Prerequisite MATH 305, INST 309, INST 306, INST 209, INST 207.

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-101
The Gas-Filled Electron Tube

The process of ionization, comparison with vacuum tube, D.C. applications, rectifier applications.

IRON-102
The Thyatron

Theory and operation, basic circuits employing thyatrons, as a control element, amplitude and phasen shift control.

IRON-103
Phase-Shifting Circuits

Resistance, capacitance, and inductance as circuit elements. Vector analysis. Types of phase-shift control.

IRON-104
The Phototube


IRON-105
Relays


IRON-106
Semiconductors

Basic theory and structure. The crystal diode. The transistor. Circuit configurations. Other semiconductor devices.

IRON-107
Motor Control Circuits


IRON-108
Pulse Circuits


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, re-
acance, impedance, calculations, resonance, phase relationships, practical considerations.

IRON-111
Test Equipment
VOM, VTVM, TVM, oscilloscopes, sine and square wave generators, tube and transistor testers.

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

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, switchers, 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 prep-
oration 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 nonbook 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 for Industrial Tradesmen**  
The modern marketing concept, consumers, products, channels of distribution, promotion, pricing, implementation of concepts.

**MASN-101**  
**Introduction, Materials and Tools**  
The 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 ½ and ¾ bat; Flemish ½ and ¾ bat; Dutch: English Cross; Flemish Cross; Monk; Garden Wall; All Rowlock.

**MASN-103**  
**Definitions**  
Trade terms; Arris; 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. Toothing. 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-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-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; equation solution methods, determinants, introduction to matrices, quadratic and higher order equations, straight line circle, parabola, ellipse, polar coordinates.

MATH-109
Algebra and Trigonometry
Right angled triangle, trigonometric functions, 0° to 360° 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.

MATH-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 MATH-102.

MATH-206
Calculus
Algebra, algebraic and trigonometric equations; curve plotting; conic sections; differentiation and integration. Prerequisite MATH-106.

MATH-207
Calculus
Differential calculus and limited applications, maxima-minima, rates, related rates, differentiation of algebraic and transcendental functions, integral calculus with limited applications, the 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 MATH-107.

MATH-209
Calculus
3-d geometry. Differentiation of algebraic functions, slopes, maxima, rates, derivates. Definite and indefinite integration, areas. Use of computer, arithmetic, input and output, formats, IF, DO, DIMENSION, logarithms, flow chart. Prerequisite MATH-109.

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, IBM 360 (Fortran). Prerequisite MATH-206.

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 transcendental 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
Trigonometry
The oblique triangle, computational methods and accuracy. Basic geometrical properties of parallel lines, triangles, circles and spheres. Spherical triangles, right angled, oblique types, sine law, cosine laws, Napier's analogies. Latitude and longitude as spherical co-ordinates. Area of the spherical triangle. Prerequisite MATH-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
Fortran IV and Subroutines. Multiple integration, Partial differentiation and indeterminant forms. Introduction to and use of statistics, and other selected topics. Prerequisite MATH-302.

MATH-408
Numerical Methods
Laplace transforms - waveforms; complex numbers, arc lengths, volumes, attraction, multiple integration. Boolean algebra and sets, convergence of series. Analogue computer, binary arithmetic. FOTRAN 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.

MATH-501
Mathematics
Whole number operations, fractions, decimals, percentages.
MATH-613
Mathematics
AC circuit calculations, logarithms and decibels, binary arithmetic.

MATH-613
Mathematics
Logic, binary arithmetic, Boolean algebra.

MDRA-101
Fundamentals
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 includes:
1) the interpretation and application of simple structural steel frame design and detailing according to the C.I.S.C. practices.
2) the interpretation and application of heat loss calculations as applied to simple mechanical systems.
3) 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 take-offs.

MDRA-104
Surveying and Topographic Drawing
Practice in the use of the transit and level, the plotting of cuts and contours, and the techniques of topographical drawing.

MEAT-101
Shop Management
Sanitation, safety, cutting test, salesmanship, equipment and tools. Trade knowledge, composition and grading of meats.

MEAT-102
Butchery of Meats, Fish and Poultry
Breaking down and preparing hinds, fronts, sides, carcasses of meats.

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; blue-prints, drawing; 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, hydrodynamics, flow of fluid in pipes, Reynold’s 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-405
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 orientors. 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, microgasometer, 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 hemostasis; 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: 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.

MEDR-110
Physics of Electricity and Magnetism
Elementary theory of magnets, magnetic fields, inverse square law, electrification by friction, properties of conductors and insulators, electromagnets, ammeters, voltmeters, fuses and circuit breakers, measurement of electric power, principles of transformers. Discussion of electromagnetic spectrum x-rays, scattered radiation, detection of x-radiation, units of quantity, quality of x-ray beam.
MEDR-111
Radiobiology & Protection

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
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 variations in exposure technique, identification systems.

MEDR-114
Positioning

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 is given. A short introduction to data processing correlated with hospital statistics (formulate) 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
Medical Records Science I
An introduction to the history of medicine and the historical development of the health care field with emphasis on the development of the medical records field and the Canadian Association of Medical Record Librarians.

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, micro-filming.
Retention and retrieval considerations included also.

MREC-203
Medical Terminology II and Medical Essentials
This involves the study of specific diseases relevant to the systems of the body (disease definition, signs and symptoms, treatment). The development of skill in transcribing medical and surgical reports is also included. The practicum consists of 2 weeks experience in a Medical Records Office.

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 of 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.

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.

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

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 I — Steam Generation
Acts and codes; types of boiler; boiler and furnace construction; heat transfer; theory of combustion; draft, fuels and firing equipment, boiler fittings; pipes and pipe fittings, pumps and injectors.
(a) Section II — Steam Use
Heat of steam; use of steam tables. Simple steam engines and pumps. Turbine theory; types, and operation; condensers.

(c) Section III — Refrigeration
Theory of mechanical compression cycle of refrigeration; types and characteristics of refrigerants. Use of tables; details of evaporators, compressors, condensers; basic controls.

(d) Section IV — 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-201 Power Plant Theory and Practice
(a) Section I — 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 II — Steam Use
Heating systems, return systems; traps and air venting; heat exchangers; heating in air-conditioning systems. Engine management, operation and maintenance.
(c) Section III — Refrigeration
Installation and operation of direct and indirect systems. Refrigeration codes, maintenance and trouble shooting. Insulation; air-conditioning and humidity control, the absorption system.

OPER-202 Electricity

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.

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-107 Wood Finishing
Hardwood, open grain, hardwood close grain, soft woods, oil stains, spirit stains, water stains, chemical stains.

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 terminants, 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 MECH-107.

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, magnatru, eddy current testing, theory and practice of radiography with tube and gamma camera. Prerequisite MECH-107, MECH-104, MECH-107, MECH-205.

PROD-331
Tool Design
Elastic and plastic bending, design for deformation in tooling, residual and fatigue stress, die sets, punches, dies, stripers 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-102 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-202 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. Prerequisite PROG-102.

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-302 Data Processing Mathematics III
Relationships, graphs, graphical solutions to linear programming, vectors, matrices, differential and integral calculus as applied to business problems. Prerequisite PROG-202.

PROG-303 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. Prerequisite PROG-201.

PROG-304 Operating Systems
Topics covered include: job control, sort/merge programs, utility programs, various operating systems. Prerequisite PROG-201.

PROG-402 Data Processing Mathematics IV
Linear programming, Simplex method, Transportation method, calculus topics, Monte Carlo simulation, critical path, queuing theory, finite differences. Prerequisite PROG-302.

PROG-403 Computer Topics and Modern Concepts
Other manufacturers, other languages, data communications, real-time systems, time-sharing. Prerequisite PROG-301.

PROG-404 EDP Organization
Development of management information systems. The organization of the computer department. Conversion problems. Specifications of systems; acquisition and utilization standards and docu-
mentation: feasibility. Prerequisite PROG 301.

PROG-405

Project and Technical Report

A technical report is required from each student on a topic approved by the Department. Prerequisite PROG-301.

PSYC-111

Psychology

This course is concerned with a thorough study of the basics of human behavior so that the knowledge gained can contribute to success in dealing with people at work and in other areas of daily life.

PSYC-212

Developmental Psychology

This course traces the psychological development of an individual from conception to death. Topics include the major internal and external aspects of the environment affecting individual personality throughout the stages of human development such as pre-natal, infancy, pre-school, early childhood, late childhood, puberty, adolescence, maturity, adulthood and old age. Prerequisite PSYC-111.

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, theory, practical resistive, capacitive, inductive circuits, rectification, power supply, amplification.

RADO-103

Oscillators

Crystal, TPTG, electron coupled, RF, AF, relaxation.

RADO-104

Receivers

TRF, superhet, broadcast, tracking, alignment, simple fault finding, RF, IF and AF amplifiers, detection, filters.

RADO-105

Test Equipment

Volt-OHM-milliammeters, vacuum tube voltmeters, cathode ray oscillographs, signal generators, (RF and AF).

RADO-106

Communication Receivers (Auto Key)

Superhet, double conversion, bandswitching, variable selectivity, circuit reading and analysis, simple fault finding, frequency modulation.

RADO-107

Communication Transmitters

Oscillators, power amplifiers, modulators, keying, parasites, 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.

RADIO-110

Direction Finding Systems

Circuit reading, operation, theory, antenna patterns, installation, bearing calculation, power supply.

RADO-111

Emergency Equipment

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 neces-
sary for messages and reports, teletype
practice sufficient to ensure correct mes-
sage transmission. Required speed, 40
wpm.

RESC-103
Physics
Statistics, kinematics, dynamics,
energy, basic electric and magnetic
principles, mechanical and thermal
properties of matter.

RESC-105 & RESC-205
Physics
Units and measurements; motion,
velocity and acceleration; vectors;
moments of forces; resolution of
forces; work, mechanical advantage,
power and energy; energy transfer and
equations; terms and laws of mechan-
ics in reference to gases and liquids;
Archimedes principle; temperature
measurement; thermal expansion; heat
quantities; heat transfer, combustion;
heat and work; first and second laws
of thermodynamics; reversible and ir-
reversible processes.

RESC-106
Chemistry
Basic chemical theory necessary to
understand chemical processes encoun-
tered in the field. Definition of Chemistry,
chemical laws and theories, nomenclature
and use of symbols. The atomic theory
of matter, structure and the atom and
molecule, valence and bonding. The per-
odictable. Use of chemical formulas
and equations. Behavior of gases, gas
laws, Oxidation and reduction, re-oxid
equations. Solutions, solution character-
istics and behavior, ionization.

RESC-203
Modern Physics
Electricity and magnetism, light,
light sensitive devices, atomic struc-
ture, nuclear structure, radiation de-
tection and devices. Prerequisite
RESC-103.

RESC-206
Applied Chemistry
Applications of chemical theory to
power plant processes. Combustion, air
requirements, heat release, air pollution
from combustion. Water treatment, ef-
ects of water contamination, common
external and internal treatment systems.
Primary treatment for pollution control.
Corrosion, electrochemical nature of
corrosion protection.

RESC-511
Science for Painting and Decorating
Basic molecular theory, properties
of matter, paints and their composi-
tion, abrasives, color theory and color
mixing, woods - classification and
structure, solvents, glues, electrical
safety.

RESC-512
Science for Upholstery
Color and s p e c t r u m , textiles -
natural and manufactured fibers, poly
foam, upholstery springs, cleaning
fluids, water, soaps and detergents,
stains and stain removal.

RESC-513
Science for Sheet Metal
Matter and energy, heat - measure-
ment, transfer, conversion and heat
loss calculations, ventilation - meas-
urement of air flow, pressure losses in
duct systems, properties of air.

RESC-514
Science for Welding
Basic principles of matter, proper-
ties of oxygen and acetylene, me-
chanical properties of metals, ferrous
metals, nonferrous metals, basic
metallurgy, heat - expansion and
transmission, annealing, tempering.

RESC-515
Science for Auto Body
Corrosion, abrasives - materials,
bands, and grinding wheels, the oxy-
acetylene welding process, colour and
spectrum - pigments and, pigment
mixing, paint and lacquer, cleaning
fluids, basic D.C. electricity and
electrical wiring, heat - expansion and
conduction.
RFSC-516
Science for Machine Shop Practice
Thermal expansion, basic metallurgy, friction, abrasives, mechanics - forces, stress, moments, work power, metric system, electrical safety.

RFSC-517
Science for Carpentry and Woodworking
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.

RFSC-518
Science for Plumbing
Basic definitions; weights and measures; simple machines; atmospheric and liquid pressures; pump systems and system design; water treatment: corrosion.

RFSC-519
Science for Automotive Mechanic Repair
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 safety.

RES-C-520
Science for Diesel Mechanics
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.

RFSC-521
Science for Refrigeration and Air Conditioning
Definitions pertaining to matter, energy, heat and refrigeration; temperature and thermal expansion, heat transfer, calorimetry; properties of gases; psychrometries; psychometric process; the Mollier diagram; basic transistor theory and servicing.

RFSC-522
Science for Appliance Servicing
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.

RFSC-523
Science for Basic Electronics Servicing, Radio Operating and Electronics Communications.
Structure of matter; electrical conduction in solids; electrostatics; magnetism; electromagnetic effects; motors; machines; semiconductors; P-N junction; applications of the junction diode; heat: 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 ap-
plication 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-114
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.

SALE-201
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 sale, presentation, demonstrating, handling objections, closing the sale 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.

SALE-202
Advanced “In-Business” Training
The program of “In-Business” Training in term II 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 practising 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.

SALE-203
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. The student learns to apply the planning, execution and control functions to the activities which direct the flow of goods and services to consumers and users. Product, Price, Place, and Promotion are the four elements of the contractual marketing mix developed to satisfy selected target markets. The influence of uncontrollable factors is also recognized and analyzed. The study includes a consideration of international as well as domestic market. Prerequisite SALE-103.

SALE-206 Advertising and Other Promotions

This subject presents a comprehensive study of the purposes, types, creation and control of advertising and other promotions. The course develops an understanding of the important elements of promotion and their relation to marketing. The management and planning of all forms of sales promotion is studied.

SALE-207 Structure and Organization of Business

An introduction to the principles of economics with emphasis on the social-economic problems of modern times. A comprehensive basis of economic understanding will be attained by the study of comparative systems and the development of our market economy, the theory of the firm in perfect and imperfect competition, and their realistic pricing policies, the economic forces of Supply and Demand, macro-economics and the implications of the Gross National Product and its components, the dynamics of the nations wealth and income, fiscal and monetary policies as the government exercises control over contemporary economic problems. The study concludes with Canada in an international setting.

SALE-208 Merchandising

A study of merchandising methods of retail organization: how to establish pricing policies; calculating mark-up required; controlling markdowns; controlling stock shortages; evaluating inventory by cost and retail methods; measuring stock turnover; analyzing sales and stock records; planning sales and expenses; factors in profit and loss, retail advertising and sales promotion.

SALE-214 Advanced Sales Communications

Building on foundations developed for the basic sales communications skills in Term I, this course develops the skills to a 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-101 and 201 Secretarial Procedures

This is an introductory course in general office procedures which will cover a wide variety of topics such as filing systems, business machines, mail procedures, diarizing and use of calendar, communications systems, equipment and supplies, typewriting production, public relations. Prerequisite for SECR-201 is SECR-101.

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-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 Typing

This course is designed to further the students' typewriting skills both in speed and office production work. Manual typewriters are used. The desired speed goal is 50 wpm. Prerequisite SECR 102.
SECR-203
Basic Shorthand and Transcription

This course covers the basic theory of Pitman Shorterhand and the development of speed in writing (to 120 wpm on prepared work and 100 wpm on unprepared work) and transcribing shorthand on manual typewriters. 85 per cent accuracy required to pass. Prerequisite SECR-103.

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 and 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. 80 per cent accuracy required to pass. Prerequisite SECR-202.

SECR-303 and 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. 90 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 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.

SECR-309 & 409
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 secre
SHOP-206
Horizontal Boring Mills
Work holding methods, facing, drilling and reaming techniques, boring and threading practice, measuring devices.

SHOP-207
Grinding Machine Operation
Belt grinding, honing machines, surface grinding, cylindrical grinding, cutter grinding.

SHOP-208
Heat Treatment
Metallurgical physics, general procedures and equipment, hardening and tempering practice, surface hardening practice, annealing practice, techniques of hardness testing.

SHOP-505
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.

SMET-101
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 ones 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 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.

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.

SOCL-103
Sociology (Social Forces)
An introduction to sociology and an examination of the social forces in the community. Basic sociological concepts - culture, society, social stratifications, social institutions, social organizations, can have on the individual, his life and his work. In class discussions and group seminars, special emphasis is placed upon the study of the Canadian scene.

SOCL-106 & 206
Self Understanding and Social Feeling
Psychology and sociology 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.

SOCL-304
Social and Health Problems
This subject provides a broad humanistic orientation to sociological concepts, functions and problems and medical care in our society. Wholistic method of investigation will be employed to analyze issues of interest and concern. The major units of instruction are the hospital as an institution, the hospital as a society, societal health care problems and the cross-cultural concepts of health care. Pre-requisite SOCL-103.

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-151
Introductory Psychology
This course is a developmental approach to the basics of human behavior and will deal with such topics as motivation, emotion, sensation, perception, learning, thinking, adjustment, maladjustment and personality.

SOSC-152
Introductory Sociology
An introductory analysis of the nature of society including such topics as culture, society, social stratification, social institutions and social organization.

SOSC-153
Political Science
This course presents a survey of the structure, function and problems of federal, provincial and municipal government: legislative, judicial, executive process; federalism, metropolitan government, community power structures, social legislation and political parties. The emphasis will be on the Canadian political scene.

SOSC-221
Behavioral Science for Salesman
The objectives of this course will be to analyse 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-251
Human Relations

This course is designed for students who, having some familiarity with the basic principles of human behavior, are capable of dealing with the deliberate attempts people make to change the attitudes, beliefs, values and actions of those around them. Topics will include behavior modification, coping mechanisms and adaptive behavior and failures of adjustment.

SOSC-252
Regional Sociology

Regional application of basic sociological principles with particular reference to the Manitoba scene. Special emphasis is placed upon minority groups such as the rural community, the ethnic sub-cultures, aspects of pluralism and the urban shift.

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, biculturalism, 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.

SSER-155
Economics

A brief examination of basic economics including examination of the firm, national income analysis, international trade and money and banking with specific reference to the Canadian scene. Other topics include alternate economic systems, economic growth, and the relationship between economic policies and social services in Canada.

SSER-156
Orientation to the Social Services

An introduction to the philosophies and principles with emphasis on recognized values of a democratic society relative to the social services. The purpose of this course is to develop attitudes and examine values of the student contemplating a social service career.

SSER-255
Community Resources

This course deals with the modern expression of social responsibility in community services with specific reference to the Canadian scene. Federal, provincial and municipal government social services including co-operative plans will be considered as well as those under private sponsorship.

SSER-256
Law

A brief introduction to Canadian law with particular emphasis on those aspects relating to the social services. To be considered are: family and domestic law, criminal and civil law and acts pertaining to human rights, children, mental defectives, etc.
SSER-257
Contemporary Social Service Practice

The development of knowledge, skills and techniques required to bring agency - worker - client together in a meaningful relationship: developing ones ability to deal with human behavior in its complexity; developing some knowledge of the various social work processes, primary and secondary i.e., casework, group work, supervision, processing and research. Emphasis will be on the helping role.

SSER-258
Public Administration

This course deals with the organization and function of bureaucracies in the contemporary social service areas. Treatment will be given to such areas of concern as the deployment of social service personnel and their tasks and functions; the structure of agencies and the social purposes they serve: the financing of agencies and institutions.

SSER-350
Assessment of Field Training

For a period of approx. 11 weeks students will receive practical experience and training in a social agency under the supervision of a professional social worker and the College field placement co-ordinator. Following the field placement the student will return to the College for one week during which time a detailed assessment and evaluation of the field work will be performed. The seminar approach will be utilized to facilitate sharing experiences as well as consultation by the instructor with individual students.

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 and typewriter maintenance, skill building, block letters, semi-block let-
ters, tables, one-page reports, enumerations, outlines, bibliography, correspondence 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. Pre-requisite STNO-123.

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.

STNO-126
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.

STNO-127
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.

STNO-220
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.

STNO-222
Intermediate Typewriting


STNO-224
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.

STNO-225
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.

STNO-226
Machine Transcription

Transcribing pre-recorded material for manuscripts, letters, telegrams, interoffice memoranda.

STRL-308
Theory of Structures

Shear and bending moment diagrams for beams and frames, the three moment equation, truss analysis by the method of shears, approximate analysis of indeterminate structures, structural loads and procedures, fundamentals of moment distribution. Prerequisite CIVL-202 CIVL-205.

STRL-311
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, decking; design of simple sawn columns, single glulam columns, spaced columns and columns subject to combined axial and bending stress; design of timber fasteners including connectors and bolts; Plywood design including stressed skin panel, stiffened panels and plywood beams.

Design of formwork and to consist of basic theory including load and presures, 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

sampling, disturbed and undisturbed, penetration tests, vane shear tests. Prerequisite CIVL-205, ENGL-206.

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 S16, 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 plated 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 procedure to 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, closed conduct, sidesway, nonprismatic frames, and wind loads, applied design of building frames, use of computer programs, deflection in beams and frames, deflection methods of structural analysis, determinate arches, three dimensional space frames, shear walls, influence line diagrams. Prerequisite STRL-308.

SURV-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, subtiense bar, self-leveling levels, geodimeter, disomat, tachometer and the principle of stadia measurements. The field testing and adjustments of the dumpy level and the engineer's transit. Prerequisite CIVL-103, MATH-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-213
Job Control and Costing
Critical path method of planning
and scheduling network theory; project scheduling; resource allocations; project analysis; Special projects in costing of materials and manpower related to surveying.

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-302
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.

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. Prerequisites 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 anaglyphic stereo plotters. Interior, Relative and absolute orientation of the Multiplex and Kelsh plotters. Laboratory work is designed to give maximum experience with manipulation of the floating dot. Prerequisite CIVL-316.

SURV-403
Control Surveys
Principles, equipment and methods of geodetic surveying covering triangulation, trilateration, traverses and leveling. Theory and use of a first order directional theodolite, geodetic level and invar rods, inantervisibility of tower sights to establish first order control stations. Precise distance measurements, corrected for curvature and reduced to sea level. Conversion of geographic co-ordinates to plane co-ordinates, theory of errors and adjustment of measurements. Strength of figures and reliability of results. Re-
duction of observations and balancing angles in triangulation nets. Solution of problems illustrating the application of least squares to the adjustment of observations. Empirical constants and formula. Emphasis on compiling and use of clear, neat, concise field notes. Prerequisite SURV-303, SURV-304.

SURV-406
Legal Surveying


SURV-407
Town Planning


SURV-408
Astronomy


SURV-409
Computer Application


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


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 runoff, drainage design, flood protection. Sediment action 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
Semiconductors and Vacuum Tubes
Two terminal devices, transistors, vacuum tubes, FETs, SCRs, LASCRs, triacs, unijunction 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, FM demodulators and FM receivers. Oscillators, buffers, frequency multipliers, power amplifiers, Amplitude modulation. Frequency modulation.

TCOM-201
Circuit Reading
Types of circuit diagrams and circuit descriptions.

TCOM-202
Introduction to Micro-Wave
The microwave spectrum high frequency limitations of components, waveguides, parabolic reflectors, cavities, planar triodes. The baseband signal, loading effect of voice channels, narrow band and wideband FM. Layout of a microwave transmitter, block diagram for commercial systems, time delay, phase delay, non-linear delay. Bandwidth requirements for a microwave 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
Direct Current Fundamentals

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. (D.C.)
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
Phase Systems and Transformers
Voltages and currents relations in three-phase systems. Principle 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 behaviour and characteristics.

TRIC-253
Electrical Motor Repair
Analyzing motor faults, stripping of motors and rewinding, testing.

TRON-101
Direct Current Fundamentals
Structure of atoms, conductors and insulators, electric charges, units of measurement, Ohm's Law, circuit measurements and calculations, magnetism, capacity and inductance, time - constants.

TRON-102
Alternating Current Fundamentals
Sine Waves, frequency spectrum, reactance, impedance, calculations, resonance, phase relationships, practical considerations.

TRON-103
Power Supplies
Transformers, AC/DC supplies, half and full wave rectifiers, voltage doublers, bridge rectifiers, battery eliminators, filters, voltage regulation.

TRON-104
Tubes and Transistors
Tube structure, characteristics, operating parameters, semiconductor physics, alpha and beta gain, types of transistors, handling techniques.

TRON-105
Audio Frequency Amplifiers
Loudspeakers, amplifier requirements, coupling methods, stage gain, speaker matching, transistor stabilization.

TRON-106
Oscillators
Requirements, common types of RC and LC oscillators, modulation, systems of amplitude modulation.

TRON-107
Tuned Radio Frequency Receivers
Detection, frequency response, sensitivity, selectivity, interference, RF amplifiers, trouble shooting procedure.

TRON-108
Superheterodyne
Mixers and converters, oscillator tracking, image and beat interference, alignment procedures, AVC circuits, design considerations, vacuum tube and transistor servicing techniques.

TRON-109
Amplifiers
Distortion, tone controls, negative feedback, push-pull circuits, power transistors, complementary - symmetry, power levels.

TRON-110
Transmitters (AM & FM)
Amplitude modulated transmitters, carrier and sideband power, bandwidths, antennas, frequency modulated transmitters, modulation index, deviation ratio, DOC regulations.

TRON-111
FM and Stereo Receivers
Discriminators, ratio detectors, automatic frequency control, transistorized receivers, composite signal, multiplexing, sound separation, servicing procedures.

TRON-112
Test Equipment
Volt-Ohm-Milliammeter, vacuum tube and transistor voltmeters, tube testers, transistor analyser, AM & FM signal generators, capacity and impedance bridges, power supplies, signal tracers, oscilloscopes.

TRON-113
Special Equipment
Use of service manuals, record player servicing, record changers, tape recorders, cassettes, car radios, intercoms, citizen-band transceivers.

TVES-101
Television Standards
Visual requirements for television.
Standards for monochrome television. The NTSC standards for color.

TVES-102
Television Transmitters
Amplitude modulation and the visual transmitter. Frequency modulation and the aural transmitter. Single sideband and suppressed carrier and the transmission of color. Vidicon and image orthicon cameras. RCA twenty-one kilowatt visual and aural transmitters. Antennas and transmission lines. The vestigial sideband filter and the diplexer.

TVFS-103
The Signal Circuit
Wideband amplifiers, RF, VIF and VF amplifiers. Alignment of RF and VIF amplifiers; measuring response of VF amplifiers. The cathode ray tube and brightness circuits, Intercarrier sound, FM detectors and alignment of signal circuits. Troubleshooting the signal circuits.

TVES-104
The Deflection Circuits
The blocking oscillators and multivibrators. Synchroguide, synchronlock and phase detector AFC systems. Vertical and horizontal output systems. High voltage and boosted power supplies. Troubleshooting the deflection systems.

TVES-105
The Auxiliary Circuits
SYNC, AGC and Power Supplies: The sync separator. Noise cancelling and gated sync separators. Simple and gated AGC. Full waves, half wave, half wave voltage doubling and bridge supplies. Troubleshooting the circuits.

TVFS-106
Solid State Television

TVES-107
Colored Television

TVES-108
Closed Circuit Television
Applications for CCTV. Vidicon cameras. Sync and deflection generators. Lens systems, switching units and remote control units. Monitors and slave receivers. Sound systems.

TVES-109
Test Equipment
Circuits, specifications and application of the basic instruments, required for television servicing: the vacuum tube voltmeter, oscilloscope, and sweep and marker generators. Instruments required for color: the keyed rainbow, cross hatch and dot generator. Other instruments to facilitate servicing, tube testers, capacity analyzers, flyback and yoke testers.

TVFS-110
Shop Planning and Management
Equipping and planning a Television shop. Service calls and charging for service work. Bench service and charges for bench service. Customer relations.

TVES-111
Safety

TVFS-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
Alternating Current Fundamentals
Basic AC generator, frequency spectrum, reactance, impedance, resonance, phase relationships, oscilloscopes.

TVES-114
Electronic Fundamentals
Vacuum tubes and CRT's and their characteristics. Semiconductors 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, AG amplifiers, AGG systems. Alignment and alignment generators, superheterodyne tracking, image and beat interference, servicing techniques.

TVES-117
FM, Stereo, H-F, 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, multielement antennas, antenna distribution systems.

TVES-203
Television Receivers and Servicing
RV, VIF, VF, SIF amplifiers alignment. Cathode ray tubes and brightness circuits, blocking oscillators and multivibrators, 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 machine, 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
Trimming
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, mak-
ing 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 upholstery 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 coordination 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 colleting, 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 conditioning of watches under similar 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,
brazewelding 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

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.

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, jig saw, jointer, planer, shaper, mortiser, tenoner, wood lathe, sanding machines, portable power tools, powder actuated tools.

WOOD-103
Concrete Form Construction
Footing, foundation walls for single and multiple dwelling units, concrete slabs, sidewalk steps, piles, columns, beams, ceilings and the stripping of forms.

WOOD-104
General Framing
Basic principles of framing procedures: One storey house, balloon framing, procedures for framing opening for doors, windows, stairs, etc., basic principles involving wooden members in masonry building, insulation, building papers, vapour barriers.

WOOD-105
Equal Pitch Roofing
Types of roofs: flat roofs, gable roofs, equal pitch hip roof, equal pitch intersecting 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, book shelves, 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.