MANITOBA
INSTITUTE OF TECHNOLOGY

INDUSTRIAL DIVISION

DEPARTMENT OF YOUTH AND EDUCATION
PROVINCE OF MANITOBA

Hon. Donald W. Craik, B.Sc., M.Sc., (M.E.), P.Eng. . . . . Minister
W. C. Lorimer, M.A., Ed.D. . . . . . . . . . . . Deputy Minister
E. B. Angood, B.Sc. (Eng. Sc.) . . . . . . Asst. Deputy Minister,
Youth and Manpower Division

Administered by the
YOUTH AND MANPOWER DIVISION
Manitoba Department of Youth and Education
with financial assistance provided by
the Federal Government

J. E. McCannel, B.A. . . . . . . . Senior Officer (Operations)
A. J. Buhr, B.A., M.Sc. (I.E.) . . . . . . . . . Director
G. L. Talbot, B.Ed. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Director

Approved by, and issued under, the authority of the
Minister of Youth and Education
THE HONOURABLE, DONALD W. CRAIK, B.SC., M.SC., (M.E.), P.ENG.

MINISTER OF YOUTH AND EDUCATION
Foreword

The dynamic spirit of "Growing to Beat '70" is spectacularly illustrated in the growth of provincially operated vocational education facilities since 1953.

Here are the highlights of that growth:

October 20, 1962 — The cornerstone of the Manitoba Institute of Technology, 2055 Notre Dame Avenue, Winnipeg 23, Manitoba, was laid by the Right Honourable John G. Diefenbaker, Prime Minister of Canada.

January, 1963 — The old M.T.I. trades training program, with an enrolment of about 800, was transferred to the Manitoba Institute of Technology Building to become the Industrial Division of the Manitoba Institute of Technology.

September, 1963 — The Technology Division of the Manitoba Institute of Technology began operation, with 304 students taught by 28 instructors.

September, 1964 — Increased enrolments in the Technology, Industrial, and Teacher Education Divisions necessitated a 40,000 square foot expansion of teaching area in the basement of the Manitoba Institute of Technology.

September, 1965 — Teacher Education, except for the Industrial Arts Workshops, moved into the former Day School for the Deaf, 1075 Wellington Avenue.

Fall, 1966 — The Manitoba Vocational Centre opened in Brandon, built to accommodate 850 full-time day students.

— The Northern Manitoba Vocational Centre opened in The Pas with a capacity for 500 students.

January, 1967 — In Winnipeg, classes began in the new fourth floor addition to the Technology Block of M.I.T., which provided 30,000 additional square feet of teaching and laboratory space.

September, 1968 — To the west of the Manitoba Institute of Technology, the new Applied Arts complex opened, providing significantly for the record 42% growth in student population over the previous year.

December, 1968 — During 1968, more than ten thousand persons received educational training at the Institute alone with Brandon and The Pas gaining in enrolments proportionately.

Now in 1969, we can look back with pride on seven years of achievement and growth unprecedented in our provincial history, and look forward to the refinement and development of vocational education with justifiable eagerness and anticipation.

Honourable Donald W. Craik, B.Sc., M.Sc., (M.E.), P. Eng.
Superintendent's Message

To say that the Institute of Technology and Applied Arts has successfully provided programs reflecting the needs of business and industry would be similar to saying that Canada is a growing country — it would be true, but by no means adequate to describe the real spirit of success and growth behind that truth.

It has been said before that the courses offered here do provide, for some students, a very real alternative to a university education. We are now able to say that the success of our graduates has surpassed even our expectations, and that Manitoba's employers are turning to us with more and more enthusiasm for career-minded people trained to meet the present and future needs of industry and commerce.

Everyone is aware that in this age of accelerated change, a man may have to seek new employment several times in his working life. That is why the first position held after graduating can be so important, why it is necessary to consider all the alternatives after high school, and why every student should seek guidance before embarking on any course of studies. With the above in mind we should all look to the future, and whatever your decision, we wish you success at your studies and in your chosen careers.

A. R. Low,
Superintendent.
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INDUSTRIAL DIVISION

Calendar of Events

1969-1970

1969

**MONDAY**  **SEPTEMBER 1ST**  Labour Day (Institute Closed).
**TUESDAY**  **SEPTEMBER 2ND**  Fall Term commences. (See page 8 for other entry dates.)
**WEDNESDAY**  **SEPTEMBER 10TH**  Registration begins for fall term extension courses.
**MONDAY**  **SEPTEMBER 22ND**  Fall Term for extension courses commences.
**MONDAY**  **OCTOBER 13TH**  Thanksgiving Day (Institute Closed).
**TUESDAY**  **NOVEMBER 11TH**  Remembrance Day (Institute Closed).
**WEDNESDAY**  **DECEMBER 24TH**  Last day of classes before Christmas Vacation.
**FRIDAY**  **DECEMBER 26TH**  Boxing Day (Institute Closed).
**MONDAY**  **DECEMBER 29TH**  Office re-opens.

1970

**THURSDAY**  **JANUARY 1ST**  New Years Day (Institute Closed).
**FRIDAY**  **JANUARY 2ND**  Office re-opens.
**MONDAY**  **JANUARY 5TH**  Classes recommence
**WEDNESDAY**  **JANUARY 7TH**  Registration begins for Winter Term extension courses.
**MONDAY**  **JANUARY 19TH**  Winter Term for extension courses commences.
**FRIDAY**  **MARCH 27TH**  Good Friday (Inst. Closed).
**MONDAY**  **MARCH 30TH**  Easter Monday (No Classes).
**TUESDAY**  **MARCH 31ST**  Classes recommence.
**WEDNESDAY**  **APRIL 8TH**  Registration begins for Spring Term extension courses.
**MONDAY**  **APRIL 13TH**  Spring Term for extension courses commences.
**THURSDAY**  **APRIL 16TH**  Open House for High School students.
**FRIDAY**  **APRIL 17TH**  Open House for High School students.
**MONDAY**  **MAY 18TH**  Victoria Day (Inst. Closed).
**FRIDAY**  **JUNE 26TH**  Graduation
**WEDNESDAY**  **JULY 1ST**  Dominion Day (Inst. Closed).
**MONDAY**  **JULY 6TH**  Departmental Summer School opens.
**MONDAY**  **AUGUST 3RD**  Civic Holiday (Inst. Closed).
"CERTIFICATE COURSES"
ENTRY DATES

The first entry date shown can be considered as a firm date. Subsequent dates are tentative dates only. If classes are filled on the first date shown, subsequent dates will be null and void. Subsequent dates may be changed if the training situation warrants such a change. Where only one date is shown subsequent dates may be established if sufficient applications are received and if staff is available. Such additional classes may be operated on a second shift.

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| C.B.O.M. | WINNIPEG | SEP 3    | NOV 3   | JAN 5   | MAR 2    | MAY 4   | BRANDON | SEP 2    | NOV 3   | JAN 5   | MAR 2    | MAY 4   |
| COMM. &amp; INDUST. SALES | WINNIPEG | SEP 3    | NOV 3   | JAN 5   | MAR 2    | MAY 4   | THE PAS | SEP 3    | NOV 3   | JAN 5   | MAR 2    | MAY 4   |
| COOKING, COMMERCIAL | WINNIPEG | SEP 3    | NOV 3   | JAN 5   | MAR 2    | MAY 4   | BRANDON | SEP 3    | NOV 3   | JAN 5   | MAR 2    | MAY 4   |
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<td>Sep 4</td>
<td>Jan 5</td>
</tr>
<tr>
<td>Restaurant Cooking</td>
<td>Winnipeg</td>
<td></td>
<td>As Vacancies Occur</td>
</tr>
<tr>
<td>Sheet Metal</td>
<td>Winnipeg</td>
<td>Sep 4</td>
<td>Jan 5</td>
</tr>
<tr>
<td>Social Welfare Services</td>
<td>Winnipeg</td>
<td>Sep 2</td>
<td></td>
</tr>
<tr>
<td>Steno</td>
<td>Winnipeg</td>
<td>Sep 3</td>
<td></td>
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<tr>
<td></td>
<td>Brandon</td>
<td>Sep 2</td>
<td>Nov 3 Feb 2</td>
</tr>
<tr>
<td>T.V. Servicing</td>
<td>Winnipeg</td>
<td>Sep 2</td>
<td>Feb 9</td>
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<tr>
<td></td>
<td>The Pas</td>
<td>Sep 2</td>
<td>Nov 3 Feb 2</td>
</tr>
<tr>
<td>Upholstery</td>
<td>Winnipeg</td>
<td>Sep 2</td>
<td>Nov 3 Feb 2</td>
</tr>
<tr>
<td>Vocational Teacher Training</td>
<td>Winnipeg</td>
<td>Sep 2</td>
<td></td>
</tr>
<tr>
<td>Waiter Waitress Training</td>
<td>The Pas</td>
<td>Sep 2</td>
<td>Nov 3 Jan 5 Mar 2 May 4</td>
</tr>
<tr>
<td>Watches</td>
<td>Winnipeg</td>
<td>Sep 4</td>
<td>Oct 27 Jan 5 Mar 2 Apr 27</td>
</tr>
<tr>
<td></td>
<td>Brandon</td>
<td>Sep 2</td>
<td>Nov 3 Jan 5 Mar 2 May 4</td>
</tr>
<tr>
<td></td>
<td>The Pas</td>
<td>Sep 2</td>
<td>Nov 3 Jan 5 Mar 2 May 4</td>
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<tr>
<td>Welding</td>
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<td>Oct 27 Jan 5 Mar 2 Apr 27</td>
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<td></td>
<td>Brandon</td>
<td>Sep 2</td>
<td>Nov 3 Jan 5 Mar 2 May 4</td>
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<tr>
<td></td>
<td>The Pas</td>
<td>Sep 2</td>
<td>Nov 3 Jan 5 Mar 2 May 4</td>
</tr>
</tbody>
</table>
Administrative Staff

Business Administrator . . . . A. FRIESENE, B.A., C.G.A.
Registrar . . . . . . . . . . . . . . . . . . . . . . . . . . . . . W. H. GRANT
Training Co-ordinator . . . H. N. ANDREWS, P.Eng. (B.C.)
Supervisor of Guidance and Testing . . H. V. F HUME, B.Sc.
Supervisor of Food Services . . . . J. G. CARTWRIGHT
Supervisor of Extension Services . . . G. S. ROSS, B.Sc.
Librarian . . . . . . . . . . . . . . . . . . . . . . . . . . . . A. J. MIAH, B.A., L.L.B., M.Sc.
Accountant . . . . . . . . . . . . . . . . . . . . . I. J. PUCHLIK
Book Store Manageress . . . . . . MRS. E. BAGOT
Chief Storekeeper . . . . . . . . . . . . J. W. GRAHAM
Department Head, Computer Centre . . . T. ROBERTSON
Maintenance Superintendent . . . . . . . . . . . . . . . . . . . . . S. L. URSEL

MANITOBA INSTITUTE OF TECHNOLOGY

Industrial Division:
Principal . . . . . . . . . . . . . . . . . . . . . . . . . . . . S. P. DIDCOTE, B.Sc. (I.E.)
Assistant Principal . . . . . . . . J. GREENAWAY, B.Sc., P.Eng.

Technology Division:
Principal . . . . . . . . . . . . . . . . . . . . . . . . . . . . R. A. DUNHAM, B.Sc.
Assistant Principal . . . . . . . . C. H. HOWARD, B.Sc. (C.E.) P.Eng.

MANITOBA INSTITUTE OF APPLIED ARTS

School of Business:
Principal . . . . . . . . . . . . . . . . . . . . . . . . . . . . A. L. BERG, B.Comm.
Assistant Principal . . . . . . . . D. G. TRENHOLM, B.Comm.

School of Commercial Studies:
Principal . . . . . . . . . . . . . . . . . . . . . . . . . . . . R. A. SANBURN, B.Sc. (Bus. Adm.)
Assistant Principal . . . . . . . . W. YANCHYSHYN, B.A.

Teacher Education Division:
Supervisor of Teacher Training . . . . . . . . . . . . . . . . . . P. F. PENNER, B.A.
Faculty

ALLAN, MR. W. G. ................................................. Automotive
BEATTIE, MISS M., Reg. N., B.N. .......................... Practical Nursing
BEECH, MR. R. S. ................................................. Watch Repair
BOROSKAIE, MR. M. ............................................. Electrical
BOURKE, MR. A. ................................................... Electrical Appliance Servicing
BROWN, MR. CHARLES C. ....................................... Sheet Metal
BURES, MR. HENRY, B.Eng., C.E.T. ......................... Machine Drafting
CANTIN, MR. L. ..................................................... Electrical
CARTWRIGHT, MR. J. G. ......................................... Supervisor of Food Services
CLAYTON, MR. SYDNEY .......................................... Carpentry and Woodworking
DAVIDSON, MR. J. C. ............................................... Painting & Decorating
DAWSON, MRS. E. .................................................. Hairdressing
DEROCHET, MR. A. G. ............................................... Auto Body
DILLON, MR. ROY .................................................. Welding
DONALDSON, MR. G. W. .......................................... Radio Operating
DOOLAN, MR. F., C.E.T. .......................................... Related (Science)
DUKELOW, MR. H. ................................................... Electrical
ELVERS, MR. PETER, B.Sc. ....................................... Carpentry and Woodworking
FARR, MR. J., B.Sc., C.E.T. ...................................... Related (Maths)
FELIX, MISS MARYANN, Reg. N., B.N. ....................... Practical Nursing
FINN, MR. CHARLES ................................................ Welding
FORCESE, MR. LEO .................................................. Steamfitting
FOULDS, MR. R. ..................................................... Industrial Electronics
FRASER, MR. VERNON, C.E.T. ................................. Machine Shop
GABOURY, MR. G. O. ............................................... Basic Electronic Servicing
GEMMEL, MR. JOHN F. ............................................ Radio Operating
GLADYZ, MR. E. J. ................................................... Electrical
GRAY, MR. DAVID ................................................. (Baking) Food Services
GROSS, MR. LOTHAR, W. (Commercial Cooking) Food Services
HALLAS, MR. FRANK ............................................... Barbering
HAYES, MR. R. S. .................................................. Related Drafting
HERRINGTON, MR. L. ............................................ Basic Electronics Servicing
HILDEBRAND, MR. N. ............................................. Auto Body
HOLDER, MR. R. ................................................... Electrical
HUNT, MRS. P. ...................................................... Architectural Drafting
JOHNSON, MR. H. L. .............................................. Electrical
JOHNSON, MISS L., Reg. N., B.A. ............................ Practical Nursing
KIRZINGER, MR. OTTO ........................................... Restaurant Cooking
KLASZ, MR. J. ....................................................... Related (Communications)
KNOFF, MR. V. R., B.Acc. ....................................... Related (Communications)
LABELLE, MR. MAURICE ......................................... Electrical Appliance Servicing
LACZKO, MR. J. ..................................................... Diesel
LANE, MR. JOHN F. ................................................ Machine Shop
Laurikainen, MR. R. ............................................... Architectural Drafting
CALENDAR FOR 1969-1970

LAXDAL, MR. JOHN A. A. .......................................... Refrigeration
LOCKEN, MR. ROGER C. .................................................. Diesel
LUSSIER, MR. L ................................................................. Related (Drafting)
MANN, MR. VICTOR J .......................................................... Plumbing
MARSH, MR. RAYMOND J .................................................. (Meat Cutting) Food Services
MORRISON, MR. T ............................................................... Related (Maths)
MOUSSEAU, MR. L., B.A. .................................................. Related (Maths)
McCOLM, MRS. ANITA, Reg. N ........................................... Practical Nursing
McCoy, MR. J. P ............................................................... Electrical
McINTYRE, MR. A ............................................................. Electrical
McIVOR, MRS. N., Reg. N., Cert. P.H.N ................................ Practical Nursing
McKIBBIN, MRS. I ............................................................ Hairdressing
McLEAN, MR. S. L .......................................................... Sheet Metal
NESS, MR., GEORGE ........................................................ Machine Shop
NOBLE, MRS. E., Reg. N., Cert. Nursing Ed ................................ Practical Nursing
NOTLEY, MR. G., B.Sc ........................................................ Related (Science)
NUTTALL, MR. R ............................................................... Electrical
PANKIW, MR. J ................................................................. Plumbing
PATTERSON, MR. E. G ...................................................... Electrical
PATTERSON, MR. J. T ......................................................... Automotive
PEDORA, MR. J. M ............................................................ Welding
RATHJE, MR. J., Dipl. Ing., P. Eng ....................................... Electrical
REID, MR. D. D ................................................................. Carpentry and Woodworking
REID, MR. F .......................................................... T. V. Servicing
REMPPEL, MISS M., Reg. N., B.N ....................................... Practical Nursing
RIDGEWAY, MR. W. J ......................................................... Related (Communications)
ROUND, MR. V. N ............................................................ Upholstery
ROY, MR. E. C ................................................................. Electrical
RUCK, MR. M. D ............................................................... Welding
SAWCHYN, MR. JOHN I ...................................................... Automotive
SCHROEDER, MR. A., B.Sc. (Ed.) C.E.T ................................. Architectural Drafting
SCHWEEDIC, MR. RUDOLPH, C.E.T .................................... Refrigeration
SHURA, MR. ARTHUR ......................................................... Diesel
SKINNER, MR. J. D .......................................................... Basic Electronic Servicing
SMALL, MR. B ................................................................. Auto Body
SMITH, MR. G. H ............................................................. Masonry
STARK, MR. JOHN ............................................................ Carpentry and Woodworking
STEVENS, MRS. S., B.Sc .................................................... Food Service Supervisor
TERRICK, MR. N ............................................................ Lab. Student Supervisor
THODY, MR. FLOYD C ........................................................ Automotive
TRYLINSKI, MR. C .......................................................... Electrical
UNDIKS, MR. J ................................................................. Related (Science)
URSEL, MR. A. F ............................................................. Automotive
VAN DE MOSELAER, MR. J ................................................ Machine Shop
VINCENT, MR. J. M .......................................................... Related (Maths)
WALKER, MR. D .............................................................. Plumbing
YOUNG, MR. WILLIAM K .................................................... Diesel
General Information

The Manitoba Institute of Technology and the Manitoba Institute of Applied Arts are located in the north-west sector of Winnipeg, adjacent to the International Airport. The combined complex has over sixteen acres of floor space containing the most up-to-date facilities and equipment. It is actually six schools in one.

1. The Industrial Division, offering apprenticeship and pre-employment training in the trades and other areas.

2. The Technology Division, offering technology courses for high school graduates interested in pursuing a technical career.

3. The School of Business, offering Business courses for high school graduates interested in pursuing a business career.

4. The School of Commercial Studies, offering business office training and arts-based courses.

5. The Teacher Education Division, offering three courses in teacher training: Business Education, Industrial Arts and Vocational Industrial.

6. Extension Services Division, offering upgrading and trade development courses.

Calendars are available for each of the above Divisions.

Over 60 courses are offered in full-time day programs. Night school courses are offered for the purpose of up-grading those who are employed in business and industry in any area where the need arises.

The Vocational Centres at The Pas and Brandon, together with the Manitoba Institute of Technology and the Manitoba Institute of Applied Arts play an important role in meeting the ever increasing need for a qualified work force for our expanding economy.

The operation of these institutes is the responsibility of the Youth and Manpower Division, Manitoba Department of Youth and Education.
APPLICATIONS FOR ADMISSION

Applicants may be classified in one of the two following categories:

Provincial Entries — Those who have not been out of the formal school system for more than one calendar year. Provincial Entry applicants, when accepted, are required to pay registration and tuition fees, and must provide their own textbooks, supplies and other equipment.

Occupational Training Adult (O.T.A.) — Those who are eligible for sponsorship by the Federal Canada Manpower Centre.

Generally, a person who is past school-leaving age by one year, and who has been out of formal schooling for one complete year may be eligible to receive free tuition, textbooks and certain supplies.

If, in addition to the above, the applicant has been a member of the labour force for the past three years OR has a dependent, he may be eligible to receive a training allowance.

Those applying for entry as "Provincial Entries" must apply in writing on 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 entries must be at least 16 years of age.

Those applying for entry as "Occupational Training Adult" must apply direct to the nearest office of the Canada Manpower Centre. Eligibility for acceptance and for allowances is determined by Canada Manpower Centre. HOWEVER, applicants accepted by Canada Manpower Centre MUST meet the pre-requisites for courses, and must have proof of education with them on registration. Those who do not meet the standard set for respective courses may be refused admission.

Foreign applicants must have their school standing evaluated into Manitoba standards. They may forward documents of proof of education to The Registrar, Department of Youth and Education, 1181 Portage Ave., Winnipeg 10, Manitoba.

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 most 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.
PRE-REQUISITES FOR ADMISSION

Applicants must meet the entrance requirements as listed under each course.

1. The school grade indicated as an entrance pre-requisite for a course refers to the standing obtained by students in any one of: The Vocational Commercial course; the Vocational Industrial course; the University Entrance course; or the General course, as offered in the Program of Studies for the Schools of Manitoba. Equivalent standing from other provinces will be acceptable. Students from countries other than Canada should have their standing evaluated by the Registrar, Department of Youth and Education, 1181 Portage Avenue, Winnipeg 10, Manitoba. Vocational Preparation Level II or the appropriate Level I is also accepted as an entrance pre-requisite in certain courses.

2. Where entrance pre-requisites call for proficiency in Mathematics, and Physics at the Grade XI level, it is to be understood that the applicants must have standing in Mathematics 200 or 201 and either Physics 200 or Physical Science 201 or its equivalent.

3. Students who have obtained standing in the Occupational Entrance course or a High School Leaving Course may be required to take an entrance examination to determine their academic competence.

Persons who lack the academic pre-requisites to enter training for a trade may meet these requirements by successfully completing the Vocational Preparation program. Further information concerning the Vocational Preparation program is given on page 132 or may be obtained from the Registrar or from any Canada Manpower Centre office.

GUIDANCE

Vocational and Educational guidance is available to applicants and students through the guidance office at the Institute.

ADMISSIONS COMMITTEE

A Committee established by the Principal.

All applications must be approved by the Admissions Committee. Applicants may be asked to appear before the Committee for a personal interview, or educational tests.
**FEES AND REFUNDS**

The following applies to Provincial Entry students only, not to O.T.A. students.

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.

**Manitoba Residents:** $7.00 per month for all courses except Welding. The rate for Welding is $14.00 per month.

**Non Manitoba Residents:** $14.00 per month for all courses except Welding. The rate for Welding is $28.00 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.

A student leaving the course for any reason within the first 30 calendar days will be eligible for a refund of the 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 fee paid less the fee for two month's 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.

Cheques or Money Orders for the exact amount of the fees being paid should be made payable to "The Manitoba Institute of Technology".

**FINANCIAL ASSISTANCE**

Unfavorable financial circumstances need not deter deserving students from enrolling in the Manitoba Institute of Technology. Assistance is available in various forms.

**Canada Manpower Centre — O.T.A. Programs:**

Qualified persons may be referred to training at the Manitoba Institute of Technology through the OCCUPATIONAL TRAINING FOR ADULTS (O.T.A.) 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.
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 and not eligible for Occupational Training for Adults through Canada Manpower Centre. Interested persons may secure further information by corresponding with the Co-ordinator of Rehabilitation Services, Department of Health, 383 York Avenue, Winnipeg 1, Manitoba.

Canada Student Loans Plan:

This plan is designed to make bank loans (up to $1,000.00 per year) available to students who need financial help and who are enrolled in courses of at least 26 weeks duration and where the entrance requirement is Grade XI. Application forms are available at the Manitoba Institute of Technology.

Department of Education Bursaries:

Applicants for admission and students presently enrolled may apply for bursaries to Student Aid Officer, Department of Youth and Education, 1181 Portage Avenue, Winnipeg 10, Manitoba. These awards are based upon the financial need and scholarship.

Children of War Dead (Education Assistance) Act:

Tuition fees and monthly allowances are provided for children of veterans whose deaths were attributable to military service. Inquiries should be directed to the nearest district office of The Department of Veterans Affairs.

SCHOLARSHIPS:

Two scholarships of $100.00 each are given annually by Pritchard Engineering Co. Ltd. of Winnipeg. One of these is given to the student in the Diesel Mechanics course who makes the most outstanding progress during the course. The other is given to the student in the Machine Shop course who makes the most outstanding progress during the course.

These scholarships are normally presented during the June graduation exercises.
OFFICE HOURS
The General Office is open from 8:00 a.m., until 5:00 p.m., Monday through Friday.

BOARD AND ROOM
No dormitories are operated in connection with the Institute. The General Office has a list of accommodation for students who wish to obtain board and room in the city. This list changes from day to day, and it is recommended students consult this list on or before registration day. The acceptability of all boarding places listed is left entirely to the discretion of the students.

DINING AREAS:
The modern Dining areas at the Institute provide excellent, low cost meals during the mid-day lunch periods.

LIBRARY
The Institute’s library functions as a centre through which the students and faculty are enabled to carry on many of their research and study activities. The library collection consists of the newest and most up-to-date volumes available and a wide selection of magazines, indexes, pamphlets and newspapers, which provide both the breadth and the specialization of resources necessary for study in the diverse fields of Technical, Industrial, and Business Education. It is open from 8:30 a.m. to 9:30 p.m. Monday to Thursday and from 8:30 a.m. to 5:00 p.m. on Friday.

Students leaving the Institute are cautioned that all Library reference material must be returned to the Library.

BOOK STORE
Textbooks and supplies may be purchased from the Institute Book Store on a cash basis only. Students will be provided with a list of required items. The Book Store does not handle used books.

LOCKERS
Lockers are available without cost to full-time students. However, as the Institute is not responsible for personal property students should provide themselves with their own locks. Combination padlocks may be purchased from the Book Store.
FIELD TRIPS

The work at the Institution is closely related to the work of industry. It is the policy of the schools 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.

ILLNESS, ACCIDENTS AND INJURIES

The Institute reserves the right to call an ambulance or a physician in case of injury or illness, the expense to be borne by the student.

The Institute 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 Institute's instruction program wherever conducted, or incidental to other activities on the Institute's properties or elsewhere."

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

All O.T.A. (including apprentices) and VRT students are covered by Workmen's Compensation. This will include medical, hospital and other necessary costs which are directly attributable to a compensable accident. 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.

TOOLS AND EQUIPMENT

Relatively expensive tools and equipment are made available to the students by the Institute. Certain items which, for sanitary or other reasons should be personal property, are purchased by the student.
CLASS HOURS

Classes are normally in session from 8:30 a.m. until 4:05 p.m., five days per week, Monday through Friday. However, these hours may be altered in accordance with training requirements and school facilities.

ATTENDANCE

Students must be punctual and should have an attendance of 90% or better. When a student remains away from school for a period of five consecutive school days, without notifying the Institution as to the reason for his absence, the student shall be considered as discontinuing his course. Three occurrences of lateness within any two week period, will be considered as one day of absence.

DRESS

Students are expected to dress and maintain a personable appearance in a neat and tidy 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 Institute's Book Store. Coveralls, smocks and other such regular protective clothing may be purchased from local merchants as the need is evidenced.

DISCIPLINE

Students are expected to exhibit adult behavior. All students are subject to the rules and regulations of the Institute and may be suspended or dismissed if their conduct or attitude proves unsatisfactory.

Disciplinary problems of an extreme or persistent nature will be dealt with by the Disciplinary Board of the Institute.

SCHOLASTIC REGULATIONS

A student enrolled in any course must maintain a satisfactory scholastic standing. Periodic progress reports are maintained and will be sent to Parent or Guardian upon request. A student whose progress is unsatisfactory may be placed on probation or dismissed.
DURATION OF COURSES

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

CERTIFICATES OF ATTAINMENT

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 in a full time day course.

2. Recommendation of their Instructor or Department Head and approval of the Principal.

SUPPLEMENTAL EXAMINATIONS

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

GRADUATION

Graduations are held periodically, at which time, "Certificates of Attainment" are awarded to the candidates meeting the prescribed requirements.

Suitable certificate cases may be obtained at the Institute at the time of Graduation at a cost of approximately $2.50 each.

STUDENT PLACEMENT OFFICE

To meet the need for an effective placement service for all students the Winnipeg office of the Canada Manpower Centre has established a Student Placement Office at the Institute. All students will be given the opportunity to register with the Student Placement Office while attending courses at this Institute.
COURSE CONTENT

The course content listed herein is intended to provide information for the guidance of applicants in the selection of appropriate courses. It is not intended to be so rigid and inflexible that it restricts the initiative of instructors and students. In general, the courses will be conducted in accordance with the curriculum outlines but may, through consultation between the Institute authorities and the Advisory Committees, be subject to revision to meet special educational needs as they arise. The Institute therefore reserves the right to make whatever changes circumstances require.
Automotive Trades Department

Courses:

Auto Body Repair
Automotive Mechanical Repair
Diesel Mechanics & Highway Tractor Maintenance

Faculty:

Mr. W. G. Allen ........................................... Automotive
Mr. A. Deroche ........................................... Auto Body
Mr. N. Hildebrande ..................................... Auto Body
Mr. J. Laczko ............................................. Diesel
Mr. R. C. Locken ......................................... Diesel
Mr. J. T. Patterson ..................................... Automotive
Mr. J. I. Sawchyn ....................................... Automotive
Mr. A. Shura ............................................. Diesel
Mr. B. Small ............................................. Auto Body
Mr. F. C. Thody .......................................... Automotive
Mr. A. F. Ursel .......................................... Automotive
Mr. W. K. Young ......................................... Diesel
Auto Body Repair

(Pre-Apprentice)

**DURATION** — Approx. 10 months,

**Pre-requisites:**
Grade X or Vocational Preparation Training Level II.

**Employment Opportunities:**

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

1. An Auto Body Repair 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.

**Course Content:**

<table>
<thead>
<tr>
<th>Term A</th>
<th>5 Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to Shop</td>
<td>Approx. 5 hours</td>
</tr>
<tr>
<td>Welding, Oxy-Acetylene</td>
<td>&quot; 225 &quot;</td>
</tr>
<tr>
<td>Cutting, Oxy-Acetylene</td>
<td>&quot; 10 &quot;</td>
</tr>
<tr>
<td>Hand Tools</td>
<td>&quot; 20 &quot;</td>
</tr>
<tr>
<td>Hydraulic Jacking Equipment</td>
<td>&quot; 15 &quot;</td>
</tr>
<tr>
<td>Basic Techniques in Metal Shaping</td>
<td>&quot; 30 &quot;</td>
</tr>
<tr>
<td>Alignment of Bodies</td>
<td>&quot; 20 &quot;</td>
</tr>
<tr>
<td>Repairing Major Assemblies</td>
<td>&quot; 195 &quot;</td>
</tr>
<tr>
<td>Power Grinder</td>
<td>&quot; 20 &quot;</td>
</tr>
<tr>
<td>Vibrators, Sanding Discs</td>
<td></td>
</tr>
<tr>
<td>Machine Shop</td>
<td>&quot; 60 &quot;</td>
</tr>
<tr>
<td>Industrial Maths</td>
<td>&quot; 40 &quot;</td>
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<tr>
<td>Industrial Science</td>
<td>&quot; 40 &quot;</td>
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<tr>
<td>Industrial Communications</td>
<td>&quot; 20 &quot;</td>
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</table>

700 hours

Students must complete Term A successfully to be eligible to enter Term B.
Term B 5 Months

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware, Trim, Glass</td>
<td>Approx. 14 hours</td>
</tr>
<tr>
<td>Alignment of Body Components</td>
<td>20</td>
</tr>
<tr>
<td>Repairing Damaged Vehicles</td>
<td>391</td>
</tr>
<tr>
<td>Dozer hook-ups and correction of frames</td>
<td>20</td>
</tr>
<tr>
<td>Spray Painting Equipment</td>
<td>16</td>
</tr>
<tr>
<td>Paint Products</td>
<td>20</td>
</tr>
<tr>
<td>Refinishing Vehicles</td>
<td>150</td>
</tr>
<tr>
<td>Estimating Collision Damage</td>
<td>9</td>
</tr>
<tr>
<td>Industrial Maths</td>
<td>20</td>
</tr>
<tr>
<td>Industrial Science</td>
<td>20</td>
</tr>
<tr>
<td>Industrial Communications</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>700 hours</td>
</tr>
</tbody>
</table>

Course Details:

Introduction to Shop: Lecture on safety, personal requirements, shop regulations and course projects.

Welding, Oxy-Acetylene: Equipment, fusion welding, theory, practical and braze welding.

Cutting, Oxy-Acetylene Equipment: Method of using a cutting torch, gas pressures required and safety precautions.

Hand Tools: Glossary of terms, tools and their uses, care and maintenance of tools.

Basic Techniques in Shaping of Metal: Roughing out, hammering on and off dolly, forging, shrinking, picking and filing. Patching, shaping of flanges, crowns, flat metal panels and body construction, tinning and torch soldering.

Alignment of Bodies: Method of alignment of bodies, doors, fenders and component parts.

Power Grinders, Vibrators, Sanding Discs: Methods of using types of discs and uses, production paper wet and dry sandpaper and their uses.

Hardware, Trim and Glass: Door assemblies, windows, headliners, upholstery, mouldings, seats, etc.

Alignment of Body Components: Bumpers, windows, front-end mouldings, etc.

Repairing Damaged Vehicles: Repairing damaged panels, removing and replacing assemblies, analyzing collision damage. Adjusting headlights. Repairing and identifying wiring.

Damage Dozer: Correction hook-ups, sag, mash sidesway, twist, diamond, gauges, estimating damage.

Spray Painting Equipment: Spray guns, hoses, booths, compressors, transformers and safety precautions.
Paint Products: Mixing of colors, matching, stirring, undercoats, top coats, thinners and reducers. Preparation and treatment of metal.

Refinishing of Vehicles: Masking, cleaning of the surface, sanding preparation for painting, glazing, top coat, pre-delivery cleaning of vehicle after painting.

Industrial Mathematics: Review of Mathematics, whole numbers, fractions, decimals, percentages, measurements, area and volumes, estimate forms.

Industrial Science: Mechanics, the oxy-acetylene flame, properties of metals, abrasives, cleaning fluids, corrosion, the spectrum and color, primary, secondary, and tertiary colors. Color charts, enamels and lacquers as used in automobile refinishing.

Industrial Communications: Review of principles of written communications; emphasis on neatness and accuracy, paragraphs, punctuation, writing of business letters, reports, references, and sources of information.

Related Machine Shop: Filing, cutting metal to a line, using electric drills and grinders. Drilling and taping a hole, sizes of bolts and nuts, types of threads, removal of broken stud, repair tool conditioning and tempering, drill bits, their sharpening, and grinding wheels.

Supplies:

Students must supply themselves with coveralls, welding goggles, grinding goggles, tip-cleaners, flint-strikers, and a lock.

Text books and other supplies for this course will cost approximately $35.00 (This is in addition to tuition fees.)
Automotive Mechanical Repair

(Pre-Apprentice)

DURATION — Approx. 10 months,
Part A — 5 months   Part B — 5 months.
(Part B can only be taken after successful completion of Part A)

Pre-requisites:
Grade X or Vocational Preparation Training Level II.

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, Specialist areas. SERVICE FIELDS: Service station operator, Auto parts outlets, Maintenance supervisor.

Course Content:

<table>
<thead>
<tr>
<th>Shop Practice and Hand Tools</th>
<th>approx. 70 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine</td>
<td>270 hours</td>
</tr>
<tr>
<td>Electrical</td>
<td>195 hours</td>
</tr>
<tr>
<td>Fuel System</td>
<td>60 hours</td>
</tr>
<tr>
<td>Engine tune-up</td>
<td>85 hours</td>
</tr>
<tr>
<td>Transmission &amp; Planetary gears</td>
<td>125 hours</td>
</tr>
<tr>
<td>Rear axles &amp; Drive Lines</td>
<td>80 hours</td>
</tr>
<tr>
<td>Brakes</td>
<td>115 hours</td>
</tr>
<tr>
<td>Steering and Suspension</td>
<td>100 hours</td>
</tr>
<tr>
<td>Machine Shop</td>
<td>70 hours</td>
</tr>
<tr>
<td>Welding</td>
<td>35 hours</td>
</tr>
<tr>
<td>Drafting and Blueprint Reading</td>
<td>35 hours</td>
</tr>
<tr>
<td>Industrial Mathematics</td>
<td>70 hours</td>
</tr>
<tr>
<td>Industrial Science</td>
<td>70 hours</td>
</tr>
<tr>
<td>Industrial Communications</td>
<td>20 hours</td>
</tr>
</tbody>
</table>

1400 hours

Course Details:

Shop Practice and Hand Tools: 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.

Engines: Cooling systems, Lubrication systems, Ventilation systems, Two cycle and four cycle internal combustion engines, etc.
Electrical: Wiring diagrams & circuits, Generators, Regulators, Cranking motors, Solenoids and switches, gauges, Ignition systems, etc.

Fuel System: Carburation, Filters, Tanks, Pumps, etc.

Engine Tune-Up: Diagnosis and tune up, Battery Tester. A.V.R. tester and generator. Test machine.

Transmission and Planetary Gears: Three & four speed synchromesh transmissions, Overdrive units and planetary gears, Clutches & pressure plate assemblies, etc.

Rear Axles and Drivelines: Gears and bearings, Tooth patterns, Universal joints, Positraction and limited slip differentials, Transaxles, Axle Shafts, Etc.

Brakes (Hydraulics): Power brakes and pistons and slave units, Machining brake drums and linings.

Steering and Suspension: Springs, shocks, Wheel Balance, Steering geometry, Steering Gears, Steering alignment, etc.

Machine Shop: Measurements, Machine shop layouts, Use of hand tools, Use of machine tools, Fitting and Assembling.

Welding: Introduction to welding techniques, Operation of oxy-acetylene torch, Safety precautions, Cutting, Basic welding.

Drafting and Blueprint Reading: Drafting fundamentals, Scaled drawing sketching, Machine drawings, Electrical schematics.

Industrial Mathematics: Review of arithmetic, whole numbers, fractions, decimals, percentages, measurements, areas, volumes, ratio and proportion, introductory algebra, simple and simultaneous equations, applications to trade calculations.

Industrial Science: Mechanics, physical properties of metals, electricity, properties of gases, fuels, lubricants, heat and thermal phenomena.

Industrial Communications: Review of principles of written communications, paragraphs, punctuation, planning, emphasis on accuracy, technical language, reports, business letters, use of references and sources of information.

Supplies:

Students must supply themselves with coveralls and welding goggles.

Textbooks and other supplies for this course will cost approximately $35.00. (This is in addition to tuition fees.)
Diesel Mechanics and Highway Tractor Maintenance

**DURATION** — Approx. 10 months,

**Pre-requisites:**
Grade X or Vocational Preparation Training Level II.

**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.
5. Equipment suppliers and manufacturers.

As well as finding employment as mechanics, opportunities also exist in a host of related support jobs such as Sales, Equipment Representatives, Parts merchandising and supervisory jobs.

**Course Content:**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engines</td>
<td>approx. 255 hours</td>
</tr>
<tr>
<td>Auxiliary Systems</td>
<td>&quot;</td>
</tr>
<tr>
<td>Running Gear I</td>
<td>&quot;</td>
</tr>
<tr>
<td>Hydraulics and Running Gear II</td>
<td>&quot;</td>
</tr>
<tr>
<td>Machine Shop</td>
<td>&quot;</td>
</tr>
<tr>
<td>Welding</td>
<td>&quot;</td>
</tr>
<tr>
<td>Drafting and Blueprint Reading</td>
<td>&quot;</td>
</tr>
<tr>
<td>Industrial Mathematics</td>
<td>&quot;</td>
</tr>
<tr>
<td>Industrial Science</td>
<td>&quot;</td>
</tr>
<tr>
<td>Industrial Communications</td>
<td>&quot;</td>
</tr>
</tbody>
</table>

1400 hours
Course Details:

Engines: Internal combustion, Compression ignition, High speed Diesels, Tune-up, Trouble shooting, Dynamometer Testing, Overhaul and Servicing.

Auxiliary Systems: Injection pumps, Fuel injection systems, carburetion, Blowers and superchargers, heavy duty electrical generators, regulators, cranking motors, magnetos, ignition systems, etc.

Running Gear I: Use of hand tools, measuring instruments, special equipment, bearings, gears, seals, chains, fasteners, fittings and tubing, drive lines, axles, clutches, transmissions, & Crawler power trains.

Hydraulic & Running Gear II: Torque convertors and fluids, powershift transmissions, front end steering systems, geometry and alignment, brake systems (mechanical and hydraulic), booster and power brakes, hydraulics — principles, systems, formulas, lubrication, types of oils and greases, chassis lubrication.

Machine Shop: Measurement, machine shop layouts, use of hand tools, use of machine tools, fitting and assembling.

Welding: Introduction to welding techniques, operation of oxy-acetylene torch, safety precautions, cutting, basic welding.

Drafting and Blueprint Reading: Drafting fundamentals, scaled drawing sketching, machine drawings, electrical schematics.

Industrial Mathematics: Review of arithmetic, whole numbers, fractions, decimals, percentages, measurements, areas, volumes, ratio and proportion, introductory algebra, simple and simultaneous equations, applications to trade calculations.

Industrial Science: Mechanics, physical properties of metals, electricity, properties of gases, fuels, lubricants, heat and thermal phenomena.

Industrial Communications: Review of principles of written communication, paragraphs, punctuation, planning, emphasis on accuracy, technical language, reports, business letters, use of references and sources of information.

Supplies:
Students must supply themselves with coveralls and welding goggles.
Textbooks and other supplies for this course will cost approximately $35.00 (this is in addition to tuition fees).
Construction Department

Courses:

Carpentry & Woodworking
Masonry
Painting & Decorating
Plumbing
Upholstery

Faculty:

MR. P. ELVERS, B.Sc.
Department Head

Mr. S. Clayton .......... Carpentry
Mr. J. C. Davidson .......... Painting & Decorating
Mr. P. Elvers, B.Sc. .......... Carpentry
Mr. L. Forcese .......... Steamlfitting (Apprentices)
Mr. V. J. Mann .......... Plumbing
Mr. J. Pankiw .......... Plumbing
Mr. D. D. Reid .......... Carpentry
Mr. V. N. Round .......... Upholstery
Mr. G. H. Smith .......... Masonry
Mr. J. Stark .......... Carpentry
Mr. D. Walker .......... Plumbing
Carpentry and Woodworking

(Pre-Apprentice)

**DURATION** — Approx. 10 months,

**Pre-requisites:**
Grade X or Vocational Preparation Training Level II.

**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 either carpentry or woodworking 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.

**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.

**Course Content:**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand Tools</td>
<td>approx. 108 hours</td>
</tr>
<tr>
<td>Woodworking Machines</td>
<td>&quot;     162 &quot;</td>
</tr>
<tr>
<td>Concrete Form Construction</td>
<td>&quot;     108 &quot;</td>
</tr>
<tr>
<td>General Framing</td>
<td>&quot;     108 &quot;</td>
</tr>
<tr>
<td>Equal Pitch Roofing</td>
<td>&quot;     135 &quot;</td>
</tr>
<tr>
<td>Stairs</td>
<td>&quot;     108 &quot;</td>
</tr>
<tr>
<td>Finishing</td>
<td>&quot;     54 &quot;</td>
</tr>
<tr>
<td>Cabinet Work</td>
<td>&quot;     162 &quot;</td>
</tr>
<tr>
<td>Unequal Pitch Roofing</td>
<td>&quot;     73 &quot;</td>
</tr>
<tr>
<td>Insulation</td>
<td>&quot;     8 &quot;</td>
</tr>
<tr>
<td>Estimating</td>
<td>&quot;     27 &quot;</td>
</tr>
<tr>
<td>Surveying</td>
<td>&quot;     27 &quot;</td>
</tr>
<tr>
<td>Drafting &amp; Blueprint Reading</td>
<td>&quot;     120 &quot;</td>
</tr>
<tr>
<td>Industrial Science</td>
<td>&quot;     80 &quot;</td>
</tr>
<tr>
<td>Industrial Mathematics</td>
<td>&quot;     80 &quot;</td>
</tr>
<tr>
<td>Industrial Communications</td>
<td>&quot;     40 &quot;</td>
</tr>
</tbody>
</table>

**Total:** 1400 hours
Course Details:


Woodworking Machines: General Safety Rules, Operations and Maintenance of the following: Table Saw, Radial Arm Saw, Bandsaw, Jigsaw, Jointer, Planer, Shaper, Mortiser, Tenoner, Wood Lathe, Sanding Machines, Portable Power Tools, Powder Actuated Tools.

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.

Framing: Basic Principles of Framing Procedures: One Story House, Balloon Framing, Platform Framing, Procedures for Framing Openings for Doors, Windows, Stairs, etc., Basic Principles Involving Wooden Members in Masonry Building, Insulation, Building Papers, Vapour Barriers.

Roofing: Types of Roofs: Flat Roofs, Gable Roofs, Equal Pitch Hip Roof, Equal Pitch Intersecting Hip Roofs.

Stair Building: Basic types of Stairs, Mathematical Terms and Calculations, Building Code Requirements, Simple, Straight Stairs, Mitered and Housed Stringers, Handrails.

Finishing: Application of Siding, Cornices, Door and Window Trim, Inside and Outside Doors, Closets, Baseboards, Feature Walls, Tile ceilings, etc.


Unequal Pitch Roofing: Intersecting Roofs of Unequal Pitch.


Surveying: Familiarisation with the Builders’ Level and Transit to check Elevations and to Layout Building Lines.

Drafting and Blueprint Reading: Orthographic Projections, Isometric Drawings, Plans, Elevations, Sections, Scaling, Sketching, Building Codes, Local Regulations, Architectural Symbols and Conventions.


Supplies:

Students must provide themselves with rulers (3 foot pocket folding rule and 10' push-pull tape), nail set and pencils. Safety glasses are advisable.

Textbooks and other supplies for this course will cost approximately $30.00.
Masonry
(Pre-Apprentice)

DURATION — Approx. 5 months.

Pre-requisites:
Grade IX, or Vocational Preparation Training Level II. Good health, physically strong and able to endure heights.

Employment Opportunities:
The student who completes the course with a pass mark of 70% in theory and 70% 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.

Course Content:

<table>
<thead>
<tr>
<th>Introductory lecture</th>
<th>approx. 2 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Masonry Materials</td>
<td>17 &quot;</td>
</tr>
<tr>
<td>Basic Tools &amp; Machines</td>
<td>4 &quot;</td>
</tr>
<tr>
<td>Scaffolding</td>
<td>4 &quot;</td>
</tr>
<tr>
<td>Masonry Bonds</td>
<td>32 &quot;</td>
</tr>
<tr>
<td>Definitions</td>
<td>29 &quot;</td>
</tr>
<tr>
<td>Wall Types</td>
<td>6 &quot;</td>
</tr>
<tr>
<td>Laying Out</td>
<td>18 &quot;</td>
</tr>
<tr>
<td>Concrete</td>
<td>4 &quot;</td>
</tr>
<tr>
<td>Field Trips</td>
<td>7 &quot;</td>
</tr>
<tr>
<td>Practical Work</td>
<td>525 &quot;</td>
</tr>
<tr>
<td>Drafting and Blueprint Reading</td>
<td>35 &quot;</td>
</tr>
<tr>
<td>Industrial Mathematics</td>
<td>17 &quot;</td>
</tr>
</tbody>
</table>

700 hours

Course Details:


Masonry Materials: Sand, limes, cements, mortars, bricks, concrete blocks, tiles, shapes, sizes, insulation, flashings.

Basic Tools & Machines: Tool kit and it's uses. Masonry cutting, saws, conveyors, hoists and safety precautions.
Scaffolding: Steel, wood, types and safety precautions.

Bonds: American, Common, English ¼ and ¾ bat; Flemish ¼ and ¾ bat; Dutch: English Cross; Flemish Cross; Monk; Garden Wall; All Rowlock.

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).

Walls: Solid, veneer, cavity, partition, parapet, party, serpentine, retaining spandrel, anchoring, dowelling.

Laying Out: Positioning of materials, storage covering winter/summer; levelling; damp course; windows; doors; blueprint reading.

Concrete: Mixing composition, strengths, steel, reinforced concrete, prestressed concrete, boning rods, levelling, screening, footings, piles, piers, caissons, coffer dams.

Field Trips: Concrete Block and brick manufacturers, cement plant, stone cutting plant. Trips to existing buildings and buildings in course of construction.

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 racking masonry units. Cutting masonry units. Checking levels. Plumbing and levelling. Ranging corners. Tooling. 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.

Drafting and Blueprint Reading: Use of drafting instruments, scale. Types of lines, symbols, isometric drawings (bonds). Plan, elevation, section, one storey building, sketching, blueprint reading, old prints, measurements, visualizing.


Supplies:

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 $25.00.
Painting and Decorating

(Pre-Apprentice)

DURATION — Approx. 5 months.

Pre-requisites:
Grade X or Vocational Preparation Training Level II.

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 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 Content:

Introduction of the course and history of trade approx. 25 hours
Study of basic components of paint
Study of tools
Use, care, and maintenance of equipment
Job organization and quantity estimating
Basic color theory and color mixing
Preparation and application of coatings on Interior and Exterior surfaces
Paint failures, causes, prevention, remedies and Preparation for Recoating Surfaces
The Spray Gun Maintenance and Use
Fundamentals of Wood Finishing
Fundamentals of Paper Hanging and Wall Coverings

Related Subjects:
Industrial Mathematics
Industrial Communications
Industrial Science

Course Detail of Related Subjects:

Industrial Mathematics: Whole Numbers - addition, subtraction, multiplication, division. Fractions - addition, subtraction, multiplication, division. Decimals, Percentages, Measurements, Areas.


Industrial Science: Chemistry of paints, woods, Basic Color theory.

Supplies:
Students must supply themselves with Painter’s Overalls or Pants.
Textbooks and other supplies for this course will cost approximately $35.00.
Plumbing
(Pre-Apprentice)

DURATION — Approx. 10 months.

Pre-requisites:
Grade X or Vocational Preparation Training Level II.

Employment Opportunities:
As 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.

Course Content:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to Plumbing</td>
<td>approx. 80 hours</td>
</tr>
<tr>
<td>Cast Iron Soil Pipe</td>
<td>&quot;</td>
</tr>
<tr>
<td>Galvanized Steel Pipe</td>
<td>&quot;</td>
</tr>
<tr>
<td>Copper Pipe</td>
<td>&quot;</td>
</tr>
<tr>
<td>Lead Pipe</td>
<td>&quot;</td>
</tr>
<tr>
<td>Plastic Pipe</td>
<td>&quot;</td>
</tr>
<tr>
<td>Glass Pipe</td>
<td>&quot;</td>
</tr>
<tr>
<td>Sheet Lead</td>
<td>&quot;</td>
</tr>
<tr>
<td>Lead Burning &amp; Lead Soldering</td>
<td>&quot;</td>
</tr>
<tr>
<td>Plumbing Theory</td>
<td>&quot; 225 &quot;</td>
</tr>
<tr>
<td>Related Machine Shop</td>
<td>&quot; 70 &quot;</td>
</tr>
<tr>
<td>Related Welding</td>
<td>&quot; 70 &quot;</td>
</tr>
<tr>
<td>Industrial Mathematics</td>
<td>&quot; 80 &quot;</td>
</tr>
<tr>
<td>Industrial Science</td>
<td>&quot; 80 &quot;</td>
</tr>
<tr>
<td>Drafting &amp; Blue Print Reading</td>
<td>&quot; 70 &quot;</td>
</tr>
<tr>
<td>Industrial Communications</td>
<td>&quot; 40 &quot;</td>
</tr>
</tbody>
</table>

1400 hours
Course Details:

Introduction to Plumbing: Type of work, Materials, Tools, Fittings, Torches, Safety.

Cast Iron Soil Pipe: Measuring, Cutting, Assembling, Supporting, Caulking, Types and uses of tools for caulkining joints, Mechanical joints, Methods of testing Installations.


Copper Pipe: Types of copper pipe and uses, Methods of assembling, Tools, Torches, Fluxes, Solders, Testing, etc.

Lead Pipe: Uses, Methods of joining, Supporting.

Plastic Pipe: Types, Uses, Methods of joining, Supporting.

Glass Pipe: Uses, Beading, Methods of joining.

All piping projects are constructed to simulate projects in industry and adhering to code regulations.

Sheet Lead: Uses, Forming lead flashings, lead trays, etc.

Lead Burning: Methods of lead burning, lead soldering.

Plumbing Theory: Interpretation of Plumbing Code, Sizing of House sewers, Drains, Soil and Waste Stacks, Vents, etc. Safety, Applying related subjects to the Trade, Builders Level.

Related Machine Shop: Measurements, Machine Shop layouts, use of hand tools, use of machine tools, fitting & assembling.

Related Welding: Introduction to welding techniques, operation of oxy-acetylene torch, Safety precautions, Basic welding, Silver Soldering.

Industrial Mathematics: Review of Arithmetic; whole numbers, fractions, decimals, percentages, square roots, measurements, offsets, cross sectional areas, volume of cylinders, discounts, profit, and losses.

Industrial Science: Weights and measures, Simple machines, Pressures in Liquids, Atmospheric Pressure, Pump Systems.

Related Drafting: Scale Rule, Blueprint reading, Plumbing Symbols, Plan and Elevation Drawings, Isometric Drawings.

Industrial Communications: Principles of written communication, paragraphs, Punctuation, Planning, Emphasis and accuracy, Technical language, Reports, Business letters, Use of references and sources of information.

Supplies:

Textbooks and supplies cost approximately $28.00. (This is in addition to tuition fees.) Students must supply themselves with appropriate coveralls and foot wear for shop work.
Upholstery

**DURATION** — Approx. 10 months,

**Length of Course:** The course is divided into two terms, each of 5 months duration. Students should pass Term A successfully before entering Term B. A certificate of attainment is presented to the students who are successful in Terms A and B.

**Pre-requisites:**
Grade X or Vocational Preparation Training Level II.

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

**Course Content:**

<table>
<thead>
<tr>
<th>Tools and Equipment</th>
<th>Spring Construction</th>
<th>approx. 140 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring Construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burlap and Stuffing Up</td>
<td></td>
<td>140</td>
</tr>
<tr>
<td>Planning Covers)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Putting on Covers)</td>
<td></td>
<td>140</td>
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<tr>
<td>Making Cushions)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foam Rubber Application)</td>
<td></td>
<td>140</td>
</tr>
<tr>
<td>Outsides and Trimmings</td>
<td></td>
<td>140</td>
</tr>
<tr>
<td>General Upholstery</td>
<td></td>
<td>440</td>
</tr>
<tr>
<td>Woodworking</td>
<td></td>
<td>70</td>
</tr>
<tr>
<td>Refinishing</td>
<td></td>
<td>70</td>
</tr>
<tr>
<td>Industrial Communications</td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>Industrial Science</td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>Industrial Mathematics</td>
<td></td>
<td>40</td>
</tr>
</tbody>
</table>

1400 hours

**Course Details:**

**Basic Tools and Equipment:** Use of various hand tools, Cushion Machine, Picking Machine, Sewing Machines, Electric Shears, Foam Cutting Machine.

**Spring Construction:** Webbing, Slatted Seats, Fastening Springs, No-Sag Springs, Unit Springs, Spring Edges, Tying Springs.


Foam Rubber Application: Cutting and Shaping, Fabricating and Cementing, Applying Tack Strips.


General Upholstery: The actual Upholstering and Re-Upholstering of Chesterfield Suites, Foot Stools, Occasional Chairs, etc.


Refinishing: Preparation of Wood, Stains and Colours, Shelacs and Varnish, Spray Gun Application, Touch-up, Care of Brushes.

Industrial Mathematics: Review of Arithmetic, Addition, Subtraction, Multiplication, Division, Whole Numbers, Fractions, Decimals, Percentage, Decimal to Fraction Conversion, Lineal and Square Measure, Application of Arithmetic to Problems Encountered in the Upholstery Trade.

Industrial Science: Colour Theory, Materials, Classification of Principal Fibres, Cleaning Fluids.

Industrial Communications: Review of Principles of written Communication, Paragraphs, Punctuation, Planning, Accuracy, Reports, Business Letters, Use of References and Sources of Information.

Supplies:

Textbooks and other supplies for this course will be approximately $25.00.
Drafting Department

Courses:

Architectural Drafting
Machine Drafting

Faculty:

MRS. P. HUNT
Department Head

Mr. H. Bures, B.Eng., C.E.T.  Machine Drafting
Mrs. P. Hunt  Architectural Drafting
Mr. R. Laurikainen  Architectural Drafting
Mr. A. Schroeder,
B.Sc. (Ed.), C.E.T.  Architectural Drafting
Architectural Drafting

DURATION — Approx. 10 months.

Pre-requisites:
Grade XI with proficiency in Mathematics and Physical Science, or Vocational Preparation Training Level IA.

Employment Opportunities:
Draftsmen and Draftswomen in the following concerns: Architecture, Structural Engineering, Town Planning, Building Sub- Trades. From the position of Draftsman, with experience gained in that field, there is the possibility of advancement into the following situations: Estimating, Specification writing, Technical representative or Salesman of Building Product lines, and Building Inspectors.

Course Content:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Drafting</td>
<td>approx. 86 hours</td>
</tr>
<tr>
<td>Residential Building</td>
<td>140 &quot;</td>
</tr>
<tr>
<td>Industrial Building</td>
<td>633 &quot;</td>
</tr>
<tr>
<td>Structural Drafting</td>
<td>40 &quot;</td>
</tr>
<tr>
<td>Miscellaneous Metal Drafting</td>
<td>40 &quot;</td>
</tr>
<tr>
<td>Millwork Drafting</td>
<td>35 &quot;</td>
</tr>
<tr>
<td>Survey and Topographical Drafting</td>
<td>128 &quot;</td>
</tr>
<tr>
<td>Presentation Drafting</td>
<td>46 &quot;</td>
</tr>
<tr>
<td>Job Site Visits and Training Films</td>
<td>37 &quot;</td>
</tr>
<tr>
<td>Related Mathematics</td>
<td>72 &quot;</td>
</tr>
<tr>
<td>Related Science</td>
<td>72 &quot;</td>
</tr>
<tr>
<td>Business Communications</td>
<td>37 &quot;</td>
</tr>
<tr>
<td>Calculating Machine Operation &amp;</td>
<td>34 &quot;</td>
</tr>
<tr>
<td>Quantity Take-Off</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1400 hours</td>
</tr>
</tbody>
</table>

Course Details:

Basic Drafting: Use and care of Instruments, Blueprinting, Linework, use of Scales, Visualization, Lettering.

Residential Building: Construction methods, use of Building Codes, production of working drawings, knowledge of common building materials.

Industrial Building: Construction methods, use of Building Codes, production of Working Drawings, knowledge of common building materials.
Structural Drafting: Interpretation of Engineer's design sketches, production of Erection Drawings and Shop Drawings.

Miscellaneous Metal Drafting: Production of Shop Drawings and Material Bills.

Millwork Drafting: Production of Shop Drawings.

Survey and Topographical Drafting: Plane surveying, plotting levelling data, Stadia surveying, use of Transit, Topographical plotting and mapping. Field exercises in Chaining, leveling and use of Transit.

Presentation Drafting: Modelling, perspective drawing, presentation drawing.

Job site visits and Training Films: "On the job" visits for observation of conditions in the field. Films on the latest materials and processes related to building and drafting procedures.


Industrial Science: General properties of materials, Vectors, internal effects of forces, relationships between stress and strain, stiffness, proportional limit and ultimate limit of steel and concrete, stress-strain diagrams and factor of safety. Definition of simple and cantilevered beams and simple columns. Riveted, bolted and welded connections. Heat transfer and thermal expansion in materials and buildings.

Business Communications: Spelling and Vocabulary improvement, word usage, paragraph composition, report writing, business etiquette, job interview situations.

Calculating Machine Operation and Quantity Take-Off: Basic operations, combined operations, use of "Memory" retention machine. Quantity Take-off related to all Subtrades. Cost analysis, which includes prorating of Total Cost of Project against the Sub-Trade costs, establishing of costs per square foot and per cubic foot of Building.

Supplies:

Textbooks, instruments and supplies for this course will cost approximately $75.00, (this is in addition to tuition fees).
Machine Drafting

DURATION — Approx. 10 months,

Pre-requisites:
Grade XI with proficiency in Mathematics and Physical Science, or Vocational Preparation Training Level IA.

Employment Opportunities:
A variety of employment opportunities await the trained student in Sheet Metal Working Industries, Tool & Die production, Machine Shop drafting, and Consulting Engineer’s Offices. With experience in some of the above situations, there are the possibilities of advancement into the Technical Representative & Salesmen's field of Metal Working equipment and Products, and Shop Inspectors.

Course Content:

<table>
<thead>
<tr>
<th>Course Content</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Drafting</td>
<td>approx. 444 hours</td>
</tr>
<tr>
<td>Production drawings</td>
<td>360</td>
</tr>
<tr>
<td>Structural Steel &amp; Misc. metals drafting</td>
<td>55</td>
</tr>
<tr>
<td>Sheet metal layout</td>
<td>140</td>
</tr>
<tr>
<td>Engineering Graphics</td>
<td>45</td>
</tr>
<tr>
<td>Survey &amp; Topographical Drafting</td>
<td>92</td>
</tr>
<tr>
<td>Job site visits</td>
<td>12</td>
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<tr>
<td>Presentation Drafting</td>
<td>48</td>
</tr>
<tr>
<td>Related Mathematics</td>
<td>75</td>
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<tr>
<td>Related Science</td>
<td>70</td>
</tr>
<tr>
<td>Business Communications</td>
<td>36</td>
</tr>
<tr>
<td>Calculating machine operation &amp;</td>
<td>23</td>
</tr>
<tr>
<td>Material Take-off</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1400 hours</td>
</tr>
</tbody>
</table>

Course Details:

Basic Drafting: Use and care of Instruments, Blueprinting, Use of scales, Lettering, Geometric construction, Multi-view, Auxiliary, Axonometric and Isometric Projection, dimensioning theories.

Production Drawings: Working drawings to include Threads, Fasteners, Springs, Gears, Cams, Tolerancing. These drawings will include Assembly and detail drawings on specific projects.
Structural Steel & Misc. metals drafting: Interpretation of Engineer's design sketches, production of Erection drawings, & Shop drawings.

Engineering Graphics: Tabulation of data and presentation of facts in Graph form.

Survey & Topographical Drafting: Plane surveying, plotting, Levelling data, Stadia surveying, use of Transit, Topographical plotting and mapping. Field exercises in Chaining, Leveling & use of Transit.

Job site Visits: "On the job" visits for observation of conditions in the field.

Presentation Drafting: The production of Ink drawings as required for Illustration & Promotion purposes.


Industrial Science: General properties of materials, vectors, internal effects of forces, relationships between stress and strain, stiffness, proportional limit and ultimate limit of steel and concrete, stress-strain diagram and factor of safety. Definition of simple and cantilevered beams and simple columns. Riveted, bolted and welded connections.


Calculating machine operation & material take-off: Basic operations, combined operations, use of "Memory" retention machine.

Supplies:
Textbooks, Instruments & supplies for this course will cost approximately $80.00 (this is in addition to tuition fees).
Electrical Department

Courses:

- Electrical Appliance Servicing
- Electrical Course
- Industrial Electrician
- Refrigeration & Air Conditioning

Faculty:

MR. J. RATHJE, Dipl. Ing., P. Eng.
Department Head

- Mr. M. Boroskae
  Electrical
- Mr. A. Bourke
  Appliance Servicing
- Mr. L. Cantin
  Electrical
- Mr. H. Dukelow
  Electrical
- Mr. E. J. Gladyz
  Electrical
- Mr. R. Holder
  Electrical
- Mr. H. L. Johnson
  Electrical
- Mr. M. LaBelle
  Appliance Servicing
- Mr. J. A. A. LaXdal
  Refrigeration
- Mr. J. P. McCoy
  Electrical
- Mr. A. McIntyre
  Electrical
- Mr. R. Nuttall
  Electrical
- Mr. E. G. Patterson
  Electrical
- Mr. J. Rathje, Dipl. Ing., P. Eng.
  Electrical
- Mr. E. Roy
  Electrical
- Mr. R. Schweedic, C.E.T.
  Refrigeration
- Mr. C. Trylinski
  Electrical
Electrical Appliance Servicing

**Duration** — Approx. 10 months,

**Pre-requisites:**
Grade X or Vocational Preparation Training Level II.

**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. Repair of domestic electrical appliances
2. Manufacturing
3. Major appliances firms
4. Electrical repair firms.

**Course Content:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>D.C. Fundamentals</td>
<td>approx. 200 hours</td>
</tr>
<tr>
<td>A.C. Fundamentals</td>
<td>&quot;</td>
</tr>
<tr>
<td>Circuit Analysis &amp; Elec. Code</td>
<td>&quot;</td>
</tr>
<tr>
<td>Elementary Electric Motor</td>
<td>&quot;</td>
</tr>
<tr>
<td>Electric Ranges</td>
<td>&quot;</td>
</tr>
<tr>
<td>Electric Dryers and Ironers</td>
<td>&quot;</td>
</tr>
<tr>
<td>Electric Washing Machine</td>
<td>&quot;</td>
</tr>
<tr>
<td>Domestic Refrigeration</td>
<td>&quot;</td>
</tr>
<tr>
<td>Drafting and Sketching Diagrams</td>
<td>&quot;</td>
</tr>
<tr>
<td>Industrial Mathematics</td>
<td>&quot;</td>
</tr>
<tr>
<td>Industrial Science</td>
<td>&quot;</td>
</tr>
<tr>
<td>Industrial Communication</td>
<td>&quot;</td>
</tr>
<tr>
<td>Related Welding</td>
<td>&quot;</td>
</tr>
</tbody>
</table>

1400 hours

**Course Details:**

**D. C. Fundamentals:** Elementary electron theory, Ohm’s Law in series and parallel circuits; power and energy, heat energy, magnetism and electro-magnetism; relays; connecting wires; measuring instruments; thermocouple.

**A.C. Fundamentals:** Introduction to A.C., heating effect, current and voltages in resistive loads, effect of Inductance Reactance in the circuit, lagging current, Vector diagrams, impedance components, capacitance reactance, leading current, Power factor, Edison Three-Wire System.
Circuit Analysis and Electrical Code: Wire sizes, connectors and terminals, elementary circuitry; circuit analysis of ranges, automatic washing machines, domestic refrigeration and motors, use of testing equipment; Electrical code for appliances.

Elementary Electric Motor: Construction and principle of operation, characteristic, connection, nameplate data, of single phase, capacitor, series, and shaded pole motors, and elementary control.

Electric Ranges: Installation and operation of ranges; components and functions; circuitry and wiring; service practices, customer complaints, poor cooking practices.

Electric Dryers and Ironers: Set-up and customer instruction; analysis of functional parts; checking circuitry of dryer; service problems and repair.

Automatic Washing Machines: Installation and inspection of washers; basic working essentials; operating and function of various makes; electrical components; parts and their replacements; service diagnosis and lubrication; guide lines to washability problems (home economist).

Domestic Refrigeration: Development and growth of modern refrigerators and freezers. Use of tools; refrigeration theory; essential components of a simple refrigeration system; multi-temperature designs and operations; refrigeration problems and diagnosis and repair; Use of service, parts, and price books. Customer Relations. Refrigerants, controls.

Drafting and Sketching Diagrams: Drafting fundamentals, sketching electrical schematics, wirings, pictorial diagram.

Industrial Mathematics: Review of arithmetic; introductory algebra, simple equations, subtraction, multiplication of signed numbers, fractional equation, square root, use of formula, angles, areas, volumes, presentage formula, simultaneous equations, ratio and proportion trigonometric functions, vectors; how to read table of natural function, Law of Cosine.

Industrial Science: (1) Heat temperature, specific heat, sensible heat and latent heat; thermal expansion, thermal expansion of gases, heat transfer. (2) Unit of measurement, work, power, efficiency, force and its effects. (3) Gas law, pressure temperatures, relationship of refrigerants.

Industrial Communications: How to prepare summaries from a text, Public Relations.

Related Welding: Safety precautions in handling tools and equipment pertaining to oxy-acetylene process welding process and basic welding application.

Supplies:
Textbooks and other supplies for this course will cost approximately $70.00. (This is in addition to tuition fees.)
Electrical Course
(Pre-Apprentice)

**DURATION** — Approx. 10 months,

**Pre-requisites:**
Grade X, or Vocational Preparation Training Level II. Grade XI preferred.

**NOTE:** This course is divided into two 5 months sections, part A and Part B. To continue into part B the student must successfully complete part A.

**Employment Opportunities:**

Students who successfully complete Part A may find employment in the electrical construction field. The student who completes Part A and enters the Electrical Construction Trade as an Apprentice will receive credit for Level I of the Apprenticeship program sponsored by the Department of Labor.

Students who successfully complete Part B 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 Part B 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 Labor.

**Course Content:**

**PART A**

**Theory**

- Direct Current Fundamentals .................................. approx. 90 hours
- Direct Current Machines and Controls .................. " 60 "
- Job Fundamentals .................................................. " 30 "
- Residential Blueprint Reading ................................ " 120 "
- Industrial Mathematics ......................................... " 40 "
- Industrial Science ................................................ " 40 "
- Industrial Communication ...................................... " 20 "

**Practical**

- Job Fundamentals .................................................. " 60 "
- Residential Wiring ............................................... " 160 "
- Electrical Laboratory ........................................... " 80 "

700 hours
PART B

Theory

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternating Current Fundamentals</td>
<td>approx. 80 hours</td>
</tr>
<tr>
<td>Three-phase systems and Transformers</td>
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</tr>
<tr>
<td>Alternating Current Machines &amp; Controls</td>
<td>&quot;</td>
</tr>
<tr>
<td>Motor Winding</td>
<td>&quot;</td>
</tr>
<tr>
<td>Commercial Blue-print reading</td>
<td>&quot;</td>
</tr>
<tr>
<td>Industrial Mathematics</td>
<td>&quot;</td>
</tr>
<tr>
<td>Industrial Science</td>
<td>&quot;</td>
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</tbody>
</table>

Practical

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial Wiring</td>
<td>&quot;</td>
</tr>
<tr>
<td>Electrical Laboratory</td>
<td>&quot;</td>
</tr>
<tr>
<td>Motor Winding</td>
<td>&quot;</td>
</tr>
</tbody>
</table>

700 hours

TOTAL 1400 hours

Course Details:

PART A


Job Fundamentals: Filing, drilling, tapping, cutting, soldering, joining, splicing, fastening, measuring, care of tools.

Residential Blue-print reading: Basic methods of blue-print reading and scaling. Application and use of code rules pertaining to house wiring. Low voltage and remote control circuits. Basic 110V circuits using single-double-pole, three and four

**Industrial Mathematics:** Review of arithmetic, adding, subtracting, multiplying, dividing of whole numbers, fractions and decimals, percentage, ratio proportion, square root, algebraic equations.


**Industrial Communications:** Review of principles of written communication, paragraphs, punctuation, planning with emphasis on accuracy, technical language, reports, business letters, use of references and sources of information.

**PRACTICAL**

**Job Fundamentals:** Filing, cutting, marking, measuring, drilling, tapping, hardening, tempering, care of tools.

**Residential Wiring:** Making joints, using Buchanans, Marr, Marrettes, soldering joints, using friction and plastic tapes. Wiring in Loomex, BX, thermoplastic wires to boxes, connectors, switches, receptacles, light fixtures. Wiring of low voltage devices. Installing switch boxes and outlet boxes in frame construction. Wiring of major appliances, wiring of different types of meters. Installing conduit, EMT and rigid, bending, cutting, threading, etc. Wiring of various heating systems.

**Electric Lab:** Measuring of voltage, current, to determine resistance, power, efficiency on various series and parallel circuits. Experiments with D.C. generators, magnetization curve, load voltage tests, generators in parallel. Experiments with D.C. motors to determine counter electromotive force, static torque, load-speed characteristic, efficiency. Motor controls: manual starting, speed control, automatic acceleration, dynamic breaking, reversing, etc.
PART B

Alternating Current Fundamentals: Generation of alternating current. The resistive circuit: RMS and average values of voltage and current. The inductive circuit: inductive reactance, reactive power. The resistive-inductive circuit impedance, apparent power, power factor. The capacitor: electric field, dielectric, Farad, energy in a capacitor, time constant. The capacitive circuit: reactance, reactive power. The inductive-capacitive circuits, resonance, power factor correction.


Industrial Mathematics: Exponents and logarithms, trigonometry, vectors, complex quantities.


PRACTICAL

Commercial Wiring: To wire 2-3-4 wire circuits for 3-phase 4-wire panels, including phasing, balancing and color coding. Wiring recessed fixtures. Wire commercial service including splitter, sub-mains, panels and grounding. Insulation test with megger. Tying in branch circuits in panels. Wiring fire alarm systems, fractional horse power, 3-phase motors, and controls. Installations of fluorescent fixture, dimmer control and replacing ballasts. Installing surface metal raceway and multi outlet assembly. Wiring three-phase three-wire distribution.


Supplies:

Textbooks and other supplies for this course will cost approximately $70.00. (This is in addition to tuition fees.)
Industrial Electrician

DURATION — Approx. 5 months.

Pre-requisites:

Grade XI or Vocational Preparation Training Level I and completion of Part B of Electrical Course OR

Grade X and completion of Part B with a sufficient high standing. OR

Equivalent, as approved by the Admissions Committee.

Employment Opportunities:

Students who successfully complete this course may find employment with:

1. Utility companies
2. Electrical contractors
3. Manufacturers of electrical equipment
4. Industries as they use electrical equipment
5. Distributors of electrical equipment

Course Content:

Theory:

1. DC. - AC. Machines and controls ........................................ 140 hours
2. Instrumentation ............................................................... 60 "
3. Industrial Electronics ....................................................... 60 "
4. Industrial Blueprint reading and Code ................................. 60 "
5. Industrial Math ................................................................. 80 "

Total 400 hours

Practical:

1. DC. - AC. Machines and controls Lab. ............................... 200 hours
2. Electronic Lab. ................................................................. 100 "

Total 300 hours

Course Details:

D.C. - A.C. Machines and Controls

D.C. Generators: Types of armature windings, current path through armature, the field structure and connections, armature reaction, build-up of magnetic field, the series-shunt-and compound generator, generator calculations, generators in parallel.
D.C. Motors: Motor calculations, armature windings, series-shunt- and compound motors, power losses, speed regulation, speed control.

D.C. Motor control: Control relays, across the line starting, use of series starting resistance, manual face plate starters, counter emf. controllers, magnetic time limit controllers, voltage drop acceleration, etc.

A.C. Generators: The revolving field, field discharge circuit, stator windings, ventilation, induced voltage, armature voltage losses, automatic voltage control, saturation curve, name plate data, efficiency, paralleling alternators, hunting.

A.C. Motors: The three-phase induction motor construction, rotating magnetic field, synchronous speed and percent slip, rotor frequency, starting characteristics, motor losses, speed control, code letter identification, name plate data. The wound rotor induction motor: principle of operation, operating characteristics. The synchronous motor: construction operating principles, d-c. field excitation, load on a synchronous motor, power factor, industrial applications, synchronous motor rating.

A.C. Motor controls: Control pilot devices: push button control stations, relays and contactors, timing relays, pressure switches and regulators, float and limit switches, phase failure relays, etc. A-C reduced voltage starter: primary resistor type starters, autotransformer type starters, part winding motor starters, automatic starters for star-delta motors. Three-phase, multispeed controllers: for two-speed two-winding motors, two-speed, one-winding and four-speed, two-winding motors. Wound rotor motor controllers: manual speed control, push button speed selection, automatic deceleration and speed control. Synchronous motor controls: push button synchronizing, timed semi-automatic synchronizing, etc. Methods of deceleration: jog or inch, plugging, electric brakes, dynamic braking, etc.

Development of control circuits: Two and three-wire control circuits, automatic control for a pump, sequence control, forward or reverse control of a motor, with jogging and automatic plugging, selective speed control for a three-speed motor, sequence speed control using control relays, definite-time acceleration control for wound-rotor motor, etc.

Analysis of control circuits: Forward and reverse control for a single motor, start, stop and jog service for a single motor, dynamic breaking for a squirrel cage motor, wye-delta controller, primary-resistance reduced-voltage starter, lockout circuit.
Basic concept of static control: The essentials of static control. Development of logic circuits: magnetic versa logic, development of logic diagrams, basic transistor switch. General Electric Co. static control: theory of operation, signal converters, electric output amplifiers, electric power supplies, special functions, accessory devices.

Instrumentation

D.C. and A.C. electrical instruments: Volt and ammeter, ohmmeter, megger, wheatstone bridge, potentiometer, wattmeter, varmeter, power factor meter, phase angle meter, synchroscope, frequency meter, recording instruments, thermal converters.

Process control instruments: Thermometer, glass, bimetallic, pressure spring, resistance, pyrometers. Pressure: monometers, bellows, pressure springs, pressure transducers. Flow meters, differential pressure, variable area, positive displacement, velocity. Humidity: absolute, relative, dew point, moisture, etc.

Electronics

Vacuum tubes: Diode, triode, pentode, principle of operation, characteristics.


DC Motor control: Thyatron control of speed of DC motors, automatic control of motor speed, electronic motor control for fractional-horsepower, DC shunt motors, etc.
Industrial Blueprint Reading and Code

Industrial Math: Slide Rule Operation and powers of ten; Vectors; Boolean Algebra; Electronic Logic Circuits; Number systems; Binary Arithmetic.

Practical


AC motor control: Connecting control circuits using push button stations, relays, contactors, timing relays, pressure-float-limit switches, etc. Connecting various reduced voltage starters, multi-speed controllers to three-phase induction, and V wound & rotor motors. Employing various methods of deceleration, etc. Using static controls to build motor control circuits.

Electronics: Experiments with gaseous tubes, rectifiers, thyatrons, phase-shift controls, phototubes, electronic relays, timers, transistors, phototransistors, saturable reactors, peaking transformer, automatic control of motor speed, etc.

Supplies:
Textbooks and other supplies for this course will cost approximately $60.00.
Refrigeration and Air Conditioning
(Pre-Apprentice)

DURATION — Approx. 10 months.

Pre-requisites:
Grade XI or Vocational Preparation Training Level IA.

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.

Course Content:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety and Fundamentals</td>
<td>60</td>
</tr>
<tr>
<td>Basic Refrigeration Systems</td>
<td>190</td>
</tr>
<tr>
<td>Commercial Systems</td>
<td>400</td>
</tr>
<tr>
<td>Calculations</td>
<td>90</td>
</tr>
<tr>
<td>Basic Air Conditioning Systems</td>
<td>50</td>
</tr>
<tr>
<td>Refrigeration Electrical</td>
<td>180</td>
</tr>
<tr>
<td>Controls and Control Systems</td>
<td>80</td>
</tr>
<tr>
<td>Industrial Mathematics</td>
<td>80</td>
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<tr>
<td>Industrial Communications</td>
<td>40</td>
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<tr>
<td>Industrial Science</td>
<td>80</td>
</tr>
<tr>
<td>Shop Drawing and Blueprint Reading</td>
<td>40</td>
</tr>
<tr>
<td>Machine Shop</td>
<td>60</td>
</tr>
<tr>
<td>Welding</td>
<td>60</td>
</tr>
</tbody>
</table>

Total: 1400 hours
Course Details:

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.

Basic Refrigeration Systems: The refrigeration cycle. Compressors, condensers, refrigerant metering devices, evaporators, refrigerants, oils, temperature controls, charging and testing systems.

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.

Calculations: Compressor capacities, speed ratios, evaporator capacity, pipe sizing and component selection.

Basic Air Conditioning Systems: Direct expansion, water chiller, single, multiple, air and its properties. Types of compressors used. Fans, filters, and air distribution systems.

Refrigeration Electrical: Electrical circuits, magnetism, motors, relays, controls and control systems. Electrical code as pertaining to refrigeration equipment.


Machine Shop: Measurements and use of measuring instruments, use of tools, drills, chisels, taps, bolt dies, etc.

Welding: Care and use of equipment, methods of soldering, silver soldering, brazing, and welding.

Shop Drawing and Blueprint Reading: Use of drafting instruments, drawing to scale and not to scale, sketching, dimensioning, symbols, graphs, piping drawings.

Industrial Science: Heat, refrigerants, psychrometry, cooling, cooling loads and ventilation.

Industrial Communications: Correction of grammatical errors, punctuation, spelling, types of business, letter writing, report writing.

Industrial Mathematics: Fractions, addition, subtraction, multiplication, division, decimals, percentages, square root, use of formulas, calculations, algebra, ratio and proportion.

Supplies:
Students must supply themselves with welding goggles, proper clothing, writing paper, etc.
Electronics Department

Courses:

Basic Electronics Servicing
Industrial Electronics
Radio Operating & Electronics Communications
T.V. Servicing

Faculty:

MR. J. D. SKINNER
Department Head

Mr. G. W. Donaldson .................. Radio Operating
Mr. R. Foulds .......................... Industrial Electronics
Mr. G. O. Gaboury .................... Basic Electronics
Mr. J. F. Gemmel ...................... Radio Operating
Mr. L. Herrington ..................... Basic Electronics
Mr. F. Reid ............................ T.V. Servicing
Mr. J. D. Skinner ..................... Basic Electronics
Basic Electronics Servicing

DURATION — Approx. 10 months,

Pre-requisites:
Grade XI with proficiency in Mathematics and Physics, or Vocational Preparation Training Level IA.

Employment Opportunities:
Graduates have carried on into television servicing or industrial electronic courses, or into the employment field with railway communication systems, telephone systems, aviation electronic firms, broadcast stations, and sound engineering firms. Students are also employed by I.B.M., Burroughs, Underwood, Minneapolis Honeywell, Remington-Rand, Kodak Company, Toledo Scale Company, parimutuel operators, and other firms where new equipment requires that the service technician has a good electronic background.

Course Content:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Electricity</td>
<td>approx. 210 hours</td>
</tr>
<tr>
<td>Power Supplies</td>
<td>105</td>
</tr>
<tr>
<td>Vacuum Tubes and AF Amplifiers</td>
<td>140</td>
</tr>
<tr>
<td>Radio Frequency Circuits</td>
<td>105</td>
</tr>
<tr>
<td>Superheterodyne Circuits</td>
<td>140</td>
</tr>
<tr>
<td>Semiconductors and Transistors</td>
<td>140</td>
</tr>
<tr>
<td>Test Equipment</td>
<td>105</td>
</tr>
<tr>
<td>Servicing procedures</td>
<td>210</td>
</tr>
<tr>
<td>Drafting</td>
<td>35</td>
</tr>
<tr>
<td>Industrial Mathematics</td>
<td>105</td>
</tr>
<tr>
<td>Industrial Science</td>
<td>70</td>
</tr>
<tr>
<td>Industrial Communications</td>
<td>35</td>
</tr>
</tbody>
</table>

1400 hours

Course Details:

Basic Electricity: Electron theory — Series and parallel circuits; Ohm's law and power calculations and measurements; Use of multimeter; Capacity and inductance; Reactance and impedance Calculations; Graphs and vectors; Phase relationships; Resonant Circuits;

Power Supplies: Transformer type; A.C.-D.C. supplies; Half and full wave voltage doublers; Bridge rectifiers; Battery eliminators; Vibrator supplies; Voltage regulation.
Vacuum Tubes and A.F. Amplifiers: Tube characteristics; Stage gain; Amplifier circuits; Phase relationship; Inverse feedback; Distortion; Load lines; Push-pull circuits; Phase inverters; Tone controls; Speaker matching.

Radio Frequency Circuits: R.F. signals; Oscillators; Modulation; R.F. amplifiers; Neutralizing; Manual and Automatic gain control; Band pass circuits; Shielding; Basic transmitter circuit.

Superheterodynes: Detectors and Mixers; Oscillator tracking; Image and beat interference; Alignment procedures; A.V.C. circuits; Sweep generators and oscilloscopes.

Semi Conductors: Diodes and transistors; Amplifier configurations; Biasing requirements and measurements; Thermal runaway; Input impedance; Common amplifier and power amplifier circuits; A.V.C. circuits and A.V.C. diodes; Heat sinks.

Test Equipment: Volt-Ohm-Milliammeter; Vacuum tube voltmeter; Tube testers; Transistor testers; A.M. and F.M. signal generators; Capacity and impedance bridge; Power supplies; Signal Tracers; Oscilloscopes.

Servicing Practice: Use of service manuals; Record players; Record changers; Tape recorders; Car radios; Intercoms; F.M. Circuits.

Practical: Time is divided approximately equally between lecture room and shop work. Students build and test the circuits that are covered in lecture periods. Actual repairs on receivers, record players, and recorders are done during the last half of the course.

Industrial Mathematics: Operation of Slide Rule; Algebra review; Trigonometry; Periodic Functions; Elementary Plane Vectors; Complex Numbers and the j Operator; A.C. circuit applications; Theory and use of logarithms in Electronics.


Supplies:
Textbooks and other supplies for this course will cost approximately $30.00.
T.V. Servicing

**DURATION** — Approx. 5 months.

**Pre-requisites:**
Complete Basic Electronics Servicing Course, or three years relevant experience in Industry.

**Employment Opportunities:**
Students who successfully complete this course find employment in television broadcasting, television servicing, communications and related electronic industries in an installation, operating, or maintenance capacity.

**Course Content:**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Television Transmission and Standards</td>
<td>approx. 50 hours</td>
</tr>
<tr>
<td>The Signal Circuits</td>
<td>130 &quot;</td>
</tr>
<tr>
<td>The Deflection Circuits</td>
<td>130 &quot;</td>
</tr>
<tr>
<td>Auxiliary Circuits</td>
<td>100 &quot;</td>
</tr>
<tr>
<td>Transistor Television Receivers</td>
<td>50 &quot;</td>
</tr>
<tr>
<td>Color Television</td>
<td>115 &quot;</td>
</tr>
<tr>
<td>Test Equipment and Shop Planning</td>
<td>35 &quot;</td>
</tr>
<tr>
<td>Industrial Science</td>
<td>35 &quot;</td>
</tr>
<tr>
<td>Industrial Mathematics</td>
<td>35 &quot;</td>
</tr>
<tr>
<td>Industrial Communications</td>
<td>20 &quot;</td>
</tr>
</tbody>
</table>

700 hours

**Course Details:**

**Television Transmission and Standards:** Standards for Television. A.M. transmitters and the visual transmitter, F.M. transmitters and the aural transmitter, single sideband and suppressed carrier transmission, the transmission of color. The NTSC system. The Image Orthicon and Vidicon camera tubes, and television cameras. The Sync generator. Antennas and transmission lines.

**Television Receivers I. - The Signal Circuits:** Wideband amplifiers, RF, VIF, and Video amplifiers. Sweep and Marker Generators, response of VF amplifiers. The Cathode Ray and Brightness Circuits, Trigun Color Picture tube, Purity and Convergence adjustments in color receivers. Chrominance and luminance circuits in color receivers. Sound Systems - Intercarrier sound, FM detectors, alignment and troubleshooting of sound systems.
Television Receivers II - The Deflection Circuits: Deflection generators, the blocking oscillator and multivibrator. Synchronizing the deflection circuits. AFC systems, synchroguide, Synchrolock and phase detector. Vertical and Horizontal output systems. High voltage and booster supplies. Deflection in color receivers, troubleshooting the deflection circuits and alignment of the horizontal output in color receivers. Convergence circuits in color receivers.

Television Receivers III - The Auxiliary Circuits: Sync: Wave shaping circuits, differentiating and integrating circuits, RC time constants. Clipping circuits, the sync separator, Noise cancelling and gated sync separator. Synchronizing the deflection circuits. Color sync and the AFPC system. Alignment and trouble-shooting. Power supplies: tube and solid rectifiers and regulators, half wave, full wave and bridge circuits, stacked supplies.

Television Receivers IV - Transistor Receivers: Semiconductor and transistor theory. Transistor television receivers.

Shop Planning and Equipment: Test equipment used in electronic servicing. Planning a shop. Customer relations, charges and guarantees on service work. Sidelines to add stability to the business, closed circuit TV, Master Antenna and Sound systems.

Industrial Mathematics: Review of Slide Rule operation and powers of ten; Kirchoff's laws; Review of Trigonometry; Vectors; Periodic functions; Theory and use of logarithms in electronics.

Industrial Science: Light, colorimetry, electron emission, optics and deflection.

Industrial Communications: The related communications course is a continuation of the course given to the students of "Basic Electronics" and covers the following areas:

1. Writing of technical information sheets.
2. Preparation and presentation of oral reports using topics directly related to the area of electronics.
3. Discussion and study of Business Orientation topics.

Supplies:

Costs of books and other supplies approximately $35.00.
Industrial Electronics

**DURATION** — Approx. 5 months.

**Pre-requisites:**

Complete Basic Electronics Servicing Course or Equivalent Background and Training. (Refer to Pre-requisites for Basic Electronics Servicing).

**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 Control 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 built 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 Content:**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Gas-Filled Electron Tube</td>
<td>approx. 30 hours</td>
</tr>
<tr>
<td>The Thyatron</td>
<td></td>
</tr>
<tr>
<td>Phase-Shifting Circuits</td>
<td></td>
</tr>
<tr>
<td>The Phototube</td>
<td></td>
</tr>
<tr>
<td>Relays</td>
<td></td>
</tr>
<tr>
<td>Semiconductors</td>
<td></td>
</tr>
<tr>
<td>Motor Control Circuits</td>
<td></td>
</tr>
<tr>
<td>Pulse Circuits</td>
<td></td>
</tr>
<tr>
<td>Industrial Mathematics</td>
<td></td>
</tr>
<tr>
<td>Industrial Science</td>
<td></td>
</tr>
<tr>
<td>Industrial Communications</td>
<td></td>
</tr>
</tbody>
</table>

700 hours
Course Details:

The Gas-Filled Electron Tube: The process of ionization, comparison with vacuum tube, DC applications, rectifier applications.

The Thyatron: Theory and operation, Basic circuits employing thyatrons, as a control element, amplitude and phase-shift control.


The Phototube: Light sensitive materials. Phototube construction and operation. DC circuit applications. AC circuit applications.

Relays: Basic theory and types of relays. DC circuit applications. AC circuit applications. Time-delay circuits.

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


Industrial Mathematics: Review of Slide Rule Operation and powers of ten; Electronic logic circuits; Boolean Algebra; Numbering Systems, Binary Arithmetic.

Industrial Science: Properties of light. Semiconductors, conductors and insulators.

Industrial Communications: Information sheets. Preparation of related information topics.

Supplies:

Students are required to provide small hand tools necessary to circuit building.

Textbooks and miscellaneous expenses will total approximately $35.00.
Radio Operating and Electronic Communication

**Duration** — Approx. 11 months.

**Pre-requisites:**
Grade XI with proficiency in Mathematics and Physics or Vocational Preparation Training Level IA.

**Employment Opportunities:**
Students who successfully complete this course, and pass the Department of Transport examinations will qualify for a Radio Operators license. This license is accepted internationally, and opens the way for a wide variety of careers with the Department.

In addition to joining the D.O.T., the student may find employment as an operator or technician with the following: Airlines, Railways, Police Departments, Coast Guard, Telephone companies, or other firms who require students with electronic training.

Graduates in good health (no glasses) may work up to Air Traffic Control.

**Course Content:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fundamentals of Electronics</td>
<td>approx. 70 hours</td>
</tr>
<tr>
<td>Advanced Electronic Theory</td>
<td>&quot; 70 &quot;</td>
</tr>
<tr>
<td>Electronic Circuits</td>
<td>&quot; 70 &quot;</td>
</tr>
<tr>
<td>Communication Receivers</td>
<td>&quot; 100 &quot;</td>
</tr>
<tr>
<td>Communication Transmitters</td>
<td>&quot; 130 &quot;</td>
</tr>
<tr>
<td>Frequency Modulation</td>
<td>&quot; 45 &quot;</td>
</tr>
<tr>
<td>Measuring Equipment and Meters</td>
<td>&quot; 45 &quot;</td>
</tr>
<tr>
<td>Special Equipment</td>
<td>&quot; 140 &quot;</td>
</tr>
<tr>
<td>Morse Code (Sending, Receiving)</td>
<td>&quot; 650 &quot;</td>
</tr>
<tr>
<td>Regulations and Accounting</td>
<td>&quot; 120 &quot;</td>
</tr>
<tr>
<td>Related Subjects</td>
<td>&quot; 100 &quot;</td>
</tr>
</tbody>
</table>

Total: 1540 hours

**Course Details:**

Advanced Electronic Theory: Resistive, capacitive and inductive circuits, resonant circuits, transformers, vacuum tube theory, transistor theory.

Electronic Circuits: Power supplies, audio frequency amplifiers, radio frequency amplifiers, cathode followers, oscillators, multi-vibrators, detectors, AGC circuits, transistorized circuits.

Communication Receivers: Tuned radio frequency receivers, Communications superheterodyne receivers, bandspreading, selectivity controls and methods, alignment, servicing and fault finding, noise limiters, heat frequency circuits and I.F. circuitry.

Communication Transmitters: Basic transmitter design and operation, Advanced transmitter design and operation, Types and methods of amplitude modulation, Methods of keying, Aerial Matching circuits, Transmission lines, Servicing and Fault finding, Tuning procedures.

Frequency Modulation: F.M. receiver design and operation, Types and methods of detection, and limiter stages. F.M. transmitter design, Methods of modulation, General operation of above.

Measuring Equipment and Meters: Voltmeters, Ammeters, Ohmmeters, Vacuum tube voltmeters, Oscilloscopes, Meters for use with audio frequency, High frequency generators, Heterodyne wave meters.

Special Electronic Equipment: Direction finding equipment, Automatic sending equipment, Automatic recorders, Emergency receivers and transmitters, Servicing, Maintenance, and signal tracing of above.

Morse Code, Sending and Receiving: Instruction and practice to enable the student to send and receive the International Morse Code at the rate of 20 words per minute.

Regulations and Accounting: International regulations pertaining to the handling of traffic, sending and receiving messages and distress routines. Methods of calculating tariffs on above messages and accounting for same.

Industrial Mathematics: Operation of Slide Rule, Algebra review; Trigonometry; Periodic Functions; Elementary Plane Vectors; Series-Parallel A.C. circuit applications; Theory and use of logarithms in electronics.

Industrial Science: Pertaining to the electron theory, Properties of magnetic fields and electrostatic fields, Properties of capacitance, and Inductance, Semi conductors, Methods of producing electricity.
Industrial Communications: Principles of written communications, technical language, reports, business letters.

Supplies:

All students must supply themselves with the necessary pens, pencils, note books and stationery for the course.

Textbooks and other supplies will cost approximately $35.00. (this is in addition to tuition fees.)
Food Services Department

Courses:

Chef Training Course
Commercial Baking
Commercial Cooking
Food Service Supervisors
Meat Cutting
Restaurant Cooking

Faculty:

MR. J. G. CARTWRIGHT
Supervisor of Food Services

Mr. J. G. Cartwright .................. Commercial Cooking
Mr. D. Gray .......................... Commercial Baking
Mr. L. W. Gross ...................... Commercial Cooking
Mr. O. Kirzinger ....................... Restaurant Cooking
Mr. R. Marsh ........................ Meat Cutting
Mrs. S. Stevens, B.Sc. .............. Food Service Supervisor
Mr. N. Terrick ......................... Lab. Student Supervisor
Chef Training Course

DURATION — 10 months.

Pre-requisites:

1) Grade X or Vocational Preparation Training Level II.

2) Successfully passed an 8-12 month Commercial Cooking course with an average of at least 70% from a recognized training Institute

OR

Two years of general cooking in a commercial establishment and pass a written achievement test at M.I.T.

3) General good health. Recent Medical, Dental and Chest X-Ray certificates will be required from each applicant before commencing course.

Employment Opportunities:

A wide variety of higher level employment is available to successful graduates of this course in food services in Hotels, Motor Hotels, Restaurants, Institutions, in-plant feeding and Catering Companies.

Course Details:

Short review of previous accomplishments.

Foods: Theory and practical of basic nutrition, purchasing and production, advanced foods, buffets, equipment and layout, accounting and records, Industrial Maths and Communications.

This course is designed to train our students for a place close to management with a full knowledge of foods, production and quality.
Commercial Baking

DURATION — Approx. 9 months.

Pre-requisites:

Grade X, or Vocational Preparation Training Level II. General good health. Recent Medical, Dental & Chest X-Ray Certificates will be required from each applicant before commencing training.

Employment Opportunities:

Students who successfully complete this course may find employment as a Baker or Baker's Helper in several interesting fields, such as: Large & Small Bakeries, In-Store Bakeries, Hotels, Restaurants, Cafeterias, Northern Work Camps.

As well as finding employment as a Baker, the progressive student may aspire to a higher position as Ovensman, Doughman and also in a Supervisory capacity.

Course Content:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bread Rolls &amp; Sweet Doughs</td>
<td>310</td>
</tr>
<tr>
<td>Fruit &amp; Cream Pies</td>
<td>300</td>
</tr>
<tr>
<td>Cake Making - Varieties</td>
<td>260</td>
</tr>
<tr>
<td>Puff Pastry</td>
<td>70</td>
</tr>
<tr>
<td>Doughnuts</td>
<td>75</td>
</tr>
<tr>
<td>Cookies</td>
<td>70</td>
</tr>
<tr>
<td>Oven Work</td>
<td>135</td>
</tr>
<tr>
<td>Sanitation &amp; Measurements</td>
<td>5</td>
</tr>
<tr>
<td>Safety</td>
<td>18</td>
</tr>
<tr>
<td>Industrial Mathematics</td>
<td>12</td>
</tr>
</tbody>
</table>

Total: 1260 hours

Course Details:

Bread Rolls & Sweet Doughs: Measuring & sifting dry ingredients, Temperature Controls, Fermentation Theory, Mixing Procedures, Dough Conditioning, Moulding & Handling, Theory on all dry Ingredients, Storage, Proofing, Baking Temperatures.


Doughnuts: Mixing procedures for Yeast raised & Cake Doughnuts, Dough Handling, Proofing, Frying Temperatures, Fats & their uses, Icings & Finishings, Doughnut Faults & their causes.

Cookies: Plain, Fruit, & Refrigerated varieties, Mixing Procedures, Cutting & Handling methods, Baking temperatures, Common Cookie Faults & their causes.


Safety: Machinery & its uses, Practical demonstration on Operating each machine, recommended Safety Practises, Industrial Housekeeping.


Industrial Communication: Paragraphs, punctuation, emphasis and accuracy in writing, plans, styling and organizing, selecting and stressing the technical language, general directions for letter writing, mechanics of letters, tone in letters, selected business letters, effectiveness in content.

Supplies:

Students must supply themselves with White Jackets, Pants & Hats. Textbooks and other supplies for this course will cost approximately $30.00. (This is in addition to tuition fees.)
Commercial Cooking

**DURATION — Approx. 10 months,**

**Pre-requisites:**

Grade X, or Vocational Preparation Training Level II. General Good Health; Recent Medical, Dental and Chest X-Ray certificates required from each applicant before commencing training.

**Employment Opportunities:**

A wide variety of employment situations is available to the successful graduates from this course in kitchens of - Hotels; Motor Hotels; Restaurants; Hospitals; Institutions; In-Plant Feeding; Catering Companies.

**Course Content:**

<table>
<thead>
<tr>
<th>Tools and Equipment</th>
<th>approx. 6 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety Practices</td>
<td>&quot; 6 &quot;</td>
</tr>
<tr>
<td>Sanitation</td>
<td>&quot; 9 &quot;</td>
</tr>
<tr>
<td>Measurements</td>
<td>&quot; 4 &quot;</td>
</tr>
<tr>
<td>Principles of Cookery</td>
<td>&quot; 35 &quot;</td>
</tr>
<tr>
<td>Stocks, Soups and Sauces</td>
<td>&quot; 70 &quot;</td>
</tr>
<tr>
<td>Vegetables and Potatoes</td>
<td>&quot; 70 &quot;</td>
</tr>
<tr>
<td>Entrees - Meat, Poultry, Fish, Extender, &amp; Meatless</td>
<td>&quot; 580 &quot;</td>
</tr>
<tr>
<td>Kitchen Management, Nutrition &amp; Service</td>
<td>&quot; 170 &quot;</td>
</tr>
<tr>
<td>Meat Cutting</td>
<td>&quot; 140 &quot;</td>
</tr>
<tr>
<td>Short Order Section</td>
<td>&quot; 280 &quot;</td>
</tr>
<tr>
<td>Industrial Mathematics</td>
<td>&quot; 18 &quot;</td>
</tr>
<tr>
<td>Industrial Communications</td>
<td>&quot; 12 &quot;</td>
</tr>
</tbody>
</table>

1400 hours

**Course Details:**

**Tools & Equipment:** Types of tools used in the cooking trade, stressing their care and maintenance. The kinds of equipment in kitchens including peelers, cutters, slicers, ranges, fryers, broilers, ovens and all steam equipment.

**Safety Practices:** General safety rules as needed in a kitchen to avoid accidents. Emphasis is placed on the need for good habits in the handling of tools and equipment in the kitchen. Fire regulations and precautions are also covered.
Sanitation: Personal Hygiene, Bacteria and disease, the Handling of food to avoid contamination. Sanitation and cleaning of all equipment, tools, dishes, cutlery, and glassware. The use and handling of detergents and other cleaning agents and tools. Pest control. Garbage Disposal and control.

Measurements: Types of measures, where and when used. Weight and Volumes. Conversions.


Stocks, Soups & Sauces: Basic stock preparation covering ingredients, methods, clarification and use. Soup making includes the following kinds - clear, cream, vegetable stock, purees, chowders, national and specials. Sauces - Basic sauces and their derivatives. Miscellaneous sauces and gravies. Ingredients, preparation techniques, care and uses.

Vegetables & Potatoes: Kinds, quality and standards - frozen, fresh, canned. Various preparation and cooking techniques with emphasis on small batch cooking, temperatures and timing. Vegetable sauces, garnishes, and combinations.

Entrees — Meat: Beef, pork, ham, veal and variety Meats. Roasts, steaks, chops, cutlets and braised items. Preparation, cooking and serving methods.

Entrees — Poultry: Turkey and Chicken. Preparation, cooking and serving methods. Quality and standards.


Entrees — Extender Dishes: Italian Pastes, Rice, Pastry items, Creamed dishes and Casseroles.

Entrees — Meatless: Egg, cheese and dry legume dishes.


Meat Cutting: Grades, quality and storage. Hotel cutting of beef hinds, and fronts, veal sides, pork sides and lamb carcasses. Poultry — eviscerating, boning, portioning of Turkey and Chicken. Use and care of butchery equipment.
Fish — Cleaning whole fish (vertebrates), filleting, skinning, scaling, portioning, and boning. Shell fish - shelling, shucking, cleaning and cracking of shrimps, lobsters, clams, oysters and scallops.

Short Order Section

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakfast Cookery</td>
<td>approx. 93 hours</td>
</tr>
<tr>
<td>Soda Fountain Work</td>
<td>&quot;</td>
</tr>
<tr>
<td>Pantry Work</td>
<td>18 &quot;</td>
</tr>
<tr>
<td>(Salads, Sandwiches, Appetizers)</td>
<td>100 &quot;</td>
</tr>
<tr>
<td>Beverages</td>
<td>23 &quot;</td>
</tr>
<tr>
<td>Service</td>
<td>46 &quot;</td>
</tr>
</tbody>
</table>

Total: 280 hours

Course Details:

Breakfast Cookery: Egg Quality and Standards, principles and techniques used in cooking a variety of egg dishes, cereals, pancakes and products as used on Breakfast Menu’s.

Soda Fountain Work: Ice Cream products, types, quality factors, make-up, storage, methods and service of items associated with frozen desserts and fountain items.


Industrial Mathematics: Review of arithmetic and rapid calculation; stressing decimals, percentages, fractions and proportion as applied to trade calculations.

Industrial Communications: Review of principles of written communications, Paragraphs, punctuation, planning, reports, business letters and other items as applied to the trade.

Field Trips:

Selected by Instructor and provided through the courtesy of the Manitoba Branch of the Canadian Restaurant Association.

Supplies:

Textbooks and other supplies for this course will cost approximately $55.00. (This is in addition to tuition fees.)
Food Service Supervisors Course

DURATION — Approx. 10 months,

Pre-requisites:

1) Grade X, or Vocational Preparation Training Level II.
2) General good health. Recent Medical, Dental and chest X-Ray certificates will be required from all applicants.

Some previous experience in the Food Industry is desirable.

Employment Opportunities:

A wide variety of employment situations is available to the successful graduates from this course. A few of the employing agencies are as follows: Hospitals; Institutions; In-Plant Feeding; Catering Companies; Hotels; Motor Hotels; Restaurants; Resorts; Lodges; Clubs.

Course Content:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food (theory and practical)</td>
<td>approx. 330 hours</td>
</tr>
<tr>
<td>Human Relations &amp; Psychology</td>
<td>255</td>
</tr>
<tr>
<td>Basic Nutrition &amp; Physiology</td>
<td>45</td>
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<tr>
<td>Nutrition &amp; Diet Therapy</td>
<td>100</td>
</tr>
<tr>
<td>Sanitation, Health &amp; Safety</td>
<td>70</td>
</tr>
<tr>
<td>Equipment &amp; Layouts</td>
<td>115</td>
</tr>
<tr>
<td>Housekeeping Practices</td>
<td>45</td>
</tr>
<tr>
<td>Food Service, Table, Cafeteria, etc.</td>
<td>70</td>
</tr>
<tr>
<td>Accounting &amp; Record Keeping</td>
<td>115</td>
</tr>
<tr>
<td>Communications</td>
<td>70</td>
</tr>
<tr>
<td>Industrial Mathematics</td>
<td>140</td>
</tr>
<tr>
<td>Physical Education</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>1400 hours</td>
</tr>
</tbody>
</table>

Course Details:

Food: Menus, Purchasing & Products, Production, Distribution (belt lines, etc.) Portioning, Recipe Development.

Human Relations & Psychology: Introduction to Psychology; Modern Trends, Personnel Management, Supervisory Techniques.

**Nutrition & Diet Therapy:** Further concepts of Nutrition, Correction of Undesirable Physiological Conditions by Diet.

**Sanitation, Health & Safety:** Principles of Sanitation, Local By-Laws Concerning Health & Sanitation, Safety Principles and Precautions.

**Equipment & Layouts:** Kitchen equipment - all types - uses and care of; arrangement of equipment for flow of production, holding, serving - storage facilities - field trips to hospitals, hotels, restaurants, etc.

**Housekeeping Practices:** Care & Cleaning of equipment, Maintenance, care of floors and furniture, garbage disposal - cleanliness, laundry - dishwashers.

**Food Service, Table, Cafeteria, etc.:** All types of food serving - cafeteria, table, hot and cold cart, smorgasbord, buffet and room service.

**Accounting & Record Keeping:** Types of accounts and accounting - buying, paying, wastage, stock keeping and inventory-hours and salaries.

**Communications:** Oral and written, employer-employee relationship, customer relationship - letters, reports, menus, forms, purchasing, terminology.

**Industrial Mathematics:** Weights and measures, metric system, decimals, checking invoices, budgeting and cost control.
Meat Cutting

DURATION — Approx. 5 months.

Pre-requisites:
Grade X, or Vocational Preparation Training Level II, a recent medical certificate from a qualified M.D. attesting to sound physical fitness and free from contagious diseases and infections. Dental certificate attesting to sound teeth, X-Ray certificate attesting to a negative reading.

Employment Opportunities:
Students who complete this course with good marks in theory and practical work, may find employment as meat cutters in several fields or use the training in still other employment, such as:
1. Chain stores, private owned stores, as meat cutters or meat managers, cutters in government institutions, hospitals, penitentiaries, etc.
2. Packing house as cutters, salesman, shipping, etc.
3. Government employment as assistant meat inspectors, government graders assistant, inspector in weights and measures.

Course Content:
The Meat Cutter and his Trade approx. 55 hours
Tools and Equipment of the Trade " 26 "
Factors Governing the Balance of Profit & Loss " 38 "
Meat Composition " 23 "
Butchery (Meats) " 365 "
Butchery (Fish) " 23 "
Butchery (Poultry) " 70 "
Meat Preparations " 48 "
Salesmanship " 52 "
700 hours

Course Details:
Meat Cutter and His Trade: Introduction and orientation, safety habits, sanitation habits to observe in the trade, first-aid rules in the shop, shop foreman responsibilities, employer-employee relations.

Tools and Equipment of the Trade: Hand tools of the trade, their care and use, power tools of the trade, their care and use, safety with tools and equipment, refrigeration and freezers (storage).
Factors Governing the Balance of Profit and Loss: Care and use of meat scales, care and proper handling of cash register, cutting tests, inventories, wrapping of meats, tying of meats, theory of cutting meats, trimming of meat (fat and bone content).

Meat Composition: Structure and composition of meat, nutritional value, meat grading and government regulations, ripening of meats, protein meats (process).

Butchery (Meats): Hind quarters of beef, fronts of beef, sides of veal, sides of Pork, carcass of lamb, miscellaneous items edible glands). Protein sides of beef, wild game.

Butchery (Poultry): Types of poultry, marketing (methods), evisceration of poultry, dissecting poultry, poultry grading and government regulations, poultry storage methods.

Butchery (Fish): Fish (vertebrates), fish (crustacea) fish (Mollusks), cutting fish, modern marketing trends, fish cookery.

Meat Preparations: Sausage making, curing pork products, curing beef products, pressed meats, smoking of meats.

Salesmanship: Personality and appearance, customer demands and buying motives, slow moving items, methods of cooking, service counter displays, self-serve counter displays, shelf-life of self-serve meats, meat advertising, meat merchandising, retail meat market management, locker plant operation (general).


Industrial Communications: Paragraphs, punctuation, emphasis and accuracy in writing, plans, styling and organizing, selecting and stressing the technical language, general directions for letter writing, mechanics of letters, tone in letters, selected business letters, effectiveness in content.

Supplies:

Students must supply themselves with three short white coats, three wedge caps (cost approx. $15.00).

Textbooks and other supplies will cost approximately $11.00. (This is in addition to tuition fees.)
Restaurant Cooking

DURATION — Approx. 5 months.

Pre-requisites:
Grade X, or Vocational Preparation Training Level II. General Good Health; Recent Medical, Dental and Chest X-Ray certificates required from each applicant before commencing training.

Employment Opportunities:
Being one of the largest industries in the world it offers the aspiring graduates a wide selection of opportunities at various levels in kitchens of restaurants, hotels, institutions and specialty houses, not only in Manitoba but many other parts of the world.

Course Content:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tools and Equipment</td>
<td>3</td>
</tr>
<tr>
<td>General Kitchen Safety</td>
<td>3</td>
</tr>
<tr>
<td>Weights and Measures</td>
<td>3</td>
</tr>
<tr>
<td>Safe Food Handling practices</td>
<td>7</td>
</tr>
<tr>
<td>Beverage Preparation</td>
<td>9</td>
</tr>
<tr>
<td>Basic Food and Kitchen Management</td>
<td>43</td>
</tr>
<tr>
<td>Service</td>
<td>2</td>
</tr>
<tr>
<td>Soda Fountain Work</td>
<td>26</td>
</tr>
<tr>
<td>Pantry Work - Sandwiches, Salads,</td>
<td>110</td>
</tr>
<tr>
<td>Appetizers</td>
<td></td>
</tr>
<tr>
<td>Vegetable Cookery</td>
<td>37</td>
</tr>
<tr>
<td>Meats, Fish &amp; Poultry</td>
<td>110</td>
</tr>
<tr>
<td>Stocks, Soups, Sauces &amp; Gravies</td>
<td>55</td>
</tr>
<tr>
<td>Breakfast Cookery</td>
<td>90</td>
</tr>
<tr>
<td>Methods of Cooking</td>
<td>22</td>
</tr>
<tr>
<td>Meat Cutting</td>
<td>140</td>
</tr>
<tr>
<td>Industrial Maths</td>
<td>20</td>
</tr>
<tr>
<td>Industrial Communications</td>
<td>20</td>
</tr>
</tbody>
</table>

700 hours

Detail of Units:

Tools & Equipment: Types of tools and their uses. Care, cleaning, use of and safety requirements as applied to equipment found in kitchen.

General Kitchen Safety: Importance of safety in food industry. Accident prevention, precautions and regulations.
Weights & Measures: Terminology and principles of weighing, and measuring as used in kitchens.


Service: Importance of service in food industry. Types of service used.

Soda Fountain Work: Ice cream products, types, quality factors, make up. Storage methods and service of items associated with frozen desserts and fountain items.

Pantry Work: Sandwiches: types of sandwiches, standards, bread, spreads, fillings and garnishes used, work and production methods, and service of sandwiches.

Salads: Types of salads, standards, ingredients and garnishes used, preparation and work methods, dressing and their variations. Storage and handling of fruits, greens and their preparation.

Appetizers: Canapes, Hors d’oeuvres, cocktails & relishes, standards, methods of preparation, garnishing; decorating.


Meats, Fish & Poultry: Principles, standards, and techniques used. Factors in quality, selecting of cooking methods for meats such as beef, pork, veal and variety meats. Poultry such as turkey, chicken, duck, etc. Fish such as fin fish and shellfish, preparation and service methods.


Stocks, Soups, Sauces & Gravies: Procedures, ingredients, care, types of basic stock, soups & sauces and their derivation, thickening agents, accompaniments.
Breakfast Cookery: Egg quality and standards, principles and techniques used in cooking a variety of egg dishes, cereals, pancakes and products as used on breakfast menus.

Meat Cutting: Grades, quality and storage. Hotel cutting of beef hinds, and fronts, veal sides, pork sides and lamb carcasses.

Poultry - eviscerating, boning, portioning of Turkey and Chicken. Use and care of butchery equipment.

Fish - Cleaning whole fish (vertebrates), filleting, skinning, scaling, portioning, and boning. Shell fish - shelling, shucking, cleaning and cracking of shrimps, lobsters, clams, oysters and scallops.

Industrial Mathematics: Review of arithmetic and rapid calculation; stressing decimals, percentages, fractions and proportion as applied to trade calculations.

Industrial Communications: Review of principles of written communications, Paragraphs, punctuation, planning, reports, business letters and other items as applied to the trade.
Hair Styling Department

Courses:

Barbering

Hairdressing & Beauty Culture

Faculty:

MR. F. HALLAS
Department Head

Mrs. E. Dawson ....................... Hair Dressing
Mr. F. Hallas ......................... Barbering
Mrs. I. McKibbin .................... Hair Dressing
Barbering

DURATION — Approx. 10 months,

Pre-requisites:

1) Academic — Grade X or Vocational Preparation Training Level II.

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

3) Personal — Ability of 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.

Employment Opportunities:

Students who successfully complete the Barbering Course are in continual demand by two, three, four, five and six chair barber shops. Since formal apprenticeship is not practised in barber shops in this province, students are expected to show professional polish when they enter the trade — all the more since they start charging professional prices at the outset. Wages are commensurate with speed and ability. Although a guaranteed minimum weekly wage is offered by most shops, the beginning barber is more dependent on building up a steady clientele or following of customers and is generally paid a piece rate of 60 - 65% of the amount of work he takes in.

At the present time, regulations under the Barbers' Act demand that a beginning barber (Improver Barber) must work at his trade under the guidance of a licenced Master Barber (Barber Shop Owner) for a period of three years before he is allowed to open a shop on his own. This is to ensure that the public gets safe, courteous and professional service at all times.

Course Content:

A. Related and Practical Theory Content .................. 350 hours
B. Practical Work Content .................................. 1050 "

Total 1400 hours
Course Content:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of Barbering</td>
<td>4</td>
</tr>
<tr>
<td>Hygiene</td>
<td>5</td>
</tr>
<tr>
<td>Bacteriology</td>
<td>12</td>
</tr>
<tr>
<td>Sterilization</td>
<td>12</td>
</tr>
<tr>
<td>Sanitation</td>
<td>5</td>
</tr>
<tr>
<td>Barbering Implements</td>
<td>12</td>
</tr>
<tr>
<td>Honing</td>
<td>34</td>
</tr>
<tr>
<td>Stropping</td>
<td>34</td>
</tr>
<tr>
<td>Face Shaving</td>
<td>100</td>
</tr>
<tr>
<td>Regulations under the Barbers' Act</td>
<td>4</td>
</tr>
<tr>
<td>Men's Haircutting</td>
<td>676</td>
</tr>
<tr>
<td>Men's Hairstyling</td>
<td>154</td>
</tr>
<tr>
<td>Current Trends in Barbering</td>
<td>37</td>
</tr>
<tr>
<td>Anatomy &amp; Physiology</td>
<td>29</td>
</tr>
<tr>
<td>Diseases of Scalp, Skin and Hair</td>
<td>29</td>
</tr>
<tr>
<td>Shampooing</td>
<td>94</td>
</tr>
<tr>
<td>Hair Tonics</td>
<td>2</td>
</tr>
<tr>
<td>Scalp Treatments</td>
<td>37</td>
</tr>
<tr>
<td>Facial Treatments</td>
<td>37</td>
</tr>
<tr>
<td>Electricity and Light Therapy</td>
<td>7</td>
</tr>
<tr>
<td>Cosmetology</td>
<td>7</td>
</tr>
<tr>
<td>Barbering Ethics</td>
<td>5</td>
</tr>
<tr>
<td>Shop Management</td>
<td>17</td>
</tr>
<tr>
<td>Modern Men's Haircoloring</td>
<td>47</td>
</tr>
</tbody>
</table>

Total 1400 hours

Course Details:

**History of Barbering:** Origin of the Barber; Superstitions in Barbering; Greek and Roman influence in Barbering; Rise and Fall of Barber Surgeons; Modern trends in barbering.

**Hygiene:** Personal hygiene; public hygiene; mental hygiene; cleanliness; posture; good health habits.

**Bacteriology:** Classification of bacteria; three general forms of bacteria; groupings of bacteria; six disease producing bacteria; bacterial growth and reproduction; infection.

**Sterilization:** Methods of sterilization; antiseptics and disinfectants; wet sterilizer; dry sterilizer; proportions for making percentage solutions; safety precautions; sterilization rules.

**Sanitation:** Board of health; barber examining board; duties of barbering inspector; importance of sanitation; sanitary rules.

**Barbering Implements:** Straight razors; regular shears; tapering shears; clippers; hones; strops; accessory implements.

**Honing:** Purpose of honing; preparation for honing; how to hold razor and hone; how to stroke razor; testing razor edge; care of hones.
**Stropping:** Purpose of stropping; technique of stropping; testing razor edge; care of strops.

**Face Shaving:** Fundamentals of face shaving; four standard positions and strokes; preparing a customer for a shave; preparing the face for shaving; positions and strokes in shaving; the neck shave; accidental cuts in shaving; why a customer may find fault with a shave; shaving the mustache; styles of mustaches; shaving the beard; styles of beards; special problems in shaving.

**Men's Haircutting:** Basic fundamentals of haircutting.  
   Advanced fundamentals of haircutting. (S. C. Thorpe)

**Men's Hairstyling:** Basic fundamentals of hairstyling. (G. J. Bondy)  
   Advanced fundamentals of hairstyling. (R. Ciconne)

**Current Trends in Barbering:**  
   Hairpieces for men.  
   Hair relaxing and processing.  
   Ladies' haircutting.

**Anatomy and Physiology:** Tissues; organs; systems; the 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.

**Diseases of the Scalp, Skin and Hair:** Justification for study; primary lesions of the skin; secondary lesions of the skin; definitions of disease terms; diseases of the oil glands; diseases of the sweat glands; dandruff; skin inflammations; dermatitis; exzema; types of alopecia; parasitic affections; non-contagious hair affections; skin pigmentations; skin growths; the control of venereal diseases.

**Shampooing:** 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, hair coloring and scalp and hair treatments.

**Hair Tonics:** Composition of hair tonics; when to use hair tonics; how to apply a professional scalp tonic (Scalp steam), benefits of hair tonics.
**Scalp Treatments:** 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.

**Facial Treatments:** Benefits of facial treatments; equipment needed; rolling cream massage (plain massage); rest facial (plain facial); 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.

**Electricity and Light Therapy:** 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.

**Cosmetology:** Chemistry of water; United States Pharmacopeia; classification of cosmetics; use of cosmetics for scalp, skin and hair.

**Barbering Ethics:** Ethics applied in the barber shop; good ethics in the barber shop; bad ethics in the barber shop.

**Barber Shop Management:** 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.

**Regulations Under the Barbers’ Act:** The need for barbering regulations; how barbering regulations are legislated; how barbering legislations are enforced; point by point review of regulations under the barbers’ act.

**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; swatch experiments in haircoloring; procedure for applying permanent tint; procedure for retouching; selecting the proper colors and reading a color chart; cleaning up after tinting; safety practices when doing color work; coloring hairpieces that have faded; coloring the fringe hair to match the hairpiece.
Supplies:

Students must supply themselves with at least two white barbers' jackets.

Textbooks, barbers' jackets and a complete kit of barbering tools for this course will cost approximately $105.00. Tuition fees for the course are as outlined in the calendar.
Hair Dressing and Beauty Culture

DURATION — Approx. 10 months.

Pre-requisites:
1) Academic — Grade X or Vocational Preparation Training Level II.
2) Health — General good health, substantiated by recent medical, dental and chest X-ray certificates prior to commencement of training.
3) Personal — Ability of 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.

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 Content:
Personality and Hygiene and Responsibilities approx. 6 hours
Bacteriology, Sterilization and Sanitation 23 hours
Anatomy and Physiology 23 hours
Shampoo and Rinses 100 hours
Hair and Scalp 75 hours
Hairstyling 363 hours
Haircutting 80 hours
Permanent Waving 160 hours
Manicuring 100 hours
Tinting and Bleaching 230 hours
Skin and Facial Treatment 120 hours
Beauty Salon Management 60 hours
Related Mathematics & Business Communications 60 hours

1400 hours

Course Details:
Personality and Hygiene: Duties, Responsibilities and grooming.
Bacteriology, Sterilization and Sanitation: Methods of sterilizing, use of sterilizers.
Anatomy and Physiology: Cells, organs, muscles, tissues, bones, and systems.
Shampoos and Rinses: Types of shampoos and rinses, applications of shampoos and rinses.

Hair and Scalp: Histology of hair, treatment of hair, treatments of scalp, commercial products.

Hairstyling: Use of equipment, types of styles, wigs and hairpieces.

Hair Cutting: Use of equipment, techniques.

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

Manicuring: Structure and diseases of nails, massage, types of manicuring.

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

Skin and Facial Treatments: Care of skin, application of treatments and massage, masks and packs, special equipment, make-up and eye-brow arching.

Beauty Salon Management: Salesmanship and shop management.

Related Maths:
- Fractions
- Percents
- Decimals
- Simple & Compound Interest
- Applications

Course orientated towards small business operation. Mathematics pertaining to profit, loss, discount, cash loans, etc., are covered.

Business Communications: Communications for Hairdressing:
1. Paragraphs
2. Letter styles
3. Letter of application
4. Letter of recommendation
5. General business letters
6. Memoranda
7. Specifications and letters dealing with specifications
8. General reports. (situations)
9. Introduce researched reports
10. Business Orientation

Supplies:
Each student is requested to purchase a fitted beauty kit, which can be obtained from the Institute book store, and must also provide herself with two white uniforms and white low heeled shoes. Textbooks and supplies will cost approximately $100.00. (This is in addition to tuition fees.)
Metals Department

Courses:

- Machine Shop Practice
- Sheet Metal
- Watch Repair
- Welding

Faculty:

**MR. V. FRASER, C.E.T.**  
Department Head

Mr. R. S. Beech ....................... Watch Repair  
Mr. C. C. Brown ..................... Sheet Metal  
Mr. R. Dillon ......................... Welding  
Mr. C. Finn ......................... Welding  
Mr. V. Fraser, C.E.T. ................... Machine Shop  
Mr. J. F. Lane ......................... Machine Shop  
Mr. S. L. McLean ...................... Sheet Metal  
Mr. G. Ness .......................... Machine Shop  
Mr. J. M. Pedora ...................... Welding  
Mr. D. Ruck ......................... Welding  
Mr. J. Van de Mosselaer ............ Machine Shop
Machine Shop Practice
(Pre-Apprentice)

DURATION — Approx. 10 months.

Pre-requisites:

Grade X or Vocational Preparation Training Level II.

This course is divided into two parts of 5 months each. To continue into part B the student must successfully complete part A.

Employment Opportunities:

A student may, on successful completion of part A of this course, continue into part B 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 part B 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.

Machine Shop Practice — Part A

Course Content:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Care and Use of Hand Tools</td>
<td>approx. 150 hours</td>
</tr>
<tr>
<td>Lathe Construction and Operation</td>
<td>180 &quot;</td>
</tr>
<tr>
<td>Planer and Shaper Construction &amp; Operation</td>
<td>80 &quot;</td>
</tr>
<tr>
<td>Milling Machine Construction &amp; Operation</td>
<td>60 &quot;</td>
</tr>
<tr>
<td>Drilling Machine Construction &amp; Operation</td>
<td>40 &quot;</td>
</tr>
<tr>
<td>Grinding Machine Construction &amp; Operation</td>
<td>30 &quot;</td>
</tr>
<tr>
<td>Power Saw Construction &amp; Operation</td>
<td>20 &quot;</td>
</tr>
<tr>
<td>Drafting and Blueprint Reading</td>
<td>60 &quot;</td>
</tr>
<tr>
<td>Industrial Mathematics</td>
<td>40 &quot;</td>
</tr>
<tr>
<td>Industrial Science</td>
<td>40 &quot;</td>
</tr>
</tbody>
</table>

700 hours

Course Details:

Care and Use of Hand Tools: Filing, chipping, tapping, reaming, layout.

Lathe Construction and Operation: Straight turning, Boring, Taper turning, Threading.
Planer and Shaper Construction and Operation: Work set-up, Machining plain surfaces.


Drilling Machine Construction and Operation: Drill grinding, Work set-up, Drilling.

Grinding Machine Construction and Operation: Offhand tool grinding, Plain Surface grinding.

Power Saw Construction and Operation: Power hacksawing, Basic contour Sawing.

NOTE: Approximately 30% of time is allotted to classroom and shop lectures.

Related Subjects:

Industrial Mathematics: Review of basic mathematics, whole numbers, fractions, decimals, measurement, areas and volumes.


Drafting and Blueprint Reading: Orthographic projection, Isometric projection, Oblique projection, Section views, Assembly drawings.

Machine Shop Practice — Part B

Course Content:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fitting</td>
<td>60</td>
</tr>
<tr>
<td>Lathe Operation</td>
<td>200</td>
</tr>
<tr>
<td>Planer and Shaper Operation</td>
<td>60</td>
</tr>
<tr>
<td>Drilling Machine Operation</td>
<td>80</td>
</tr>
<tr>
<td>Milling Machine Operation</td>
<td>60</td>
</tr>
<tr>
<td>Grinding Machine Operation</td>
<td>60</td>
</tr>
<tr>
<td>Power Contour Sawing</td>
<td>20</td>
</tr>
<tr>
<td>Industrial Mathematics</td>
<td>40</td>
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<tr>
<td>Industrial Science</td>
<td>40</td>
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<tr>
<td>Industrial Communications</td>
<td>20</td>
</tr>
<tr>
<td>Welding</td>
<td>60</td>
</tr>
</tbody>
</table>

Course Details:

Fitting: Filing, scraping, lapping, care, layout and maintenance of hand tools.
Lathe Operation: Lathe gearing, grinding in the lathe, cutting multiple threads.

Planer and Shaper Operation: Planer set-up, machining dovetails, vertical and angular cuts.

Drilling Machine Operation: Boring, counter boring, spot facing, reaming.

Milling Machine Operation: Direct, plain, compound and differential indexing, spur gear cutting, bevel gear cutting, spiral milling.

Grinding Machine Operation: External and internal cylindrical grinding, Tool and cutter grinding.

Power Sawing: Contour Sawing.

NOTE: Approximately 30% of time allotted to classroom and shop lectures.

Related Subjects:

Industrial Mathematics: Ratio and proportion, basic trigonometry, introductory algebra, simple and simultaneous equations, application to trade calculations.

Industrial Science: Mechanical properties of Metals, toughness and other properties of metal, Basic metalurgy and Heat treatment of Metals.

Industrial Communications: Formal letters of application and inquiry, Ordering to specification, Writing specifications, Report writing, Elements of good oral communication.

Related Welding: Introduction to welding techniques, Operation of Oxy-acetylene torch, Cutting (flame), Basic Welding.

Supplies:

Students will be required to supply safety goggles, dark welding goggles, and welding gloves.

Textbooks and other supplies for this course will cost approximately $40.00. (This is in addition to tuition fees.)
Sheet Metal

DURATION — Approx. 8 months.

Pre-requisites:
Grade X or Vocational Preparation Training Level II.

Employment Opportunities:
Our modern society uses a very wide variety of products and services which involve sheet metal work in one form or another. Graduates of this course may find employment in many fields, such as: Sheet metal manufacturing; Heating and Ventilating contracting; Air-Conditioning Contracting; Stainless Steel Fabricating; Aircraft Fabricating and Repair.

Course Content:

<table>
<thead>
<tr>
<th>Introduction</th>
<th>approx. 20 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Hand Tools</td>
<td>&quot; 20 &quot;</td>
</tr>
<tr>
<td>Sheet Metal Machines and Safety</td>
<td>&quot; 160 &quot;</td>
</tr>
<tr>
<td>Pattern Development</td>
<td>&quot; 250 &quot;</td>
</tr>
<tr>
<td>Description and Selection of Materials</td>
<td>&quot; 35 &quot;</td>
</tr>
<tr>
<td>Sheet Metal Seams</td>
<td>&quot; 35 &quot;</td>
</tr>
<tr>
<td>Sheet Metal Fittings</td>
<td>&quot; 215 &quot;</td>
</tr>
<tr>
<td>Punching, Drilling and Notching</td>
<td>&quot; 35 &quot;</td>
</tr>
<tr>
<td>Rivets and Riveting</td>
<td>&quot; 20 &quot;</td>
</tr>
<tr>
<td>Bend Allowances</td>
<td>&quot; 20 &quot;</td>
</tr>
<tr>
<td>Soldering</td>
<td>&quot; 35 &quot;</td>
</tr>
<tr>
<td>Machine Shop</td>
<td>&quot; 35 &quot;</td>
</tr>
<tr>
<td>Industrial Mathematics</td>
<td>&quot; 54 &quot;</td>
</tr>
<tr>
<td>Industrial Science</td>
<td>&quot; 54 &quot;</td>
</tr>
<tr>
<td>Industrial Communications</td>
<td>&quot; 27 &quot;</td>
</tr>
<tr>
<td>Welding</td>
<td>&quot; 70 &quot;</td>
</tr>
<tr>
<td>Drafting</td>
<td>&quot; 35 &quot;</td>
</tr>
</tbody>
</table>

1120 hours

Course Details:

Introduction: Lecture on safety; Personal Requirements for success in trade, Willingness to work and study; Abilities and character needed; Location of tools in shop; Show sample jobs; Importance of salesmanship.

Basic Hand Tools and their Application: Practice work to get feel of hand tools; Types of snips and their use, Types of dollys and their use, Types of bench stakes and their proper use, Electric and air drills, Pneumatic hammers and rivet sets.
Sheet Metal Machines and How to Use Them Safely: Practice work on burring machine, turning machine, elbow machine, crimping and beading machines, cornice brake and box brake. How to use squaring shear and circular shear, bar folder and rollers, seaming machine. Practice work on wiring machine, How to set and use notching machine, How to use Pittsburgh lock former, Care of equipment.

Pattern Development: Description of measuring tools, the micrometer caliper, layout tools. Principles of orthographic projection, Simple layout work. Description of edges, seams and notches. Parallel line method of development, Radial line method of development, Triangulation, How to transfer patterns.


Description and selection of rivets and rivet sets: How to select proper rivet for the job. How to identify the rivets. How to space the rivets. How to set the rivets. How to use pneumatic riveter. How to use a bucking bar for riveting.

Soldering: Kinds of solder, How to solder various seams, How to file, tin, and forge soldering coppers, Kinds of soldering fluxes, Description of soldering coppers and furnaces.

Machine Shop: Drilling a hole, Sharpening a drill bit, Testing the cut, Using a grinder, Technical details re drill bits and their uses, Types of bits, Clearance gap for rest, Specifications for wheel, Colors for tempering, Degree Fahrenheit, Heat treating tools, Filing by machine and by hand.


Industrial Science: Materials of construction - metals, woods, etc. a study and comparison of various properties and characteristics. Heat - basic principles, heat loss calculations, heat transfer, etc.

Watch Repair

DURATION — Approx. 12 months.

Pre-requisites:
Grade X or Vocational Preparation Training Level II.

Employment Opportunities:
The Canadian Jewellers Institute offers a certificate which is well received by the trade. The student must work for six months and then may apply for test papers.
At the present time the training program is well behind the demand for watchmakers. Many of the students have gone to trades that are related in detail and size to our training of the student.

Course Content:

Basic Exercises on Watch Makers Lathe
Clock Repairs, Alarm, Strike and ¼ hour Strike
Balance Wheel Staffs,
   Making and Staking
Truing and Poising Wheels
Preparing Hairspring blanks for service

Related Drafting and Blueprint Reading
Related Machine Shop
Industrial Mathematics
Industrial Communications

Escapements and General Repairs
General Techniques in Repairing Watches
Ladies and Gents Manual Wind Watches
Ladies and Gents Auto-Wind Watches

Course Details:

Basic Exercises: Projects designed to turning skills, eye and hand development to micrometer accuracy.

Clock Repairs: All types of alarms, electric, intermittent and repeating alarms. Interval timing clocks.

Balance Wheels: Staking 10 & 12 size wheels, truing in the round and flat. Poising for timing reasons. Make and install balance staff to sample.
Hairsprings: Preparing 12 size and 10½ ligne hairspring for service, colletting, vibrating, over coiling, and pinning studs.

Escapements: Matching stone to escape wheels for lock drop slide and impulse, Jewelled lever, cylinder, verge and pin lever.


Auto-Winds: Proper adjustment of gear in winding and clutch methods, proper oiling.


Industrial Maths: Fractions, Percentage, Decimals, Ratio & Proportion, Area & Volume, and Simple Equations.

Mathematics as applied to business operations are covered.

Topics include:
Profit, loss, discount, interest on loans, etc.

Supplies:
Tweezers, eye loupes, note books and drafting materials, etc. The cost of these supplies is approximately $20.00 (This is in addition to tuition fees.)
Welding

DURATION — Approx. 6 months.

Pre-requisites:
Grade X or Vocational Preparation Training Level II.
Employment in this field requires vigorous good health, with good eyesight particularly in respect to depth perception and color blindness. Applicants who wear glasses should check with their eye specialists before registering for this course.

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 field.
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, provide satisfactory employment prospects for welding course graduates.

Course Content:

(Part A) — Gas Welding

<table>
<thead>
<tr>
<th>Introduction</th>
<th>approx. 5 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welding Theory (Lectures &amp; Demonstrations)</td>
<td>26</td>
</tr>
<tr>
<td>Basic Welding (Practical)</td>
<td>90</td>
</tr>
<tr>
<td>Brazing</td>
<td>30</td>
</tr>
<tr>
<td>Aluminum and Die Cast</td>
<td>30</td>
</tr>
<tr>
<td>Miscellaneous Welding</td>
<td>13</td>
</tr>
<tr>
<td>Cutting</td>
<td>46</td>
</tr>
<tr>
<td>Industrial Science</td>
<td>8</td>
</tr>
<tr>
<td>Industrial Mathematics</td>
<td>16</td>
</tr>
<tr>
<td>Industrial Communications</td>
<td>16</td>
</tr>
</tbody>
</table>

280 hours
Course Details:

(Related Subject Courses)

Industrial Mathematics: Review of arithmetic, fractions, decimals, percentages, and measurements.


Industrial Science: Physical properties, of metals, Properties of gases.

PART B

Industrial Mathematics: Review of part "A", measurement, area, volumes, ratio and proportion, introductory algebra, simple and simultaneous equation, and applications of trade mathematics.
Industrial Science: Mechanics of machinery, Heat and thermal expansion, Ferrous and non-ferrous metal and their chemical and physical properties, heat treatment of metals, crystalline structure of metals.

Industrial Blueprint Reading and Drafting: Drafting fundamentals, Scaled drawing sketching, welding symbols, Assembly drawings, Structural forms.

Supplies:

Grinding goggles, Acetylene goggles, gloves, apron, drafting paper (sketch pad), Drafting pencils (2 H. & H.B.), eraser, drafting ruler, lock.

Students must supply themselves with coveralls, etc., that may be needed. Textbooks and other supplies will cost approximately $60.00.
Practical Nursing

Faculty:

Miss M. A. FELIX, Reg.N., B.N.
Department Head

Miss M. Beattie, Reg.N., B.N.
Miss M. A. Felix, Reg.N., B.N.
Miss L. D. Johnson, Reg.N., B.A.
Mrs. A. P. McColm, Reg.N.
Mrs. N. McIvor, Reg.N., Cert. P.H.N.
Miss M. Rempel, Reg.N., B.N.
Practical Nursing

DURATION — Approx. 4 months.

Pre-requisites:

Academic:
1) Grade X University Entrance or General Course, as assessed by the Registrar, Manitoba Department of Education, including the following subjects:
   - English (Literature and Composition)
   - Social Studies
   - General Science
   - Mathematics

*2) Commercial Course students may be considered but, effective September 1, 1970, they must have selected General Science 101 or Biology 201 as an option in Grade X.

*3) Mature applicants 21 years of age and over with standing in Vocational Preparation Training Level II.

* Applicants under sections 2 and 3 will be required to apply directly by appointment to the address given below.

Health:
Applicants must have general good health both physically and mentally. Recent medical and dental certificates are required. Emotional stability is essential.

Personal:
Character references will be required from business or professional people not related to the applicant.

Contents:

Theory: Basic Nursing Arts, Anatomy and Physiology, Microbiology and Community Health, Medical and Surgical Nursing, Drugs and Solutions, Mother and Newborn, Nutrition, Personal Health and Personal Relationships, The Child.

Practical: In relation to the above, plus 8 months clinical experience in hospitals.
Remarks:

Training consists of a 4 months classroom period at the Manitoba Institute of Technology, 2 weeks vacation, plus 8 months supervised clinical experience in the hospitals before a certificate is issued. (Manitoba hospitals are used for the supervised clinical experience.)

NOTE:

Entrance dates are January, May and September. Apply at least six months prior to the opening date of the course to:

Department Head,
Practical Nursing Training,
Manitoba Institute of Technology,
2055 Notre Dame Avenue,
Winnipeg 23, Manitoba.

Supplies:

Textbooks are purchased on the first day of classes. Expenses, in addition to room and board, include uniforms approximately $45, textbooks approximately $45 and Tuition $28, if not eligible under O.T.A.
Related
Department

Courses:

Communications
Drafting
Mathematics
Science

Faculty:

MR. L. MOUSSEAU, B.A.
Department Head

Mr. F. Doolan, C.E.T.  Science
Mr. J. Farr, B.Sc., C.E.T.  Mathematics
Mr. R. S. Hayes  Drafting
Mr. J. Klasz  Mathematics
Mr. V. R. Knoll, B.Acc.  Communications
Mr. L. Lussier, C.E.T.  Drafting
Mr. T. Morrison  Mathematics
Mr. L. Mousseau, B.A.  Mathematics
Mr. G. Notley, B.Sc.  Science
Mr. W. J. Ridgeway  Communications
Mr. J. Undiks  Science
Mr. J. M. Vincent  Mathematics
Related Subjects

The Related Department provides the students with the potential and the methods of interpreting and solving the problems that occur during their training. It also facilitates the transition between educational and industrial environments.

**Industrial Communications:**

The students are taught to write and present reports on topics that pertain to their course and on the administrative problems of small businesses.

**Industrial Mathematics:**

Some of the mathematics required by the students as prerequisites to the course will now be emphasized in a practical form in the related classes but many new aspects will be introduced to some of the Electronics courses.

**Industrial Science:**

The underlying theories and principles will be explained and stressed in order to give the student a more comprehensive understanding of his own trade.

**Industrial Drafting:**

Some of the finer points of blue print reading and the interpretation of the different types of drawings will be taught to facilitate the construction projects and job estimates.
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 instruction.

Persons over the age of 21 MAY be registered if approved by the Apprenticeship Board. If they have had previous experience or training in the trade, the length of the apprenticeship term may be reduced. Many persons over 21 years of age now become apprentices so that they may avoid remaining helpers or labourers.

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 trades are offered in full-time day classes at the Manitoba Institute of Technology, Industrial 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 training.

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 co-operate 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 Qualification in his trade. This certification identifies the holder as a journeyman and he is recognized by employers and the public as a trained and competent tradesman. In several trades the certificates are officially recognized across Canada.
## APPRENTICESHIP COURSES

(OFFERED IN CO-OPERATION WITH THE DEPARTMENT OF LABOUR)

<table>
<thead>
<tr>
<th>TRADE</th>
<th>LENGTH OF COURSE</th>
<th>PRE-REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTO BODY REPAIR</td>
<td>LEVEL I 8 WEEKS</td>
<td>MINIMUM AGE 16 YEARS.</td>
</tr>
<tr>
<td>AUTOMOTIVE REPAIR</td>
<td>LEVEL I 4 WEEKS</td>
<td>APPROVAL OF THE DIRECTOR OF APPRENTICESHIP DEPT. OF LABOUR.</td>
</tr>
<tr>
<td>BRICKLAYING</td>
<td>LEVEL I 8 WEEKS</td>
<td></td>
</tr>
<tr>
<td>CARPENTRY</td>
<td>LEVEL I 8 WEEKS</td>
<td></td>
</tr>
<tr>
<td>ELECTRICAL CONSTRUCTION</td>
<td>LEVEL I 8 WEEKS</td>
<td></td>
</tr>
<tr>
<td>FACTORY WOODWORKING</td>
<td>LEVEL I 8 WEEKS</td>
<td></td>
</tr>
<tr>
<td>MACHINE SHOP</td>
<td>LEVEL I 8 WEEKS</td>
<td></td>
</tr>
<tr>
<td>PAINTING AND DECORATING</td>
<td>LEVEL I 8 WEEKS</td>
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<tr>
<td>PLASTERING</td>
<td>LEVEL I 8 WEEKS</td>
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<tr>
<td>PLUMBING</td>
<td>LEVEL I 8 WEEKS</td>
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<tr>
<td>REFRIGERATION</td>
<td>LEVEL I 8 WEEKS</td>
<td></td>
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<tr>
<td>SHEET METAL</td>
<td>LEVEL I 6 WEEKS</td>
<td></td>
</tr>
<tr>
<td>STEAMFITTING</td>
<td>LEVEL I 6 WEEKS</td>
<td></td>
</tr>
</tbody>
</table>

For further information contact directly:

**APPRENTICESHIP & INDUSTRIAL TRAINING DIVISION**

Department of Labour
Room 609, Norquay Building
WINNIPEG 1, MANITOBA
Telephone 946-7551

The Department of Labour
Court House
Brandon, Manitoba
Telephone: PA 9-6467

The Department of Labour
Provincial Building
The Pas, Manitoba
Telephone: MA 3-3522

"SKILL FOR SECURITY"
Vocational Preparation Training

This is an upgrading program which is offered in full-time day classes to persons who are interested in improving their standing in Communications (English), Industrial Mathematics and Industrial Science.

Three levels of training are offered — Level III for persons having less than Grade VIII, Level II for persons having Grade VIII but less than Grade X, and Level I for persons having Grade X or Level II but less than is required for entry into courses requiring minimum Grade XI pre-requisite. The duration of the courses varies with the different levels but is approximately 16 weeks.

At the end of the Level III course, students write exams which, if successfully passed, entitle them to enter Level II training. After the successful completion of either Level II or Level I (depending upon the vocational course chosen) the graduate may enter further vocational training.

Purpose:

The purpose of these courses is to enable students to upgrade their education to a point which will permit them to enter into and profit from formal vocational trade training classes which may be offered under the provincial apprenticeship training program or the vocational industrial courses offered at provincial vocational centres including the Manitoba Institute of Technology, the Manitoba Vocational Centre (Brandon) and Northern Manitoba Vocational Centre (The Pas).

Where Are The Courses Offered?

Permanent centres are located in Winnipeg at the Vocational Preparation Centre, 139 Tuxedo Avenue, Winnipeg 9, at the Manitoba Vocational Centre (Brandon) and the Northern Manitoba Vocational Centre (The Pas).

Courses have also been held at a considerable number of centres in various parts of Manitoba. Whenever a sufficient number of persons require this type of training, a centre may be opened provided that adequate facilities and qualified instructors are available.

Eligibility:

In order to qualify, applicants must be at least seventeen years of age, have a formal education of less than Grade X, for Level III and Level II, have not attended school for at least one year and have the interest and ability to upgrade their education. The Level I program is currently in its beginning stages. Admission requirements are under revision.
Most referrals to Vocational Preparation programs are normally made by the Canada Manpower Centres. Some are sponsored under the Vocational Rehabilitation Training and others are enrolled as Provincial Entries by paying their own fees.

NOTE:

Students entering Vocational Preparation classes will be given a period of 4 weeks in which to demonstrate to their instructor by their punctuality, attendance, attitude, and work progress, the reasons why they should be allowed to continue training.

Students who fail to satisfy their instructor in the above respects may be withdrawn from the course after proper counselling.

General Information:

The general information, rules and regulations as put forth at the beginning of this calendar will govern those students taking Vocational Preparation at this centre.

1. COMMUNICATION SKILLS

The main aim in this subject is to teach students to communicate better with others. This may be by means of speaking, writing, spelling, testing or reading, or a combination of these. Although formal grammar is taught, this is chiefly to teach the use of words and the ability to build them into good sentences and good paragraphs in a united, coherent whole. Communication skills are becoming increasingly important in all trades and vocations and the subject material offered is slanted in this direction.

2. INDUSTRIAL MATHEMATICS

Mathematics that is applicable to our way of life. It is a functional program that will give adequate attention to basic mathematical concepts, principles, facts and skills. It must also stress real life problems and applications within the potential range of experience of the students. In other words, theory and practice, skills and their application to the world of work should be closely correlated.

3. INDUSTRIAL SCIENCE

The course in applied science is designed to give the student an orderly understanding of the materials and forces which make up man's environment. All units of work selected have practical applications for the trades and industry in general. It will be noted that emphasis has been placed upon the physical sciences.
Extension or Evening Course Program

The Extension Department of the Manitoba Institute of Technology offers a comprehensive program of studies for Adult Education. These courses are presented during the evening or on Saturday morning.

For information please write or phone:

MANITOBA INSTITUTE OF TECHNOLOGY
2055 Notre Dame Avenue
Winnipeg 23, Manitoba.
Phone 786-1481 Ext. 4.