MANITOBA
INSTITUTE OF TECHNOLOGY

INDUSTRIAL DIVISION

* *

DEPARTMENT OF EDUCATION
PROVINCE OF MANITOBA

* *

Administered by
PROVINCIAL VOCATIONAL SCHOOLS DIVISION
Manitoba Department of Education
with financial assistance provided by
the Federal Government

* *

Hon. George Johnson, M.D. . . . . . . Minister of Education
E. B. Angood, B.Sc. (Eng. Sc.) . . . . . . Assistant Deputy
Minister of Education
A. J. Buhr, B.A., M.Sc. (I.E.) . . . . . . Director,
Provincial Vocational Schools Division

Approved by, and issued under, the authority of the Minister of Education
The Honourable George Johnson, M.D.
Minister of Education
Foreword

One hundred years of progress in Canada is behind us and a new century lies ahead. In Manitoba we will be celebrating our own 100th birthday in 1970. Progress, particularly in the past few years in technological development is one of the phenomena of our age. By 1970, our centennary, we will be able to look back with pride and say "Manitoba is on the move". More than this we can say right now that "Education is on the move". In the total spectrum of education the technological, vocational, industrial, and applied arts concepts have all come into fruition in the past decade with the tremendous growth in facilities, programs, staff, and community participation.

Hindsight, however, is always much easier than foresight. With the challenge of the seventies just around the corner we cannot afford to just look back and say "Well done". There must be constant re-evaluation of aims and objectives through the already strong and dedicated advisory committees from industry and commerce. The guidance and evaluation of our programs by these advisory committees is strong and frank in order that we may provide sound programs to suit the needs of the students, and to meet the ever changing socio-economic conditions of our times.

There is strong co-operation constantly evidenced among all sectors of our society, all levels of educational services as well as all divisions and departments of government. This type of co-operation can only lead to the ongoing development of sound and progressive training programs, programs where people can seek and happily find the training and retraining necessary to fit them into the expanding economy of our province.

Honourable George Johnson, M.D.
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreward</td>
<td>3</td>
</tr>
<tr>
<td>Faculty</td>
<td>10</td>
</tr>
<tr>
<td>Calendar of Events</td>
<td>5</td>
</tr>
<tr>
<td>Entry Dates</td>
<td>12</td>
</tr>
<tr>
<td>General Information</td>
<td>14</td>
</tr>
<tr>
<td>Financial Assistance</td>
<td>19</td>
</tr>
<tr>
<td>Vocational Preparation Training</td>
<td>132</td>
</tr>
<tr>
<td>Apprenticeship</td>
<td>134</td>
</tr>
<tr>
<td><strong>Courses:</strong></td>
<td></td>
</tr>
<tr>
<td>Automotive Trades Department:</td>
<td></td>
</tr>
<tr>
<td>Auto Body Repair</td>
<td>25</td>
</tr>
<tr>
<td>Automotive Mechanical Repair</td>
<td>28</td>
</tr>
<tr>
<td>Diesel Mechanics &amp; Highway Tractor Maintenance</td>
<td>30</td>
</tr>
<tr>
<td>Construction Department:</td>
<td></td>
</tr>
<tr>
<td>Carpentry &amp; Woodworking</td>
<td>35</td>
</tr>
<tr>
<td>Masonry</td>
<td>38</td>
</tr>
<tr>
<td>Painting &amp; Decorating</td>
<td>41</td>
</tr>
<tr>
<td>Plumbing</td>
<td>43</td>
</tr>
<tr>
<td>Upholstery</td>
<td>45</td>
</tr>
<tr>
<td>Drafting Department:</td>
<td></td>
</tr>
<tr>
<td>Architectural Drafting</td>
<td>49</td>
</tr>
<tr>
<td>Machine Drafting</td>
<td>51</td>
</tr>
<tr>
<td>Electrical Department:</td>
<td></td>
</tr>
<tr>
<td>Electrical Appliance Repair</td>
<td>55</td>
</tr>
<tr>
<td>Electrical Course</td>
<td>58</td>
</tr>
<tr>
<td>Industrial Electrician</td>
<td>64</td>
</tr>
<tr>
<td>Refrigeration &amp; Air Conditioning</td>
<td>69</td>
</tr>
<tr>
<td>Electronics Department:</td>
<td></td>
</tr>
<tr>
<td>Basic Electronics Servicing</td>
<td>75</td>
</tr>
<tr>
<td>Industrial Electronics</td>
<td>80</td>
</tr>
<tr>
<td>Radio Operating &amp; Electronics Communication</td>
<td>82</td>
</tr>
<tr>
<td>T.V. Servicing</td>
<td>87</td>
</tr>
<tr>
<td>Food Services Department:</td>
<td></td>
</tr>
<tr>
<td>Baking for Cooks</td>
<td>89</td>
</tr>
<tr>
<td>Commercial Baking</td>
<td>87</td>
</tr>
<tr>
<td>Commercial Cooking</td>
<td>91</td>
</tr>
<tr>
<td>Food Service Supervisors</td>
<td>95</td>
</tr>
<tr>
<td>Meat Cutting</td>
<td>97</td>
</tr>
<tr>
<td>Restaurant Cooking</td>
<td>99</td>
</tr>
<tr>
<td>Hair Styling Department:</td>
<td></td>
</tr>
<tr>
<td>Barbering</td>
<td>105</td>
</tr>
<tr>
<td>Hairdressing &amp; Beauty Culture</td>
<td>110</td>
</tr>
<tr>
<td>Metals Department:</td>
<td></td>
</tr>
<tr>
<td>Machine Shop Practice</td>
<td>115</td>
</tr>
<tr>
<td>Sheet Metal</td>
<td>118</td>
</tr>
<tr>
<td>Watch Repair</td>
<td>121</td>
</tr>
<tr>
<td>Welding</td>
<td>123</td>
</tr>
<tr>
<td>Practical Nursing</td>
<td>127</td>
</tr>
</tbody>
</table>
INDUSTRIAL DIVISION

Calendar of Events

1968-69

1968

MONDAY  SEPTEMBER 2ND  Labour Day (Institute Closed).
TUESDAY  SEPTEMBER 3RD  Fall Term for Industrial Pre-employment and Apprentice courses commences. (See page 12 for other entry dates.)
WEDNESDAY  SEPTEMBER 11TH  Registration for fall term of Extension classes.
MONDAY  SEPTEMBER 23RD  Fall term of Extension classes for adults opens for a period of ten weeks.
MONDAY  OCTOBER 14TH  Thanksgiving Day (Institute Closed).
MONDAY  NOVEMBER 11TH  Remembrance Day (Institute Closed).
TUESDAY  DECEMBER 24TH  Last day of classes before Christmas Vacation.
THURSDAY  DECEMBER 26TH  Boxing Day (Institute Closed).
FRIDAY  DECEMBER 27TH  Office re-opens.

1969

WEDNESDAY  JANUARY 1ST  New Years Day (Institute Closed).
THURSDAY  JANUARY 2ND  Office re-opens.
FRIDAY  JANUARY 3RD  Classes Recomence
WEDNESDAY  JANUARY 8TH  Registration for winter term of Extension classes.
MONDAY  JANUARY 20TH  Winter term of Extension classes for adults opens for a period of ten weeks.
WEDNESDAY  APRIL 9TH  Registration for spring term of Extension classes.
MONDAY  APRIL 14TH  Spring term of Extension Classes for adults opens for a period of ten weeks.
FRIDAY  APRIL 4TH  Good Friday (Inst. Closed).
MONDAY  APRIL 7TH  Easter Monday (No Classes).
THURSDAY  APRIL 24TH  Open House for High School students.
FRIDAY  APRIL 25TH  Open House for High School students.
FRIDAY  JUNE 27TH  Graduation
TUESDAY  JULY 1ST  Dominion Day (Inst. Closed).
WEDNESDAY  JULY 2ND  Departmental Summer School opens.
MONDAY  AUGUST 4TH  Civic Holiday (Inst. Closed).
The growth in our economy coupled with the changes and advances in this technological age, continue to make it necessary for our manpower to be trained and retrained. There is an ever-increasing demand for the skilled craftsman.

The Industrial Division continues to offer courses in those areas where job opportunities are obvious. From time to time new courses will be introduced as the need becomes evident. As trades become more technical, the academic pre-requisites to enroll in a course also rise slowly. High School students are advised to seriously consider the disadvantages of leaving the High School streams with only minimum academic requirements to enter Industrial Training.

S. P. Didcote, Principal.
Superintendent’s Message

Since the start of all phases of Training at the Manitoba Institute of Technology in 1963, the Institute has grown in stature and favor with the citizens of Manitoba, the students, the parents and the employers. It provides an alternative type of training for those whose education, interests or aptitudes make a University education either unobtainable or unattractive. It provides a preparation for interesting, challenging and remunerative employment in more than fifty areas of work.

As we begin the school year 1968-69 the completion of the first phases of the construction of the Manitoba Institute of Applied Arts will make it possible to offer a still greater variety of courses, not only in the Arts-based business-oriented field but also in the science-based production-centred field.

The three calendars issued by the M.I.T. - M.I.A.A. are published to assist you in choosing the type of training which can best develop your talents. Your choice of career is too important to be made hastily. Consult your teachers, guidance counsellors, parents and other knowledgeable citizens to assist you in selecting the training that is best for you.

A. R. Low
Superintendent.
Administrative Staff


General Administration:
Administrative Officer and Registrar . . . W. H. GRANT, C.D.
Supervisor of Curriculum,
    Guidance and Testing . . . . H. V. F. HUME, B.Sc.
Supervisor of Teacher Training . . . P. F. PENNER, B.A.
Supervisor of Auxiliary Services . . . G. S. ROSS, B.Sc.
Librarian . . . . . . . . . . . . . . . .
Accountant . . . . . . . . . . . . . . . . I. J. PUCHLIK
Chief Maintenance Engineer . . . . . . . . . . . . F. MASSEY
Training

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.

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

School of Business:
Principal . . . . . . . . . . . . . . . . . . . . . . A. L. BERG, B.Comm.
Faculty

BEATTIE, MISS M., Reg. N., B.N. ............................................. Practical Nursing
BOURKE, MR. A. ................................................................. Electrical Appliance Repair
BROWN, MR. CHARLES C. ..................................................... Sheet Metal
BUCHANAN, MR. IVAN M. ..................................................... Watch Repair
BURES, MR. HENRY, B.Eng., C.E.T ........................................ Machine Drafting
CANTIN, MR. L. ................................................................. Electrical
CLAYTON, MR. SYDNEY ....................................................... Carpentry and Woodworking
DAVIDSON, MR. J. C. ............................................................ Painting & Decorating
DAWSON, MRS. E. ............................................................... Hairdressing
DEROCHÉ, MR. A. G. ............................................................. Auto Body
DILLON, MR. ROY ............................................................... Welding
DONALDSON, MR. G. W. ..................................................... Radio Operating
DOOLAN, MR. F., C.E.T ........................................................ Related (Science)
ELVERS, MR. PETER, B.Sc. .................................................. Carpentry and Woodworking
FARR, MR. J., B.Sc., C.E.T .................................................... Related (Maths)
FAST, MRS. SANDRA E., Reg. N., B.Sc.N ................................ Practical Nursing
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 .......................................................... 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
HARRIS, MR. D. J., C.E.T ..................................................... Architectural Drafting
HAYES, MR. R. S. ............................................................... Architectural Drafting
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 (Maths)
KNOFF, MR. V. R., B.Acc. .................................................... Related (Communications)
LABELLE, MR. MAURICE ..................................................... Electrical Appliance Repair
LANE, MR. JOHN F. ............................................................ Machine Shop
LAURIKAINEN, MR. R. ....................................................... Related (Maths)
LAXDAL, MR. JOHN A. A. .................................................... Refrigeration
LOCKEN, MR. ROGER C. ..................................................... Diesel
<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>MANN, MR. VICTOR J.</td>
<td>Plumbing</td>
</tr>
<tr>
<td>MARSH, MR. RAYMOND J.</td>
<td>(Meat Cutting) Food Services</td>
</tr>
<tr>
<td>MOUSSEAU, MR. L., B.A.</td>
<td>Related (Maths)</td>
</tr>
<tr>
<td>McCAIN, MR. W.</td>
<td>Electrical</td>
</tr>
<tr>
<td>MCCOLM, MRS. ANITA,</td>
<td>Practical Nursing</td>
</tr>
<tr>
<td>MARSH, MR. RAYMOND J.</td>
<td>Meat Cutting Food Services</td>
</tr>
<tr>
<td>MCEINTYRE, MR. A.</td>
<td>Related (Maths)</td>
</tr>
<tr>
<td>MCEINTYRE, MR. A.</td>
<td>Electrical</td>
</tr>
<tr>
<td>NEST, MR. GEORGE</td>
<td>Machine Shop</td>
</tr>
<tr>
<td>NOBLE, MRS. E., Reg.</td>
<td>Practical Nursing</td>
</tr>
<tr>
<td>NOTLEY, MR. G., B.Sc.</td>
<td>Related (Science)</td>
</tr>
<tr>
<td>NUTTALL, MR. R.</td>
<td>Electrical</td>
</tr>
<tr>
<td>PANKIW, MR. J.</td>
<td>Plumbing</td>
</tr>
<tr>
<td>PATTENSON, MR. E. G.</td>
<td>Electrical</td>
</tr>
<tr>
<td>PATTENSON, MR. J. T.</td>
<td>Automotive</td>
</tr>
<tr>
<td>PEDORA, MR. J. M.</td>
<td>Welding</td>
</tr>
<tr>
<td>REID, MR. J. D.</td>
<td>Carpentry and Woodworking</td>
</tr>
<tr>
<td>REID, MR. F.</td>
<td>T. V. Servicing</td>
</tr>
<tr>
<td>RIDGEWAY, MR. W. J.</td>
<td>Related (Communications)</td>
</tr>
<tr>
<td>ROUND, MR. V. N.</td>
<td>Upholstery</td>
</tr>
<tr>
<td>ROY, MR. E. C.</td>
<td>Electrical</td>
</tr>
<tr>
<td>SAWCHYN, MR. JOHN I.</td>
<td>Automotive</td>
</tr>
<tr>
<td>SCHREIDER, MR. A., B.</td>
<td>Related (Drafting)</td>
</tr>
<tr>
<td>SCHWEIDIC, MR. RUDOLPH</td>
<td>Refrigeration</td>
</tr>
<tr>
<td>SHURA, MR. ARTHUR</td>
<td>Diesel</td>
</tr>
<tr>
<td>SKINNER, MR. J. D.</td>
<td>Basic Electric Servicing</td>
</tr>
<tr>
<td>SMALL, MR. B.</td>
<td>Auto Body</td>
</tr>
<tr>
<td>SMITH, MR. G. H.</td>
<td>Masonry</td>
</tr>
<tr>
<td>STARK, MR. JOHN</td>
<td>Carpentry and Woodworking</td>
</tr>
<tr>
<td>STEVENSON, MISS A.,</td>
<td>Hairdressing</td>
</tr>
<tr>
<td>STURKO, MRS. I.</td>
<td>Automotive</td>
</tr>
<tr>
<td>THODY, MR. FLOYD C.</td>
<td>Related (Science)</td>
</tr>
<tr>
<td>TRYLINISI, MR. C.</td>
<td>Electrical</td>
</tr>
<tr>
<td>UNDIKS, MR. J.</td>
<td>Automotive</td>
</tr>
<tr>
<td>URSEL, MR. A. F.</td>
<td>Automotive</td>
</tr>
<tr>
<td>VAN DE MOSELAER, MR.</td>
<td>Machine Shop</td>
</tr>
<tr>
<td>VINCENT, MR. J. M.</td>
<td>Related (Maths)</td>
</tr>
<tr>
<td>YOUNG, MR. WILLIAM K.</td>
<td>Diesel</td>
</tr>
</tbody>
</table>
ADDITIONAL ENTRY DATES

The first entry date shown can be considered as a firm date. Subsequent dates are tentative dates only. They may be changed to an alternate date that is mutually agreeable to the training centre concerned and the Canada Manpower Centre if the training situation demands. Where a course is filled and no training vacancies exist, the subsequent dates are null and void until a sufficient number of vacancies occur. If extra staff are obtainable, classes may be commenced on a second shift.

<table>
<thead>
<tr>
<th>AUTO BODY REPAIR</th>
<th>BRANDON</th>
<th>3 SEP</th>
<th>4 NOV</th>
<th>3 JAN</th>
<th>3 MAR</th>
<th>5 MAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>WINNIPEG</td>
<td></td>
<td>3 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
</tr>
<tr>
<td>AUTO MECH. REPAIR</td>
<td>BRANDON</td>
<td>3 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
</tr>
<tr>
<td>THE PAS</td>
<td>3 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
<td></td>
</tr>
<tr>
<td>WINNIPEG</td>
<td>4 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
<td></td>
</tr>
<tr>
<td>DIESEL MECHS.</td>
<td>WINNIPEG</td>
<td>5 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
</tr>
<tr>
<td>BARBERING</td>
<td>BRANDON</td>
<td>3 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
</tr>
<tr>
<td>WINNIPEG</td>
<td>3 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
<td></td>
</tr>
<tr>
<td>HAIR DRESSING</td>
<td>BRANDON</td>
<td>3 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
</tr>
<tr>
<td>THE PAS</td>
<td>3 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
<td></td>
</tr>
<tr>
<td>WINNIPEG</td>
<td>4 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
<td></td>
</tr>
<tr>
<td>CARPENTRY AND WOODWORK</td>
<td>BRANDON</td>
<td>3 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
</tr>
<tr>
<td>THE PAS</td>
<td>3 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
<td></td>
</tr>
<tr>
<td>WINNIPEG</td>
<td>3 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
<td></td>
</tr>
<tr>
<td>MASONRY</td>
<td>WINNIPEG</td>
<td>4 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
</tr>
<tr>
<td>PAINTING</td>
<td>WINNIPEG</td>
<td>3 JAN</td>
<td>3 FEB</td>
<td>3 MAR</td>
<td>5 MAY</td>
<td></td>
</tr>
<tr>
<td>PLUMBING</td>
<td>BRANDON</td>
<td>3 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
</tr>
<tr>
<td>THE PAS</td>
<td>3 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
<td></td>
</tr>
<tr>
<td>WINNIPEG</td>
<td>6 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
<td></td>
</tr>
<tr>
<td>HEAVY DUTY MECHS.</td>
<td>BRANDON</td>
<td>3 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
</tr>
<tr>
<td>WINNIPEG</td>
<td>3 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
<td></td>
</tr>
<tr>
<td>WELDING</td>
<td>BRANDON</td>
<td>3 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
</tr>
<tr>
<td>THE PAS</td>
<td>3 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
<td></td>
</tr>
<tr>
<td>WINNIPEG</td>
<td>3 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
<td></td>
</tr>
<tr>
<td>SHEET METAL</td>
<td>THE PAS</td>
<td>3 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
</tr>
<tr>
<td>WINNIPEG</td>
<td>6 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
<td></td>
</tr>
<tr>
<td>BLDG. MAT.</td>
<td>WINNIPEG</td>
<td>6 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
</tr>
<tr>
<td>WATCH REP.</td>
<td>BRANDON</td>
<td>3 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
</tr>
<tr>
<td>WINNIPEG</td>
<td>3 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
<td></td>
</tr>
<tr>
<td>PRACT. NURSE.</td>
<td>WINNIPEG</td>
<td>26 AUG</td>
<td>3 JAN</td>
<td>5 MAY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WINNIPEG</td>
<td>AS OPENINGS OCCUR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BAKING FOR COOKS</td>
<td>WINNIPEG</td>
<td>3 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
</tr>
<tr>
<td>WINNIPEG</td>
<td>AS OPENINGS OCCUR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMMERCIAL BAKING</td>
<td>WINNIPEG</td>
<td>3 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
</tr>
<tr>
<td>COMMERCIAL COOKING</td>
<td>THE PAS</td>
<td>3 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
</tr>
<tr>
<td>WINNIPEG</td>
<td>3 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
<td></td>
</tr>
<tr>
<td>CAMP COOK</td>
<td>THE PAS</td>
<td>3 SEP</td>
<td>4 NOV</td>
<td>3 FEB</td>
<td>3 FEB</td>
<td>3 MAR</td>
</tr>
<tr>
<td>MEAT CUTTING</td>
<td>WINNIPEG</td>
<td>5 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
</tr>
<tr>
<td>WAITER WAITRESS</td>
<td>THE PAS</td>
<td>3 SEP</td>
<td>4 NOV</td>
<td>3 JAN</td>
<td>3 MAR</td>
<td>5 MAY</td>
</tr>
<tr>
<td>UPHOLSTERY</td>
<td>WINNIPEG</td>
<td>AS OPENINGS OCCUR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------</td>
<td>-------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GENERAL DRAFTING</td>
<td>BRANDON</td>
<td>3 SEP 3 FEB</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>THE PAS</td>
<td>3 SEP 4 NOV 3 FEB</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARCH. DRAFTING</td>
<td>WINNIPEG</td>
<td>6 SEP 3 FEB</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MACHINE DRAFTING</td>
<td>WINNIPEG</td>
<td>6 SEP 3 FEB</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ELECTRICAL COURSE</td>
<td>BRANDON</td>
<td>3 SEP 4 NOV 3 JAN 3 MAR 5 MAY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>THE PAS</td>
<td>3 SEP 4 NOV 3 JAN 3 MAR 5 MAY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>WINNIPEG</td>
<td>4 SEP 30 SEP 4 NOV 3 FEB 5 MAY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INDUSTRIAL ELECTRICIAN</td>
<td>BRANDON</td>
<td>3 SEP 4 NOV 3 JAN 3 MAR 5 MAY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>THE PAS</td>
<td>3 SEP 4 NOV 3 JAN 3 MAR 5 MAY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>WINNIPEG</td>
<td>6 SEP 3 FEB</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ELEC. APPLIAN. REPAIR</td>
<td>BRANDON</td>
<td>3 SEP 4 NOV 3 JAN 3 MAR 5 MAY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>WINNIPEG</td>
<td>3 SEP 4 NOV 3 JAN 3 MAR 5 MAY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RADIO OPS.</td>
<td>WINNIPEG</td>
<td>6 SEP 3 JAN</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RADIO &amp; T.V.</td>
<td>BRANDON</td>
<td>3 SEP 3 FEB</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BASIC ELECT. &amp; T.V. SERVICING</td>
<td>THE PAS</td>
<td>3 SEP 4 NOV 3 FEB 3 MAR 5 MAY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>WINNIPEG</td>
<td>5 SEP 4 NOV 3 FEB 3 MAR 5 MAY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T.V. SERVICING</td>
<td>THE PAS</td>
<td>3 SEP 4 NOV 3 FEB 3 MAR 5 MAY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>WINNIPEG</td>
<td>6 SEP 4 NOV 3 FEB</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INDUSTRIAL ELECTRONICS</td>
<td>WINNIPEG</td>
<td>6 SEP 3 FEB</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INDUST. PARTS &amp; SALES</td>
<td>BRANDON</td>
<td>3 SEP 4 NOV 3 FEB 5 MAY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AG. SALES</td>
<td>BRANDON</td>
<td>3 SEP 3 JAN 3 MAR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REFRIGERATION</td>
<td>WINNIPEG</td>
<td>5 SEP 4 NOV 3 JAN 3 MAR 5 MAY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MACHINE SHOP PRACTICE</td>
<td>BRANDON</td>
<td>3 SEP 4 NOV 3 JAN 3 MAR 5 MAY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>WINNIPEG</td>
<td>6 SEP 4 NOV 3 JAN 3 MAR 5 MAY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INDUST. MECHS.</td>
<td>THE PAS</td>
<td>3 SEP 4 NOV 3 JAN 3 MAR 5 MAY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HEAVY DUTY OPS.</td>
<td>THE PAS</td>
<td>3 SEP 4 NOV 3 JAN 3 MAR 5 MAY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| DOMESTIC SCIENCE              | THE PAS  | 3 SEP 4 NOV 3 JAN 3 MAR 5 MAY |
| C.B.O.M.                      | BRANDON  | 3 SEP 4 NOV 3 JAN 3 MAR 5 MAY |
|                               | THE PAS  | 3 SEP 4 NOV 3 JAN 3 MAR 5 MAY |
|                               | WINNIPEG | 6 SEP 4 NOV 3 JAN 3 MAR 5 MAY |
| CLERK TYPIST                  | BRANDON  | 3 SEP 4 NOV 3 JAN 3 MAR 5 MAY |
|                               | THE PAS  | 3 SEP 4 NOV 3 JAN 3 MAR 5 MAY |
|                               | WINNIPEG | 4 SEP 4 NOV 3 JAN 3 MAR 5 MAY |
| STENO                         | BRANDON  | 3 SEP 4 NOV 3 FEB   |
|                               | THE PAS  | 3 SEP 4 NOV 3 FEB   |
|                               | WINNIPEG | 3 SEP 4 NOV 3 FEB   |
| COMMERCIAL ART                | BRANDON  | 3 SEP 4 NOV 3 JAN 3 MAR 5 MAY |
|                               | WINNIPEG | 5 SEP             |
| SOCIAL WELFARE SERVS.         | BRANDON  | 3 SEP             |
|                               | WINNIPEG | 3 SEP             |
| RESTAURANT COOKING            | WINNIPEG | 6 SEP 4 NOV 3 JAN 3 MAR 5 MAY |
|                               | THE PAS  | AS OPENINGS OCCUR |
| JUNIOR ACCOUNTANCY            | WINNIPEG | 6 SEP 4 NOV 3 FEB  |
| COMM. & INDUST. SALES         | WINNIPEG | 3 SEP ONLY        |
| FOOD SERV. SUPERVISORS        | WINNIPEG | 4 SEP ONLY        |
| PHOTO TECH.                   | WINNIPEG | 6 SEP ONLY        |
| GRAPH. ARTS                   | WINNIPEG | 5 SEP ONLY        |
| LIBRARY TECH.                 | WINNIPEG | 4 SEP ONLY        |
| OPER. ENG.                    | WINNIPEG | 3 SEP ONLY        |
General Information

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 prerequisites 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 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.
ADMISSIONS COMMITTEE

A Committee Established by the Principal.

All applicants must be approved by the Admissions Committee prior to admission to their respective program. Applicants may be asked to appear before the Committee for a personal interview, or aptitude tests.

PRE-REQUISITES FOR ADMISSION

Applicants should meet one of the pre-requisites listed under the course of his choice. However, applicants who do not have the complete grade necessary will be considered by the Admissions Committee.

The Vocational Preparation Training (B.T.S.D.) referred to in this Calendar is a special training program for those persons who do not meet the grade requirements. Further information concerning this program may be obtained from any Canada Manpower Centre in Manitoba. See page 132 for general information regarding course content.

For Electronics courses requiring Grade XI, applicants must have Mathematics 200 or 201, and either Physics 200 or Physical Science 201.

School grades referred to are Manitoba grades. Educational qualification from other provinces or other countries must be submitted for evaluation to:

The Registrar
Department of Education
1181 Portage Avenue
Winnipeg 10, Manitoba.

FEES AND DEPOSITS

Fees for all courses are on a quarterly (three months) basis, payable as follows:

Manitoba Resident—$20.00 per quarter, or portion thereof, payable in advance. $50.00 per quarter for Welding Course.

Non Resident—$40.00 per quarter, or portion thereof, payable in advance. $100.00 per quarter for Welding Course.

All cheques or money orders should be made payable to "The Manitoba Institute of Technology". These registration fees are not refundable, except in the case that if a fee paying student finds that he must withdraw from his course or is asked to leave the course within 2 weeks of the date on which he was initially registered, he is entitled to a refund of 75% of the fee paid. NO REFUNDS will be made either for withdrawal or suspension from the course after the two week period.
A tool deposit or caution fee may be required of students attending certain shop courses. This amount, less any deductions for tools lost or damaged, will be returned to the student if application is made within thirty days after the completion of the course.

**GUIDANCE**

Vocational and Educational guidance is available to applicants and students.

**REGISTRATION**

Tuition fees for the first quarter (3 months) are due and payable on the date of registration.

**ATTENDANCE**

Students must be punctual and 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 this course. Three occurrences of lateness within any two week period, will be considered as one day of absence.

**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, progress, attendance, or attitude proves unsatisfactory. The Institute reserves the right to dismiss at any time, students who are unable or unwilling to profit from instruction.

Students are required to complete all assignments of homework.

**DRESS AND APPEARANCE**

Students are expected to dress, and maintain a neat, tidy personal appearance, appropriate to the classroom, laboratory, or workshop in which they are working. In some shops, special protective clothing or coveralls must be worn. This clothing may be purchased at the Institute’s Book Store.
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.

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 Training Centres have exerted and will continue to exert every effort to avoid accidents, but incorporate 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.

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

OFFICE HOURS

The General Office is open from 8:00 a.m., until 5:00 p.m., Monday through Friday.

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.

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.
LOCKERS

Lockers are available without cost to full-time students.

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.

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, Guardian or Sponsor, upon request. A student doing unsatisfactory work 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

Students meeting the following requirements will be presented Certificates of Attainment:

(Duplicate certificates will be issued on payment of a fee of $1.00.)

1. Satisfactory completion of a full-time day course (enrollment for designated duration) with at least 90% attendance.
2. Attainment of a minimum 60% in all required subjects.
3. Recommendation of their Home Room or Shop Instructor.

SUPPLEMENTAL EXAMINATIONS

Students who do not meet the standards required for a Certificate of Attainment may be permitted supplemental privileges in not more than two subjects. Supplementals must be written within two years from the time of course termination. Time and place for writing of supplementals are to be arranged in consultation with the Principal.
GRADUATION

Graduations are held periodically, at which time, "Certificates of Attainment" are awarded to the candidates meeting the prescribed requirements. Upon proof of six months satisfactory employment a seal will be affixed to the certificate.

Suitable certificate cases may be obtained from the Registrar in the General Office, at the time of Graduation at a cost of $2.50 each.

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 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.

BOOK STORE

Textbooks and supplies may be purchased from the Manitoba Institute of Technology Book Store, on a cash basis only.

CAFETERIA

The modern cafeteria at the Institute provides excellent, low cost meals during the mid-day lunch period.

LIBRARY

The Institute Library functions as a centre through which students and faculty are enabled to carry on many of their research and study activities. The library collection consists of textbooks 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 5:00 p.m. Monday through Friday.

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. Textbooks listed in this calendar are also subject to change without notice.

EXTENSION COURSES

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.
Automotive Trades Department

Courses:

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

Faculty:

Mr. A. Deroche ........................................ Auto Body
Mr. R. Dripps .......................................... Diesel
Mr. N. Hildebranede ........................................ Auto Body
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:** Complete Grade X or Vocational Preparation Training (B.T.S.D.) 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>&quot; 60 &quot;</td>
</tr>
<tr>
<td>Machine Shop</td>
<td>&quot; 40 &quot;</td>
</tr>
<tr>
<td>Industrial Maths</td>
<td>&quot; 40 &quot;</td>
</tr>
<tr>
<td>Industrial Science</td>
<td>&quot; 20 &quot;</td>
</tr>
<tr>
<td>Industrial Communications</td>
<td></td>
</tr>
</tbody>
</table>

**700 hours**

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

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Trim Glass</td>
<td></td>
</tr>
<tr>
<td>Alignment of Body Components</td>
<td></td>
</tr>
<tr>
<td>Repairing Damaged Vehicles</td>
<td></td>
</tr>
<tr>
<td>Dozer hook-ups and correction of frames</td>
<td></td>
</tr>
<tr>
<td>Spray Painting Equipment</td>
<td></td>
</tr>
<tr>
<td>Paint Products</td>
<td></td>
</tr>
<tr>
<td>Refinishing Vehicles</td>
<td></td>
</tr>
<tr>
<td>Estimating Collision Damage</td>
<td></td>
</tr>
<tr>
<td>Industrial Maths</td>
<td></td>
</tr>
<tr>
<td>Industrial Science</td>
<td></td>
</tr>
<tr>
<td>Industrial Communications</td>
<td></td>
</tr>
</tbody>
</table>

5 Months

Approx. 14 hours

20

391

20

16

20

150

9

20

20

20

700 hours

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.

Term B

Hardware Trim and Glass: Door assemblies, windows, headlinings, 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.

Textbooks:
"Oxy-Acetylene Welding" — Linde
"Auto-Body Repairing and Re-Painting" — Bill Toboldt
"The A B C's of Spray-Painting" — Devilbiss
"Trade Mathematics" — Ruttan
"General Repair Tools for Automobile Mechanics" — Delmar Publishers

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

Textbooks 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: Complete Grade X or Vocational Preparation Training (B.T.S.D.) 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</td>
</tr>
<tr>
<td>Electrical</td>
<td>195</td>
</tr>
<tr>
<td>Fuel System</td>
<td>60</td>
</tr>
<tr>
<td>Engine tune-up</td>
<td>85</td>
</tr>
<tr>
<td>Transmission &amp; Planetary gears</td>
<td>125</td>
</tr>
<tr>
<td>Rear axles &amp; Drive Lines</td>
<td>80</td>
</tr>
<tr>
<td>Brakes</td>
<td>115</td>
</tr>
<tr>
<td>Steering and Suspension</td>
<td>100</td>
</tr>
<tr>
<td>Machine Shop</td>
<td>70</td>
</tr>
<tr>
<td>Welding</td>
<td>35</td>
</tr>
<tr>
<td>Drafting and Blueprint Reading</td>
<td>35</td>
</tr>
<tr>
<td>Industrial Mathematics</td>
<td>70</td>
</tr>
<tr>
<td>Industrial Science</td>
<td>70</td>
</tr>
<tr>
<td>Industrial Communications</td>
<td>20</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1400 hours</strong></td>
</tr>
</tbody>
</table>

**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 cycles, 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 bearing, Tooth patterns, Universal joints, Positracktion 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 oxyacetylene 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, punctuations, planning, emphasis and accuracy, technical language, reports, business letters, use of references and sources of information.

Text Books:

"Automotive Mechanics" — Crouse
"Delco Remy Electrical Equipment"
"Delco Remy Test Specifications"
"Motor Vehicle Calculations and Science" — Champion & Arnold
"Trade Mathematics" — Ruttan
"Trade Science" — Jenson & Brazier

Other 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 (B.T. S.D.) 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>Description</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engines</td>
<td>255</td>
</tr>
<tr>
<td>Auxiliary Systems</td>
<td>255</td>
</tr>
<tr>
<td>Running Gear I</td>
<td>270</td>
</tr>
<tr>
<td>Hydraulics and Running Gear II</td>
<td>270</td>
</tr>
<tr>
<td>Machine Shop</td>
<td>60</td>
</tr>
<tr>
<td>Welding</td>
<td>70</td>
</tr>
<tr>
<td>Drafting and Blueprint Reading</td>
<td>35</td>
</tr>
<tr>
<td>Industrial Mathematics</td>
<td>80</td>
</tr>
<tr>
<td>Industrial Science</td>
<td>80</td>
</tr>
<tr>
<td>Industrial Communications</td>
<td>25</td>
</tr>
</tbody>
</table>

Total: 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 II: 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 converters 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 and accuracy, technical language, reports, business letters, use of references and sources of information.

Textbooks:

"Diesel Engineering Handbook" — Diesel Publications
"Automotive Mechanics" — Crouse
"Fuel Injection Systems" — Diesel Publications
"Delco Remy Electrical Equipment"
"Delco Remy Test Specifications"
"Motor Vehicle Calculations and Science" — Champion and Arnold
"Trade Mathematics" — Ruttan

Other 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 ........................................ Carpentery
Mr. J. C. Davidson .................................. Painting & Decorating
Mr. P. Elvers, B.Sc. ................................ Carpentery
Mr. L. Forcere .......................................... Steamfitting (Apprentices)
Mr. V. J. Mann ......................................... Plumbing
Mr. J. Pankiw ........................................... Plumbing
Mr. D. D. Reid .......................................... Carpentery
Mr. V. N. Round ....................................... Upholstery
Mr. G. H. Smith ...................................... Masonry
Mr. J. Stark ............................................. Carpentery
Carpentry and Woodworking  
(Pre-Apprentice)

DURATION — Approx. 10 months.

Pre-requisites: A complete Grade X, or Vocational Preparation Training (B.T.S.D.) 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 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>Hand Tools</th>
<th>approx. 108 hours</th>
</tr>
</thead>
<tbody>
<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>

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: Familiaration 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.


Textbooks:

"Hand Woodworking Tools" — Delmar
"Framing, Sheathing & Insulation" — Delmar
"Simplified Stair Layout" — Delmar
"Concrete Form Construction" — Delmar
"Interior and Exterior Trim" — Delmar
"Practical Problems in Mathematics" — Delmar
"Cabinet Making and Millwork" — Delmar
"Simplified Roof Framing" — Wilson and Werner
"Operation of Modern Woodworking Machines" — Holtrop and Hjorth
"Portable Power Tools" — Delmar
(Others to be announced.)

Other 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: A complete Grade IX, or Vocational Preparation Training (B.T.S.D.) 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>Topic</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introductory Lecture</td>
<td>approx. 2 hours</td>
</tr>
<tr>
<td>Masonry Materials</td>
<td>17</td>
</tr>
<tr>
<td>Basic Tools &amp; Machines</td>
<td>4</td>
</tr>
<tr>
<td>Scaffolding</td>
<td>4</td>
</tr>
<tr>
<td>Masonry Bonds</td>
<td>32</td>
</tr>
<tr>
<td>Definitions</td>
<td>29</td>
</tr>
<tr>
<td>Wall Types</td>
<td>6</td>
</tr>
<tr>
<td>Laying Out</td>
<td>18</td>
</tr>
<tr>
<td>Concrete</td>
<td>4</td>
</tr>
<tr>
<td>Field Trips</td>
<td>7</td>
</tr>
<tr>
<td>Practical Work</td>
<td>525</td>
</tr>
<tr>
<td>Drafting and Blueprint Reading</td>
<td>35</td>
</tr>
<tr>
<td>Industrial Mathematics</td>
<td>17</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 its 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. Tooothing. Racking back. Blocking, placing corner line blocks, line pins, stretching line, sighting line, setting trigs (twig), tingle brick, setting brick to line, perpends plumb. Chases and indents, anchoring techniques, offsets, corbels, setting frames, striking joints, tooling joints, sills, copings, lintels, cleaning masonry, clean work habits taught.

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.


Textbooks:

"Clay Masonry Manual" — Culter & Miklund
"Brick Tile Institute of Ontario"
"A Concise Building Encyclopedia" — T. Corkhill: Pitman
Additional references:

Mason’s & Builder’s Guide — Audel
Bricklaying I, II & III — Delmar

Other 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:** A complete Grade X, or Vocational Preparation Training (B.T.S.D.) 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 adoption 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:**

<table>
<thead>
<tr>
<th>Course Content</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction of the course and history of trade</td>
<td>25</td>
</tr>
<tr>
<td>Study of basic components of paint</td>
<td>30</td>
</tr>
<tr>
<td>Study of tools</td>
<td>40</td>
</tr>
<tr>
<td>Use, care, and maintenance of equipment</td>
<td>25</td>
</tr>
<tr>
<td>Job organization and quantity estimating</td>
<td>30</td>
</tr>
<tr>
<td>Basic color theory and color mixing</td>
<td>120</td>
</tr>
<tr>
<td>Preparation and application of coatings on Interior and Exterior surfaces</td>
<td>120</td>
</tr>
<tr>
<td>Paint failures, causes, prevention, remedies and Preparation for Recoating Surfaces</td>
<td>120</td>
</tr>
<tr>
<td>The Spray Gun Maintenance and Use</td>
<td>30</td>
</tr>
<tr>
<td>Fundamentals of Wood Finishing</td>
<td>30</td>
</tr>
<tr>
<td>Fundamentals of Paper Hanging and Wall Coverings</td>
<td>30</td>
</tr>
</tbody>
</table>

**Related Subjects:**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial Mathematics</td>
<td>40</td>
</tr>
<tr>
<td>Industrial Communications</td>
<td>20</td>
</tr>
<tr>
<td>Industrial Science</td>
<td>40</td>
</tr>
</tbody>
</table>

**Course Detail of Related Subjects:**

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

**Industrial Communications:** Paragraphs, Letter styles, Letter of application, Letter of recommendation, Bills and Collection letters, Specifications, Letters dealing with specifications, Introduction to basic reports.

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

**Textbooks:**

- “Painting and Decorating Encyclopedia” — Jarvis
- “Painting and Decorating” — Chlystyk
- “Basic Mathematics for Trades” — Ruttan
- “English for Vocational & Technical Schools” — Shuman 2nd Ed.

**Other 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:** A complete Grade X, or Vocational Preparation Training (B.T.S.D.) Level II.

**Employment Opportunities:**

As the Plumber is a craftsman who installs water, gas, and waste disposal systems in 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>Approx. Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to Plumbing</td>
<td>80</td>
</tr>
<tr>
<td>Cast Iron Soil Pipe</td>
<td>210</td>
</tr>
<tr>
<td>Galvanized Steel Pipe</td>
<td>45</td>
</tr>
<tr>
<td>Copper Pipe</td>
<td>210</td>
</tr>
<tr>
<td>Lead Pipe</td>
<td>40</td>
</tr>
<tr>
<td>Plastic Pipe</td>
<td>35</td>
</tr>
<tr>
<td>Glass Pipe</td>
<td>70</td>
</tr>
<tr>
<td>Sheet Lead</td>
<td>35</td>
</tr>
<tr>
<td>Lead Burning &amp; Lead Soldering</td>
<td>40</td>
</tr>
<tr>
<td>Plumbing Theory</td>
<td>225</td>
</tr>
<tr>
<td>Related Machine Shop</td>
<td>70</td>
</tr>
<tr>
<td>Related Welding</td>
<td>70</td>
</tr>
<tr>
<td>Industrial Mathematics</td>
<td>80</td>
</tr>
<tr>
<td>Industrial Science</td>
<td>80</td>
</tr>
<tr>
<td>Drafting &amp; Blue Print Reading</td>
<td>70</td>
</tr>
<tr>
<td>Industrial Communications</td>
<td>40</td>
</tr>
</tbody>
</table>

**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 caulking 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.

Textbooks:

"Metropolitan Corporation of Greater Winnipeg" — By-Law No. 711
"Plumbing" — Babbitt
"Trade Information Sheets"
"Trade Mathematics" — Ruttan
"Plumbing Layout Sheets"

Other 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: A complete Grade X, or Vocational Preparation Training (B.T.S.D.) Level II.

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

Course Content:

Course Details:
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.

Textbooks:

"New Essentials of Upholstery" — H. Bast
"Upholstering and Re-Upholstering" — Criswell
"Trade Mathematics" — Ruttan

Other 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
Mr. D. Harris, C.E.T. .......................... Architectural Drafting
Mr. R. Hayes ................................. Architectural Drafting
Mrs. P. Hunt ............................... Architectural Drafting
Architectural Drafting

**DURATION** — Approx. 10 months,

**Pre-requisites:** Complete Grade XI with proficiency in Mathematics and Physical Science, or Vocational Preparation Training (B.T.S.D.) 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>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Drafting</td>
<td>86</td>
</tr>
<tr>
<td>Residential Building</td>
<td>140</td>
</tr>
<tr>
<td>Industrial Building</td>
<td>633</td>
</tr>
<tr>
<td>Structural Drafting</td>
<td>40</td>
</tr>
<tr>
<td>Miscellaneous Metal Drafting</td>
<td>40</td>
</tr>
<tr>
<td>Millwork Drafting</td>
<td>35</td>
</tr>
<tr>
<td>Survey and Topographical Drafting</td>
<td>128</td>
</tr>
<tr>
<td>Presentation Drafting</td>
<td>46</td>
</tr>
<tr>
<td>Job Site Visits and Training Films</td>
<td>37</td>
</tr>
<tr>
<td>Related Mathematics</td>
<td>72</td>
</tr>
<tr>
<td>Related Science</td>
<td>72</td>
</tr>
<tr>
<td>Business Communications</td>
<td>37</td>
</tr>
<tr>
<td>Calculating Machine Operation &amp; Quantity Take-Off</td>
<td>34</td>
</tr>
</tbody>
</table>

1400 hours

**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, levelling 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.

Related Mathematics: Equivalent to Grade XI matriculation plus Grade XII matric mathematics. Review of Grade XI, use of Slide Rule, Algebra, Graphical exercises, Geometry, Trigonometry, variation of Ratio & Proportion, Quadratics, Inequalities, Co-ordinates.


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.

Textbooks:

"A.I.S.C. Steel Manual" — American Institute of Steel Construction
"Trade Mathematics" — Ruttan
"Algebra" — Schaums
"Report Writing" — Graves & Hoffman

Prospective students are requested NOT to obtain the above Textbooks prior to enrollment as the selection may be changed as required to suit the annual up-dating of the Course contents.

Other Supplies:

Textbooks, instruments and supplies for this course will cost approximately $60.00, (this is in addition to tuition fees).
Machine Drafting

**DURATION** — Approx. 10 months.

**Pre-requisites:** Complete Grade XI with proficiency in Mathematics and Physical Science, or Vocational Preparation Training (B.T.S.D.) Level IΔ.

**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>&quot; 360 &quot;</td>
</tr>
<tr>
<td>Structural Steel &amp; Misc. metals drafting</td>
<td>&quot; 55 &quot;</td>
</tr>
<tr>
<td>Sheet metal layout</td>
<td>&quot; 140 &quot;</td>
</tr>
<tr>
<td>Engineering Graphics</td>
<td>&quot; 45 &quot;</td>
</tr>
<tr>
<td>Survey &amp; Topographical Drafting</td>
<td>&quot; 92 &quot;</td>
</tr>
<tr>
<td>Job site visits</td>
<td>&quot; 12 &quot;</td>
</tr>
<tr>
<td>Presentation Drafting</td>
<td>&quot; 48 &quot;</td>
</tr>
<tr>
<td>Related Mathematics</td>
<td>&quot; 75 &quot;</td>
</tr>
<tr>
<td>Related Science</td>
<td>&quot; 70 &quot;</td>
</tr>
<tr>
<td>Business Communications</td>
<td>&quot; 36 &quot;</td>
</tr>
<tr>
<td>Calculating machine operation &amp; Material Take-off</td>
<td>&quot; 23 &quot;</td>
</tr>
</tbody>
</table>

1400 hours

**Course Details:**

**Basic Drafting:** Use and care of Instruments, Blueprints, use of Scales, Lettering, Geometric construction, Multi-view, Auxiliary, Axonometric & 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, Levelling & 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.

Related Mathematics: Equivalent to Grade XI matric plus Grade XII matric mathematics. Review of Grade XI, use of Slide Rule, Algebra, Graphical exercises, Geometry, Trigonometry, variation of Ratio & Proportion, Quadratics, Inequalities, Coordinates.


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

Textbooks:

"A.I.S.C. Steel Manual" — American Institute of Steel Construction
"Trade Mathematics" — Ruttan
"Algebra" — Schaums
"Report Writing" — Graves & Hoffman

Prospective students are requested NOT to obtain the above Textbooks prior to enrollment as the selection may be changed as required to suit the annual up-dating of the Course contents.

Other Supplies:

Textbooks, Instruments & supplies for this course will cost approximately $65.00 (this is in addition to tuition fees).
Electrical Department

Courses:

**Electrical Appliance Repair**
**Electrical Course**
**Industrial Electrician**
**Refrigeration & Air Conditioning**

Faculty:

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

Mr. A. Bourke ........................................... Appliance Repair
Mr. L. Cantin ........................................... Electrical
Mr. E. J. Gladyz ....................................... Electrical
Mr. R. Holder .......................................... Electrical
Mr. H. L. Johnson ..................................... Electrical
Mr. M. Labelle .......................................... Appliance Repair
Mr. J. A. A. Laxdal ................................... Refrigeration
Mr. W. McCaine ........................................ Electrical
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 ...................................... Refrigeration
Mr. C. Trylinski ....................................... Electrical
Electrical Appliance Repair

DURATION — Approx. 10 months,

Pre-requisites: A complete Grade X, or Vocational Preparation Training (B.T.S.D.) 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>Approx. Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>D.C. Fundamentals</td>
<td>230</td>
</tr>
<tr>
<td>A.C. Fundamentals</td>
<td>210</td>
</tr>
<tr>
<td>Fundamental Jobs and Circuitry</td>
<td>190</td>
</tr>
<tr>
<td>Elementary Electric Motor</td>
<td>60</td>
</tr>
<tr>
<td>Small Appliances</td>
<td>70</td>
</tr>
<tr>
<td>Electric Ranges</td>
<td>70</td>
</tr>
<tr>
<td>Electric Dryers and Ironers</td>
<td>35</td>
</tr>
<tr>
<td>Electric Washing Machine</td>
<td>120</td>
</tr>
<tr>
<td>Domestic Refrigeration</td>
<td>200</td>
</tr>
<tr>
<td>Drafting and Sketching Diagrams</td>
<td>35</td>
</tr>
<tr>
<td>Industrial Mathematics</td>
<td>80</td>
</tr>
<tr>
<td>Industrial Science</td>
<td>80</td>
</tr>
<tr>
<td>Industrial Communication</td>
<td>20</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; concerning 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, elementary transformer, Edison Three-Wire System, elementary three-phase circuit.
Fundamental Jobs and Circuitry: Wire sizes, connectors and terminals, elementary circuitry; Use of tools, use of testing equipment; Related soldering techniques (Soft soldering and silver soldering); Customer Relations; Electrical code for appliances.

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

Small Appliances: Analysis of thermostatic control, construction and operation and service techniques of heating and motor-driven appliances.

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.

Electric Washing Machines: Installation and inspection of washers; basic working essentials; operation 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; knowledge of definition and spelling of trade terms; write concise reports; composition of business letters.
Textbooks:

“Direct Current Fundamentals” — O. E. Loper
“Alternating Current Fundamentals” — R. Duff
“How to Repair Small Appliances Vol. I” — J. Darr
“Basics of Fractional Horsepower Motors and Repair” — G. Schweitzer
“How to Repair Small Appliances” Vol. II — J. Darr
“How to Repair Major Appliances” — E. Tricomi
“Wiring Simplified” (small edition) — Richter
“Canadian Electrical Code”
“Mathematics for Electrician” — M. H. Kuehn
“Mathematics Tables”
“Modern Refrigeration” — Althouse and Turnquist

Other 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: A complete Grade X, or Vocational Preparation
Training (B.T.S.D.) 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 employ-
ment in the electrical construction field. The student who com-
pletes 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 employ-
ment in the following fields:
1. The utility companies as they generate and distribute elec-
trical 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 and 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 "
House 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>80</td>
</tr>
<tr>
<td>Three-phase systems and Transformers</td>
<td>40</td>
</tr>
<tr>
<td>Alternating Current Machines &amp; Controls</td>
<td>80</td>
</tr>
<tr>
<td>Electric Motor Winding</td>
<td>40</td>
</tr>
<tr>
<td>Commercial Blue-print reading</td>
<td>80</td>
</tr>
<tr>
<td>Industrial Mathematics</td>
<td>40</td>
</tr>
<tr>
<td>Industrial Science</td>
<td>40</td>
</tr>
<tr>
<td>Practical</td>
<td></td>
</tr>
<tr>
<td>Commercial Wiring</td>
<td>80</td>
</tr>
<tr>
<td>Electrical Laboratory</td>
<td>120</td>
</tr>
<tr>
<td>Motor Winding</td>
<td>100</td>
</tr>
</tbody>
</table>

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, 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.

House 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.

PART B


Commercial Blueprint Reading: Explanations of plans and specifications of commercial building. The 120/208 three-phase four-wire system as applied to commercial buildings. Number of circuits required for incandescent and fluorescent lights. Load calculation for air conditioners. Calculation of distribution and sub feeders. De-rating of conductors (Rule 4-00-4). Show window lighting loads. Application of various types of motor control switches. Characteristics and data on neon sign lighting. Method of installing light and power panels. Use of multi-wire branch circuits. Motor load calculation (Section 28) space and water heating controls. Basic requirement in estimating commercial buildings, including blueprint layout, take-off, pricing, labor take-off as required.
**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.


Textbooks:

"Direct Current Fundamentals" — E. Loper, Delmar
"Blueprint Reading for Electrical Trades (Residential)" — Delmar
"Canadian Electrical Code"
"Bench Work (Machine Shop Series)" — Delmar
"Mathematics for Electricians" — H. Kuehn, McGraw-Hill
"Alternating Current Fundamentals" — J. R. Duff
"Blueprint Reading for Electrical Trades" (Commercial) — Delmar
"Electric Motor Repair" — Rosenberg

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: A complete Grade XI or Vocational Preparation Training (B.T.S.D.) Level I and completion of Part B of Electrical Course or
A complete Grade X and completion of Part B with a sufficiently high standing.

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


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.

Textbooks:
Direct Current Fundamentals — E. Loper—Delmar
Alternating Current Fundamentals — J. R. Duff—Delmar
Electric Motor Control — W. N. Alerich—Delmar
Instrumentation — F. W. Kirk & N. R. Rimboi—
American Technical Society
Industrial Electronics — P. B. Ibar—McGraw-Hill
Lab. Experiments Direct Current — J. R. Duff—Delmar
Lab Experiments Alternating Current — J. R. Duff—Delmar
Binary Arithmetic and Boolean Algebra — A. C. Gillie—
McGraw-Hill
Canadian Electrical Code (Metro)

Additional Expenses:

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

DURATION — Approx. 10 months,

Pre-requisites: A complete Grade X (Grade XI preferred.) or Vocational Preparation Training (B.T.S.D.) Level II.

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>Subject</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>
</tr>
<tr>
<td>Industrial Communications</td>
<td>40</td>
</tr>
<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>
<tr>
<td></td>
<td>1400</td>
</tr>
</tbody>
</table>

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.
Textbooks:

"Modern Refrigeration and Air Conditioning" — Althouse and Turnquist
"Principles of Refrigeration" — Roy J. Dossat
"Fundamentals of Electricity" — Westinghouse Co.
"Electrical Principles and Practices" — James E. Adams
"Canadian Electrical Code, Part I" — Canadian Standards Assoc.
"Trane Reciprocating Refrigeration Manual" — Trane Air Conditioning Co.
"Trane Air Conditioning Manual" — Trane Air Conditioning Co.
"Trade Mathematics" — George Ruttan

Approximate cost of the above textbooks is $40.00.

Other 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. F. Reid ............................ T.V. Servicing
Mr. J. D. Skinner ...................... Basic Electronics
Basic Electronics Servicing

**DURATION** — Approx. 10 months,

**Pre-requisites:** A complete Grade XI with proficiency in Mathematics and Physics, or Vocational Preparation Training (B.T.S.D.) Level I.A.

**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, Wodak Company, Toledo Scale Company, paromutual 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>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Electricity</td>
<td>approx. 210 hours</td>
</tr>
<tr>
<td>Power Supplies</td>
<td>&quot; 105 &quot;</td>
</tr>
<tr>
<td>Vacuum Tubes and AF Amplifiers</td>
<td>&quot; 140 &quot;</td>
</tr>
<tr>
<td>Radio Frequency Circuits</td>
<td>&quot; 105 &quot;</td>
</tr>
<tr>
<td>Superheterodyne Circuits</td>
<td>&quot; 140 &quot;</td>
</tr>
<tr>
<td>Semi conductors and Transistors</td>
<td>&quot; 140 &quot;</td>
</tr>
<tr>
<td>Test Equipment</td>
<td>&quot; 105 &quot;</td>
</tr>
<tr>
<td>Servicing procedures</td>
<td>&quot; 210 &quot;</td>
</tr>
<tr>
<td>Drafting</td>
<td>&quot; 35 &quot;</td>
</tr>
<tr>
<td>Industrial Mathematics</td>
<td>&quot; 105 &quot;</td>
</tr>
<tr>
<td>Industrial Science</td>
<td>&quot; 70 &quot;</td>
</tr>
<tr>
<td>Industrial Communications</td>
<td>&quot; 35 &quot;</td>
</tr>
</tbody>
</table>

**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.


Textbooks:

- Tube and Transistor Manuals
- "Basic Mathematics for Electronics" — Cooke
- "Fundamentals of Electronics" (Volume 1) — Navpers Publications
- "Power Supplies and Amplifiers" (Volume 2) — Navpers Publications
- "Transmitter Circuit Applications" (Volume 3) — Navpers Publications
- "Receiver Circuit Applications" (Volume 4) — Navpers Publications

Additional Expenses:

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:

Television Transmission and Standards .......... approx. 50 hours
The Signal Circuits ..................................... " 130 "
The Deflection Circuits ................................. " 130 "
Auxiliary Circuits ...................................... " 100 "
Transistor Television Receivers ....................... " 50 "
Color Television ........................................ " 115 "
Test Equipment and Shop Planning ................... " 35 "
Industrial Science .................................... " 35 "
Industrial Mathematics ................................ " 35 "
Industrial Communications ............................ " 20 "

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 II - The Deflection Circuits: Deflection generators, the blocking oscillator and multivibrator. Synchronizing the deflection circuits. AFC systems, synchroguide, Synchronlock 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: A continuation of mathematics presented to basic electronics and radio servicing embracing the following topics: Algebra, Trigonometry, Common Logs, Natural Logs, and Vectors.

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.

Textbooks:
Basic Television — Bernard Grobb
Television Servicing — Levy and Frankel
Color Television Fundamentals — Milton S. Kiver
Color Television Troubleshooting Pictoguide — RCA Victor Co.
Basic Television Laboratory Manual — Zbar and Schildkraut

Other 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.

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:

The Gas-Filled Electron Tube ......................... approx. 30 hours
The Thyatron ........................................ 70 h
Phase-Shifting Circuits ............................. 90 h
The Phototube ....................................... 60 h
Relays .................................................. 60 h
Semiconductors ....................................... 115 h
Motor Control Circuits ......................... 45 h
Pulse Circuits ....................................... 120 h
Industrial Mathematics .............................. 60 h
Industrial Science ................................. 30 h
Industrial Communications ....................... 20 h

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

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

Textbooks:

"Electronics in Industry", 3rd edition — George M. Chute
"Industrial Electronics" (Lab Manual for Electronic Technicians) — Paul B. Zbar
"Binary Arithmatic and Boolean Algebra" — Angello C. Gillie

Other 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: Complete Grade XI with proficiency in Mathematics and Physics or Vocational Preparation Training (B.T.S.D.) 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.

Course Content:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fundamentals of Electronics</td>
<td>70</td>
</tr>
<tr>
<td>Advanced Electronic Theory</td>
<td>70</td>
</tr>
<tr>
<td>Electronic Circuits</td>
<td>70</td>
</tr>
<tr>
<td>Communication Receivers</td>
<td>100</td>
</tr>
<tr>
<td>Communication Transmitters</td>
<td>130</td>
</tr>
<tr>
<td>Frequency Modulation</td>
<td>45</td>
</tr>
<tr>
<td>Measuring Equipment and Meters</td>
<td>45</td>
</tr>
<tr>
<td>Special Equipment</td>
<td>140</td>
</tr>
<tr>
<td>Morse Code (Sending, Receiving)</td>
<td>650</td>
</tr>
<tr>
<td>Regulations and Accounting</td>
<td>120</td>
</tr>
<tr>
<td>Related Subjects</td>
<td>100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1500</td>
</tr>
</tbody>
</table>

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, beat 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 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.
Textbooks:

"Electronic Communications" — Shrader
"Essentials of Electronics" — Slurzberg
"Transistor Handbook" — American Army
"Handbook for Radio Operators" — Dept. of Transport
"Mathematics for Electronics" — Cook
"Tube Manual" — RCA
"Lab Book" — Philco
"Mathematics Tables"

Other 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:

Commercial Baking
Baking for Cooks
Commercial Cooking
Food Service Supervisors
Meat Cutting
Restaurant Cooking

Faculty:

MR. J. G. CARTWRIGHT
Department Head

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
Commercial Baking

DURATION — Approx. 9 months.

Pre-requisites: A complete Grade X, or Vocational Preparation Training (B.T.S.D.) Level II.

General good health. 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 Bakers 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>approx. 290 hours</td>
</tr>
<tr>
<td>Fruit &amp; Cream Pies</td>
<td>280</td>
</tr>
<tr>
<td>Cake Making - Varieties</td>
<td>230</td>
</tr>
<tr>
<td>Puff Pastry</td>
<td>70</td>
</tr>
<tr>
<td>Doughnuts</td>
<td>65</td>
</tr>
<tr>
<td>Cookies</td>
<td>70</td>
</tr>
<tr>
<td>Oven Work</td>
<td>125</td>
</tr>
<tr>
<td>Sanitation &amp; Measurements</td>
<td>5</td>
</tr>
<tr>
<td>Safety</td>
<td>5</td>
</tr>
<tr>
<td>Industrial Mathematics</td>
<td>18</td>
</tr>
<tr>
<td>Industrial Communications</td>
<td>12</td>
</tr>
</tbody>
</table>

1170 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.

Textbooks:

"Bread Rolls & Sweet Doughs" — Paul Richards
"Cakes for Bakers" — Paul Richards
"Trade Mathematics"

Reference Books:

"Bread Making and its Principles & Practises" — E. D. Bannion
"Hotel & Restaurants Desserts" — K. C. Den Dooven
"Practical Baking" — W. J. Sultan

Other 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.)
Baking For Cooks

This Course is intended as a supplement to the Commercial Cooking Course.

**DURATION** — Approx. 3 months.

**Pre-requisites:** Successful completion of Commercial Cooking Course or proof of three years experience as a cook in commercial establishment. Complete Grade X or Vocational Preparation Training (B.T.S.D.) Level II.

**Employment Opportunities:**

The student who successfully completes this course in "Baking for Cooks", will find the additional knowledge invaluable should he aspire to become a Pastry Cook. Employment opportunities will be increased as the successful graduate should be able to acquire a higher position in any Cooking Establishment.

**Course Content:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bread Rolls &amp; Sweet Doughs</td>
<td>approx. 95 hours</td>
</tr>
<tr>
<td>Fruit &amp; Cream Pies</td>
<td>&quot;     95 &quot;</td>
</tr>
<tr>
<td>Cake Making</td>
<td>&quot;     85 &quot;</td>
</tr>
<tr>
<td>Puff Pastry</td>
<td>&quot;     30 &quot;</td>
</tr>
<tr>
<td>Doughnuts</td>
<td>&quot;     30 &quot;</td>
</tr>
<tr>
<td>Cookies</td>
<td>&quot;     30 &quot;</td>
</tr>
<tr>
<td>Oven Work</td>
<td>&quot;     40 &quot;</td>
</tr>
<tr>
<td>Jellies, Creams &amp; Meringues</td>
<td>&quot;     10 &quot;</td>
</tr>
<tr>
<td>Safety</td>
<td>&quot;     5 &quot;</td>
</tr>
</tbody>
</table>

**Course Details:**

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

**Fruit & Cream Pies:** Preparing Fruits, Preparing Fillings, Effects of Acids on Starches, Baking Temperatures, Bacteria Growth in a Cream Pie, Storage, Refrigeration, Cream Toppings, Meringue Toppings.


Cookies: Mixing Procedures, Cutting and Handling methods, Baking temperatures, Cookie Faults and their Causes.

Oven Work: Types of Ovens in Use, Fuel Systems, Care and Maintenance of Ovens.

Safety: Machinery and its Uses, Practical Demonstration on Operating each Machine, Recommended Safety Practises, Industrial Housekeeping.


Textbooks:
“Bread Rolls and Sweet Dough” — Paul Richards
“Cakes for Bakers”

Other Supplies:
Textbooks and other supplies for this course will cost approximately $30.00 (less for students who have purchased supplies for Commercial Cooking Course.)
Commercial Cooking

**DURATION** — Approx. 10 months,

**Pre-requisites:** A complete Grade X, or Vocational Preparation Training (B.T.S.D.) Level II.

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


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>&quot;</td>
</tr>
<tr>
<td>(Salads, Sandwiches, Appetizers)</td>
<td>&quot;</td>
</tr>
<tr>
<td>Beverages</td>
<td>&quot;</td>
</tr>
<tr>
<td>Service</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
</tr>
</tbody>
</table>

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.
Textbooks:

"The Professional Chef" — Culinary Institute of America
"Professional Restaurant Service" — E. A. Harris
"The Meat We Eat" — Ziegler
"Basic Mathematics for Trades" — Ruttan

Field Trips:

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

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) A complete Grade X, or Vocational Preparation Training (B.T.S.D.) Level II.
2) General good health. Medical, dental and chest X-Ray certificates will be required from all applicants.

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

1400 hours

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.

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

Textbooks:
To be selected.

Other Supplies:
To be announced.
Meat Cutting

**DURATION** — Approx. 5 months.

**Pre-requisites:** A complete Grade X, or Vocational Preparation Training (B.T.S.D.) Level II, a dated 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:**

<table>
<thead>
<tr>
<th>The Meat Cutter and his Trade</th>
<th>approx. 55 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tools and Equipment of the Trade</td>
<td>26</td>
</tr>
<tr>
<td>Factors Governing the Balance of Profit &amp; Loss</td>
<td>38</td>
</tr>
<tr>
<td>Meat Composition</td>
<td>23</td>
</tr>
<tr>
<td>Butchery (Meats)</td>
<td>365</td>
</tr>
<tr>
<td>Butchery (Fish)</td>
<td>23</td>
</tr>
<tr>
<td>Butchery (Poultry)</td>
<td>70</td>
</tr>
<tr>
<td>Meat Preparations</td>
<td>48</td>
</tr>
<tr>
<td>Salesmanship</td>
<td>52</td>
</tr>
</tbody>
</table>

**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, proten meats (process).

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

Textbooks:
"The Meat We Eat" — Thomas Ziegler
"Trade Mathematics" — Ruttan

Other 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: A complete Grade X, or Vocational Preparation Training (B.T.S.D.) Level II.

General Good Health; 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>Tools and Equipment</th>
<th>approx. 3 hours</th>
</tr>
</thead>
<tbody>
<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>28</td>
</tr>
<tr>
<td>Pantry Work - Sandwiches, Salads, Appetizers</td>
<td>110</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.


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.

Methods of Cooking: Principles of broiling, grilling, roasting & baking, sauteing, panfrying, deep-frying, steaming, boiling, poaching, braising, etc. Principles of cookery of protein foods.

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.

Textbooks:
Professional Restaurant Service — A. E. Harris
Professional Chef — Culinary Institute of America
Basic Maths — Ruttan
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. Sturko ............................................. Hair Dressing
Barbering

**DURATION** — Approx. 10 months,

**Pre-requisites:** 1) Academic — Complete Grade X or Vocational Preparation Training (B.T.S.D.) Level II.

2) Health — General good health, substantiated by 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 3½ 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>
<tr>
<td>Total</td>
<td>1400</td>
</tr>
</tbody>
</table>

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; antisepsics 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; straps; 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.

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.

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

Men's Hairstyling: Basic fundamentals of hairstyling. (G. J. Bondy)
Advanced fundamentals of hairstyling. (R. Ciconne)
Special techniques used in advanced hairstyling.

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.

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.
Textbooks:

Prescribed Text—Practice and Science of Standard Barbering
(S. C. Thorpe)
Standard Workbook for Modern Barber Science (S. C. Thorpe)

References:

Art and Science of Standard Barbering — (Sherman L. Trusty)
Advanced Men’s Hairstyling — (Sherman L. Trusty)
Modern Hairstyles for Men — (J. Mastrioni)
Air Jet Styling for Men — (Michael D. Moro)
Men’s Hairstylist and Barbers’ Journal — Publication
Basic Hairstyling — G. J. Bondy
Men’s Advanced Hairstyling — R. Cicone
Blow Waving — J. Carlow
Hairstyling — J. Carlow
Carlow on Hairpieces — J. Carlow
How To Do Better Haircoloring — Clairol
Men’s Hair Tinting for the Professional Barber — Olivo

Other 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:** A complete Grade X, or Vocational Preparation Training (B.T.S.D.) Level II. General good health. Medical and Dental certificates and a chest X-Ray will be required from each applicant, prior to 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:**

<table>
<thead>
<tr>
<th>Course Content</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personality Hygiene and Responsibilities</td>
<td>6</td>
</tr>
<tr>
<td>Bacteriology, Sterilization and Sanitation</td>
<td>23</td>
</tr>
<tr>
<td>Anatomy and Physiology</td>
<td>23</td>
</tr>
<tr>
<td>Shampoo and Rinses</td>
<td>100</td>
</tr>
<tr>
<td>Hair and Scalp</td>
<td>75</td>
</tr>
<tr>
<td>Hairstyling</td>
<td>363</td>
</tr>
<tr>
<td>Haircutting</td>
<td>80</td>
</tr>
<tr>
<td>Permanent Waving</td>
<td>160</td>
</tr>
<tr>
<td>Manicuring</td>
<td>100</td>
</tr>
<tr>
<td>Tinting and Bleaching</td>
<td>230</td>
</tr>
<tr>
<td>Skin and Facial Treatment</td>
<td>120</td>
</tr>
<tr>
<td>Beauty Salon Management</td>
<td>60</td>
</tr>
<tr>
<td>Related Mathematics &amp; Business</td>
<td>60</td>
</tr>
<tr>
<td>Communications</td>
<td></td>
</tr>
</tbody>
</table>

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

Textbooks:
- Standard Textbook of Cosmetology — Milady
- Theory Workbook for Beauty Culture — Milady
- Practical Workbook for Beauty Culture — Milady
- Sketch Book
Other 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
Department Head

Mr. C. C. Brown .......................................... Sheet Metal
Mr. i. M. Buchanan ...................................... Watch Repair
Mr. R. Dillon ........................................... Welding
Mr. C. Finn ............................................. Welding
Mr. V. Fraser ........................................... Machine Shop
Mr. J. F. Lane ........................................... Machine Shop
Mr. G. Ness ............................................ Machine Shop
Mr. J. M. Pedora ....................................... Welding
Mr. J. Van de Mosselaer .............................. Machine Shop
Machine Shop Practice

(Pre-Apprentice)

**DURATION** — Approx. 10 months.

**Pre-requisites:** A complete Grade X or Vocational Preparation (B.T.S.D.) 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>

Total: 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>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fitting</td>
<td>approx. 60 hours</td>
</tr>
<tr>
<td>Lathe Operation</td>
<td>200 &quot;</td>
</tr>
<tr>
<td>Planer and Shaper Operation</td>
<td>60 &quot;</td>
</tr>
<tr>
<td>Drilling Machine Operation</td>
<td>80 &quot;</td>
</tr>
<tr>
<td>Milling Machine Operation</td>
<td>60 &quot;</td>
</tr>
<tr>
<td>Grinding Machine Operation</td>
<td>60 &quot;</td>
</tr>
<tr>
<td>Power Contour Sawing</td>
<td>20 &quot;</td>
</tr>
<tr>
<td>Industrial Mathematics</td>
<td>40 &quot;</td>
</tr>
<tr>
<td>Industrial Science</td>
<td>40 &quot;</td>
</tr>
<tr>
<td>Industrial Communications</td>
<td>20 &quot;</td>
</tr>
<tr>
<td>Welding</td>
<td>60 &quot;</td>
</tr>
</tbody>
</table>

700 hours

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.

Textbooks:

"Machine Tool Operation" (Part 1 and Part 2) — Burghardt and Axelrod

"Workbook and Tests to Accompany Machine Tool Operation" (Parts 1, 2, 3, and 4)—Axelrod and Anderson

"Machinist's Ready Reference" — Weingartner


"Mechanical Engineering Science for Technicians" — Oxley

Other 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: A complete Grade X, or Vocational Preparation (B.T.S.D.) 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>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>approx. 20 hours</td>
</tr>
<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; 160 &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; 70 &quot;</td>
</tr>
<tr>
<td>Industrial Science</td>
<td>&quot; 70 &quot;</td>
</tr>
<tr>
<td>Industrial Communications</td>
<td>&quot; 35 &quot;</td>
</tr>
<tr>
<td>Welding</td>
<td>&quot; 70 &quot;</td>
</tr>
<tr>
<td>Drafting</td>
<td>&quot; 30 &quot;</td>
</tr>
</tbody>
</table>

1100 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 Materials: How to measure galvanized iron, sizes, gauges, How to handle and store metal. How to select gauges for different jobs, Description of stainless steel sheets and its uses, How to fabricate stainless steel, How to Select polished tin and its uses, Description of copper sheets, weights, sizes, hot and cold rolled, Description of black iron sheets, gauges, sizes, Turne Plate and its uses, Aluminum sheets and its alloys.

Fabrication of Sheet Metal Seams: How to flange, Double seam, Single or peened seam, How to set down a single seam, How to assemble a pittsburgh lock, How to make a wire edge, Grooved seam, Standing seam, Single hem and double hem, Bead and dovetail seam, Riveted seams, S Clips and drive cleats.

Fabrication of Sheet Metal Fittings: Construction of square and rectangular containers, Construction of cylindrical containers, Elbows, Tees, Boots, Transition fittings, Square to round fittings, Construction of fittings and ducts for heating and ventilation, Eavestroughs, Tanks, various shapes, sizes, Flashings.

Punching, Drilling and Notching: How to use solid and hollow punches, How to use the hand punch, How to use the electric drill, How to use the air drill, Notching for wire edge, Notching for box and pan corners, Notching for machine edges.

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.

Bend Allowances: Bend allowance for heavy metal, How to allow for bend allowance on machines, Allowance for aluminum bends, Allowance for stainless steel bends.
**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 Mathematics:** Fractions - scale reading, addition, subtraction, division, multiplication. Decimals - fractional equivalents, addition, subtraction, multiplication, division. Percentages - fractional equivalents, use of decimals in percentage calculations, discounts, profit and loss, interest. Square root. Cross sectional areas.

**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.

**Industrial Communications:** Business Letter Forms - letter of application, formal letter form, addressing the formal envelope. Report Writing - job report. Writing Specifications - specification forms, terms used in specifications (general trade terminology, their abbreviations, spelling and application), Estimate forms, Writing up estimates. Oral communication - grammar, diction, clarity, general speech habits (faults of speech, and their avoidance).

**Textbooks:**

"Sheetmetal Pattern Drafting and Shop Problems"—Daugherty  
"Sheetmetal Shop Practice" — Bruce  
"Sheet Metal Mathematics" — Delmar  
"Measurement and Layout" — Delmar  
"Hand Processes" — Delmar  
"Machine Processes" — Delmar  
"Short Cuts to Round Layout" — Kaberlien III  
"Sheet Metal Drafting" — Betterley III  
"Triangulation Short Cut Layout" — Kaberlien II

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

**DURATION** — Approx. 12 months.

**Pre-requisites:** Complete Grade X or Vocational Preparation Training (B.T.S.D.) 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 1/4 hour Strike
- Balance Wheel Staffs, approx. 700 hours
- Making and Staking
- Truing and Poising Wheels
- Preparing Hairspring blanks for service

**Related Drafting and Blueprint Reading**
- Related Machine Shop, approx. 250 hours
- Industrial Mathematics
- Industrial Communications

**Escapements and General Repairs**
- General Techniques in Repairing Watches, approx. 800 hours
- Ladies and Gents Manual Wind Watches
- Ladies and Gents Auto-Wind Watches

1750 hours

**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.

**General Watch Repair:** Proper method of dismantling. Cleaning, reassemble, oiling, checking, and regulating.

**Manual Wind Watches:** Winding mechanism. Dialtrain and cannon pinion calendar mechanism.

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

**Industrial Communications:** Business Letter Forms - letter of application, formal business letter, addressing the formal letter envelope. Report Writing - job report, library reading report. Writing Specifications - specification forms, terms used in specifications (general trade terminology, their abbreviation, spelling, and application.) Work Order Forms - types of customer work order forms, purpose of clear, orderly work order form and receipt. Oral communication - necessity of proper grammar, diction, clarity, and politeness, general speech habits (faults of speech and their avoidance).

**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.

**Textbooks:**
- "Watch Repairer's Manual" — Fried
- "Mathematics for Trades" — Ruttan
- "Watch Repair Manual" — Joseph Bulova

**Other 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:** Complete Grade X, or Vocational Preparation Training (B.T.S.D.) Level II.

**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>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td></td>
</tr>
<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>

**Total** 280 hours
(Part B) — Arc Welding

Introduction ................................................. approx. 2 hours
Background of Arc Welding (theory) ... " 2 "
Polarity (theory) ........................................... " 12 "
Definitions of Arc Welding Terms (theory) ... " 12 "
Electrodes - Classification and Identification (theory) ... " 12 "
Welding Codes and Inspection (theory) ... " 5 "
Field Trips (to local concerns) ................................ " 8 "
Arc Welding Techniques (practical demonstration) ................... " 104 "
Horizontal position (practical) ....................... " 40 "
Vertical Position (practical) ......................... " 84 "
Overhead Position (practical) ........................... " 52 "
Light Gauge Welding (practical) ..................... " 40 "
Miscellaneous Welding (practical) .................... " 40 "
Pipe Welding (practical) ............................... " 25 "
Review and Testing (theory) ............................ " 22 "
Industrial Mathematics ................................... " 20 "
Industrial Science .......................................... " 32 "
Blue print reading and Drafting (theory & practical) ........ " 48 "

560 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.

**Textbooks:**

"Basic Mathematics" — Rutton  
"Oxy-Acetylene Handbook" — Linde Corp  
"Metals and How to Weld Them" — Lincoln  
"Blueprint Reading for Welders" — Delmar  
"New Lessons in Arc Welding" — Lincoln

**Other 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:

BEATTIE, MISS M., Reg. N. B.N.
FAST, MRS. S. E., Reg. N. B.Sc.N.
FELIX, MISS M., Reg. N. B.N.
JOHNSON, MISS L., Reg. N. B.A.
McCOLM, MRS. A., Reg. N.
Practical Nursing

DURATION — Approx. 4 months.

Pre-requisites: Grade X as assessed by the Registrar, Manitoba Department of Education. (Exceptions may be made for applicants born before 1920).

General good health. Medical and dental certificates and a chest X-Ray are required. Character references will be requested from business and professional people who are not related to the applicant.

Contents:


Practical: In relation to the above, plus 7½ months clinical experience in hospitals.

Remarks:

Training consists of a 4 months classroom period at the Manitoba Institute of Technology, 2 weeks vacation, plus 7½ 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:

The Director, Central School for Practical Nurses,
415 Norquay Building, 401 York Avenue,
Winnipeg 1, Manitoba.

Textbooks are purchased on the first day of classes. Expenses, in addition to room and board, include uniforms approximately $40 and textbooks approximately $40, Tuition $40, if not eligible for Vocational training benefits.
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. J. Klasz ................................. Mathematics  
Mr. V. R. Knoll, B.Acc. ...................... Communications  
Mr. G. Laurikainen .......................... Mathematics  
Mr. L. Mousseau, B.A ...................... Mathematics  
Mr. G. Notley, B.Sc. ...................... Science  
Mr. W. J. Ridgeway ......................... Drafting  
Mr. A. Schroeder, B.Sc. (Ed.), C.E.T. .... Drafting  
Mr. J. Undiks .............................. Science  
Mr. J. M. Vincent ......................... Mathematics
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 Trade 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 2 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 442 William Avenue, Strathcona Hall and Fort Osborne Barracks, 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.
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 1 8 Weeks</td>
<td>I. Minimum age 16 years.</td>
</tr>
<tr>
<td>Auto Body Repair</td>
<td>Level 2 4 Weeks</td>
<td>II. Approval of the Director of Apprenticeship Dept. of Labour.</td>
</tr>
<tr>
<td>Bricklaying</td>
<td>Level 1 8 Weeks</td>
<td></td>
</tr>
<tr>
<td>Carpenter</td>
<td>Level 1 8 Weeks</td>
<td></td>
</tr>
<tr>
<td>Electrical Construction</td>
<td>Level 1 8 Weeks</td>
<td></td>
</tr>
<tr>
<td>Factory Woodworking</td>
<td>Level 1 8 Weeks</td>
<td></td>
</tr>
<tr>
<td>Machine Shop</td>
<td>Level 1 8 Weeks</td>
<td></td>
</tr>
<tr>
<td>Painting and Decorating</td>
<td>Level 1 8 Weeks</td>
<td></td>
</tr>
<tr>
<td>Plastering</td>
<td>Level 1 8 Weeks</td>
<td></td>
</tr>
<tr>
<td>Plumbing</td>
<td>Level 1 8 Weeks</td>
<td></td>
</tr>
<tr>
<td>Refrigeration</td>
<td>Level 1 8 Weeks</td>
<td></td>
</tr>
<tr>
<td>Sheet Metal</td>
<td>Level 1 6 Weeks</td>
<td></td>
</tr>
<tr>
<td>Steamfitting</td>
<td>Level 1 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 WHitehall 6-7551

The Department of Labour
Court House
Brandon, Manitoba
Telephone: PA 9-6407

"Skill for Security"