1935

**Mechanical Engineering: Prospectus of Courses Session 1935-36**

City of Dublin Vocational Education Committee

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City of Dublin
Vocational Education Committee

Scoileanna Ceárd-Oideachais
City of Dublin Technical Schools

Session 1935-36

MECHANICAL ENGINEERING
PROSPECTUS OF COURSES

Bolton Street and Ringsend
1935.
Sept. 2, Monday. Wholetime Day Schools open for enrolment.
Sept. 9, Monday. Wholetime Day Schools commence work, and Part-time Day Classes open for enrolment.
Sept. 23, Monday. Evening Classes commence work.
Nov. 1, Friday. All Saints' Day. Wholetime Day Schools—excepting Day Apprentice School and Special Classes—closed.
Dec. 8, Sunday. Feast of Immaculate Conception.
Dec. 14, Saturday. Teaching work in Wholetime Day Schools ceases (excepting Day Apprentice School and Special Classes).
Dec. 16, Monday. Term Examinations in Wholetime Day Schools commence (excepting Day Apprentice Schools and Special Classes).
Dec. 21, Friday. Schools close for Christmas Vacation.

1936.
Jan. 6, Monday. Feast of Epiphany.
Jan. 7, Tuesday. All classes resume work after Christmas Vacation. New Courses in Practical Pharmacy commence.
Mar. 28, Saturday. Land Surveying Field work begins.
Apr. 7, Tuesday. Last meeting of classes before Easter Vacation.
Apr. 15, Wednesday. All classes resume work after Easter Vacation.
Apr. 16, Thursday. New Courses in Practical Pharmacy commence.
May 1, Friday. Evening classes close (excepting Special Classes).
May 4, Monday. Evening class written Sessional Examinations commence (except for Special Classes).
May 21, Thursday. Ascension Day. Wholetime Day Schools—excepting Day Apprentice School and Special classes—closed.
June 1, Monday. Whit Monday. Schools closed.
June 11, Thursday. Feast of Corpus Christi. Wholetime Day Schools—excepting Day Apprentice School and Special Classes—closed.
June 20, Saturday. Teaching work ceases in Wholetime Day Schools—excepting Day Apprentice School and Special classes.
June 22, Monday. Sessional Examinations commence in Wholetime Day Schools, excepting Day Apprentice School and Special classes.
June 27, Saturday. Wholetime Day Schools close, excepting Day Apprentice School and Special classes.
June 29, Monday. Feast of Saints Peter and Paul.
July 17, Friday. Day Apprentice School and Special classes close.

Schools closed on all Bank Holidays not specified in above Calendar.

**CALENDAR**

**SESSION 1935-6**

**CITY OF DUBLIN**

**VOCATIONAL EDUCATION COMMITTEE**

**COMMITTEE**

Alderman C. Breathnach, LL.D., T.D., 384 Clontarf Road.
Senator Mrs. T. Clarke, T.C., Baymount, 95 Clontarf Road.
Senator D. D. Healy, T.C., 40 Usher's Quay.
Councillor Mrs. M. Walsh, 16 Elgin Road.
" " Mrs. M. Cosgrave, 17 Park Drive, Cowper Gardens.
" " P. Belton, T.B., Belfield Park, Drumcondra.
" " D. J. Cogan, 12 Merrion Square, N.
" " M. O'Sullivan, P.C., 7 Moibhi Road, Glasnevin.
Miss Helena Moloney, 51 Larkfield Grove, Kimmage.
Michael O'Foghiludha, 5 Cabra Road.
Mr. M. P. Rowan, 27, Leeson Park.
Dr. Lorcan G. Sherlock, 21 Parliament Street.
Mr. Michael Somerville, 1 O'Curry Road, South Circular Road.
Mr. W. J. Whelan, 35 Lower Gardiner Street.

**Offices:**

Technical Institute, Bolton Street, Dublin.

L. E. O'Carroll, B.A., B.L., Chief Executive Officer.

**LOCAL SUB-COMMITTEES**

For triennial period 1934-37

**RATHMINES.**

Alderman C. Breathnach, LL.D., T.D., 384 Clontarf Road (ex-officio).
Mr. W. J. Whelan, 35 Lower Gardiner Street.
Dr. Conn Murphey, 10 Charleston Avenue, Rathmines.
Councillor Mrs. M. Cosgrave, 17 Park Drive, Cowper Gardens.
Mr. G. F. Klingner, A.C.A., 7 St. Helen's Road, Booterstown.
Mr. M. P. Rowan, 27 Leeson Park.
Mr. W. Woods Hill, 5 Parliament Street.
Mr. M. J. O'Reilly, 31 Kenilworth Square.

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Alderman C. Breathnach, LL.D., T.D., 384 Clontarf Road (ex-officio).
M. O'Foghiludha, 5 Cabra Road.
Sean O'Uaidhaigh, 12 Dawson Street.
Liam O'Carrawhail, 88 Manor Street.
Miss H. Cheney, 48 Fleet Street.
Mr. J. W. Kelly, 16 St. Joseph's Parade, Nelson Street.
Mr. Bernard Moran, 7 Talbot Street.
Local Sub-Committees—(Continued)

BOLTON STREET.

Alderman C. Breathnach, LL.D., T.D., 384 Clontarf Road (ex-officio).
Mr. O. Hynes, 6 St. Kevin's Road, S.C.R.
Mr. M. P. Rowan, 27 Leeson Park.
Mr. M. Somerville, 1 O'Curry Road, S.C.R.
Mr. W. J. Whelan, 35 Lower Gardiner Street.
Mr. Sean Campbell, 35 Lower Gardiner Street.
Mr. Gerald Doyle, 32 East Essex Street.
Mr. Thos Darcy, 27 Aungier Street.
Mr. R. Murphy, Messrs. Hopkins and Hopkins, O'Connell Street.
Mr. J. G. Wilson, 13 Sackville Place.
Mr. T. A. Cramp ton, Hammersmith Works, Ballsbridge.

PEMBROKE (Ballsbridge and Ringsend).

Alderman C. Breathnach, LL.D., T.D., 384 Clontarf Road (ex-officio).
Councillor Mrs. M. Walsh, 16 Elgin Road.
L. G. Sherlock, LL.D., 21 Parliament Street.
Rev. J. Hooke, c.c., St. Mary's, Haddington Road.
Mr. J. J. Beggan, c/o. McEntagart Bros., Percy Place.
Professor B. F. Shields, 87 Pembroke Road.
Mr. William Hanlon, 29 Home Villas, Donnybrook.

KEVIN STREET.

Alderman C. Breathnach, LL.D., T.D., 384 Clontarf Road (ex-officio).
Mr. O. Hynes, 6 St. Kevin's Road, S.C.R.
Mr. M. Somerville, 1 O'Curry Road, S.C.R.
Rev. M. Geraghty, c.c., The Presbytery, High Street.
Senator D. D. Healy, t.c., 40 Usher's Quay.
Mr. M. P. Rowan, 27 Leeson Park.
Mr. J. W. Kelly, 16 St. Joseph's Parade, Nelson Street.
Mr. J. Andrews, B.Sc., Messrs. A. Guinness, Son and Co., James's Street.

CHATHAM ROW (School of Music).

Alderman C. Breathnach, LL.D., T.D., 384 Clontarf Road (ex-officio).
Councillor Mrs. M. Walsh, 16 Elgin Road.
Councillor M. O'Sullivan, 7 Bothar Moibhi, Glasnevin.
Senator Mrs. Clarke, t.c., Baymount, 95 Clontarf Road.
Madame Kathleen Roddy, Broadcasting Station, Henry Street.
Mr. W. J. Whelan, 35 Lower Gardiner Street.
Mr. M. P. Rowan, 27 Leeson Park.
Mr. J. T. Doyle, Osborne Lodge, Mount Prospect Road, Dollymount.
Mr. Thos. M. Murphy, 16 Cowper Road.
Mr. Jos. O'Reilly, 9 Lower Leeson Street.
L. G. Sherlock, LL.D., 21 Parliament Street.

ADVISORY COMMITTEES

MASTER JEWELLERS.
Mr. G. Thornley.
Mr. R. Murphy.
Mr. L. Beirley.
Mr. J. Sheerin.
Mr. Sleator.

MASTER TAILORS.
Mr. E. J. McWilliam.
Mr. W. O'Connor.
Mr. W. Scott.
Mr. R. Boyd.

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GENERAL NOTICES

ENTRANCE EXAMINATIONS, FEES, REGULATIONS.

Students, on enrolment, may be required, at the discretion of the Principal, to sit for an Entrance Examination. Introductory Courses are provided for those not sufficiently qualified to enter a full Technical Course.

Fees: per Session.

Courses in Mechanical Engineering and
Motor Car Engineering ....... 7/6 for Course.
Introductory Course ....... 2/6 for Course.
Additional Course subjects ....... 2/6 each.
Single subjects ....... 7/6 each.

Technical students may take a class in Irish and in Physical Training for an additional fee of 2/6 per class.

Students who through obtaining employment are unable to continue in attendance at the Whole-time Day School Courses of the City of Dublin Vocational Education Committee will be admitted to approved Evening School Courses, without fees, up to the value of the Day School Fees paid.

The same concession may be extended to other students who have left the Day School Courses, if the reasons for their non-attendance at the Day School Classes are considered by the Principal to be adequate.

Applicants for admission to Courses or Classes must be at least fourteen years of age.

The Trade Classes are primarily intended for those engaged in the several trades. Others will not be admitted before November 8th, and then only if there be room, and on payment of a quadruple fee.

A Laboratory or Workshop Class can only be taken in conjunction with an approved Lecture or Drawing Class. No student will be allowed to continue in a Laboratory or Workshop Class if his attendance at the Lecture or Drawing Class is unsatisfactory.

A Class may be discontinued if an insufficient number of students join or attend; the number of evenings allotted weekly to a Class may be reduced if there be a falling off in the attendance. The right is reserved to close Classes for any other reason whatever.

Students must make good any damage done by them.

Strict order must be observed at all times within the precincts of the Schools.

A complete course of study in any section generally occupies from three to four years.

Where possible, separate Classes for journeymen will be arranged in Trade subjects.

The Courses in Mechanical Engineering, Engineering Workshop Practice, Metal Plate Work and Motor Car Engineering are arranged in connection with the Technical Examinations Syllabus of the Department of Education. They are not to be considered as arbitrary, and the subjects may be varied with the sanction of the Principal.
PROGRAMME and TIME TABLE

OF THE

Schools of Mechanical and Motor Car Engineering and Allied Trades

AT

Technical Institutes: Bolton Street and Ringsend
### COURSES AND TIME TABLES

**Bolton Street**

<table>
<thead>
<tr>
<th>No. of Course</th>
<th>SUBJECT</th>
<th>Day</th>
<th>Hour</th>
<th>Room</th>
<th>TEACHER</th>
<th>No. of Syllabus</th>
</tr>
</thead>
<tbody>
<tr>
<td>1B</td>
<td>Arithmetic</td>
<td>Mon.</td>
<td>7.30-9.30</td>
<td>B 20</td>
<td>M. Burns</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Rudish</td>
<td>Mon.</td>
<td>8.30-9.30</td>
<td>B 20</td>
<td>M. Burns</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Practical Drawing</td>
<td>Tues.</td>
<td>7.30-9.30</td>
<td>B 39</td>
<td>B. E. Fee</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Practical Drawing (Metal)</td>
<td>Tues.</td>
<td>7.30-9.30</td>
<td>D 2</td>
<td>J. Dooley</td>
<td>35</td>
</tr>
</tbody>
</table>

**MECHANICAL ENGINEERING COURSE.**

<table>
<thead>
<tr>
<th>No. of Course</th>
<th>SUBJECT</th>
<th>Day</th>
<th>Hour</th>
<th>Room</th>
<th>TEACHER</th>
<th>No. of Syllabus</th>
</tr>
</thead>
<tbody>
<tr>
<td>3B</td>
<td>Machine Drawing-I.A. or II.B.</td>
<td>Mon.</td>
<td>7.30-9.30</td>
<td>A 5</td>
<td>H. C. FitzGerald</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Machine Drawing-I.B.</td>
<td>Wed.</td>
<td>7.30-9.30</td>
<td>A 5</td>
<td>B. E. Fee</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Geometry</td>
<td>Thurs.</td>
<td>7.30-9.30</td>
<td>B 27</td>
<td>J. J. Dowling</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Mathematics-I.</td>
<td>Fri.</td>
<td>7.30-9.30</td>
<td>B 18</td>
<td>J. J. Hughes</td>
<td>12</td>
</tr>
<tr>
<td>4B</td>
<td>Machine Drawing-II.</td>
<td>Thurs.</td>
<td>7.30-9.30</td>
<td>A 6</td>
<td>B. E. Fee</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Engineering Science-I.A.</td>
<td>Tues.</td>
<td>7.30-9.30</td>
<td>C 7</td>
<td>R. J. Dowling</td>
<td>10A</td>
</tr>
<tr>
<td></td>
<td>Mathematics II.</td>
<td>Wed.</td>
<td>7.30-9.30</td>
<td>C 22</td>
<td>H. Holohan</td>
<td>15</td>
</tr>
<tr>
<td>5B</td>
<td>Machine Construction-I.</td>
<td>Tues.</td>
<td>7.30-9.30</td>
<td>A 5</td>
<td>E. J. Joynt</td>
<td>6</td>
</tr>
<tr>
<td>Applied Mechanics-I.</td>
<td>Tues.</td>
<td>7.30-9.30</td>
<td>C 8</td>
<td>A. M. MacLaughlin</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mathematics III.</td>
<td>Wed.</td>
<td>7.30-9.30</td>
<td>C 7</td>
<td>H. C. Clifton</td>
<td>13</td>
</tr>
<tr>
<td>6B</td>
<td>Machine Construction-II.</td>
<td>Tues.</td>
<td>7.30-9.30</td>
<td>A 5</td>
<td>E. J. Joynt</td>
<td>7</td>
</tr>
<tr>
<td>Applied Mechanics-II.</td>
<td>Wed.</td>
<td>7.30-9.30</td>
<td>C 8</td>
<td>A. M. MacLaughlin</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Heat Engraving-I.I.</td>
<td>Fri.</td>
<td>7.30-9.30</td>
<td>A 8</td>
<td>R. J. Dowling</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Mathematics IV.</td>
<td>Mon.</td>
<td>7.30-9.30</td>
<td>C 7</td>
<td>H. C. Clifton</td>
<td>14</td>
</tr>
<tr>
<td>7B</td>
<td>Machine Design-V.</td>
<td>Fri.</td>
<td>7.30-9.30</td>
<td>B 27</td>
<td>J. J. Dinnen</td>
<td>8</td>
</tr>
<tr>
<td>Applied Mechanics-I.V.</td>
<td>Wed.</td>
<td>7.30-9.30</td>
<td>C 8</td>
<td>A. M. MacLaughlin</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Heat Engraving-II.</td>
<td>Thurs.</td>
<td>7.30-9.30</td>
<td>A 8</td>
<td>P. Corrigan</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Mathematics-V.</td>
<td>Mon.</td>
<td>7.30-9.30</td>
<td>C 7</td>
<td>H. C. Clifton</td>
<td>15</td>
</tr>
</tbody>
</table>

**MECHANICAL ENGINEERING TRADES COURSES—ENGINEERING WORKSHOP PRACTICE.**

<table>
<thead>
<tr>
<th>No. of Course</th>
<th>SUBJECT</th>
<th>Day</th>
<th>Hour</th>
<th>Room</th>
<th>TEACHER</th>
<th>No. of Syllabus</th>
</tr>
</thead>
<tbody>
<tr>
<td>10B</td>
<td>Engineering Workshop-I.</td>
<td>Wed., Th.</td>
<td>7.30-9.30</td>
<td>D 7</td>
<td>J. Kelly, J.J. Redmond</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Machine Drawing-I.A. or II.B.</td>
<td>Mon.</td>
<td>7.30-9.30</td>
<td>A 5</td>
<td>H. C. FitzGerald</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Machine Drawing-II.B.</td>
<td>Wed.</td>
<td>7.30-9.30</td>
<td>A 5</td>
<td>B. E. Fee</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Engineering Science-I.B.</td>
<td>Tues.</td>
<td>7.30-9.30</td>
<td>B 39</td>
<td>M. Burns</td>
<td>18</td>
</tr>
<tr>
<td>11B</td>
<td>Engineering Workshop-II.</td>
<td>Tues.</td>
<td>7.30-9.30</td>
<td>D 7</td>
<td>J. Kelly, J.J. Redmond</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>Machine Drawing-II.</td>
<td>Thurs.</td>
<td>7.30-9.30</td>
<td>A 5</td>
<td>B. E. Fee</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Mathematics-I.</td>
<td>Fri.</td>
<td>7.30-9.30</td>
<td>B 18</td>
<td>J. J. Hughes</td>
<td>11</td>
</tr>
<tr>
<td>12B</td>
<td>Engineering Workshop-III.</td>
<td>Fri.</td>
<td>7.30-9.30</td>
<td>D 7</td>
<td>J. Kelly, R. Bent</td>
<td>24</td>
</tr>
<tr>
<td>Applied Mechanics-II.</td>
<td>Thurs.</td>
<td>7.30-9.30</td>
<td>C 8</td>
<td>A. MacLaughlin</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mathematics-II.</td>
<td>Wed.</td>
<td>7.30-9.30</td>
<td>C 22</td>
<td>H. Holohan</td>
<td>12</td>
</tr>
<tr>
<td>13B</td>
<td>Machine Plate, Lecture and Drawing-I.</td>
<td>Mon.</td>
<td>7.30-9.30</td>
<td>D 2</td>
<td>J. Dooley</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>Machine Plate, Practical-I.</td>
<td>Mon.</td>
<td>7.30-9.30</td>
<td>D 2</td>
<td>J. Dooley, T. J. Ryan</td>
<td>36</td>
</tr>
<tr>
<td>14B</td>
<td>Patternmaking, Lecture and Drawing</td>
<td>Mon.</td>
<td>7.30-9.30</td>
<td>D 2</td>
<td>J. Dooley, T. J. Ryan</td>
<td>37</td>
</tr>
<tr>
<td>15B</td>
<td>Brassfinishing, Practical</td>
<td>Mon.</td>
<td>7.30-9.30</td>
<td>D 2</td>
<td>J. Dooley, T. J. Ryan</td>
<td>38</td>
</tr>
<tr>
<td>16B</td>
<td>Metal Plate Work, Lecture and Drawing</td>
<td>Mon.</td>
<td>7.30-9.30</td>
<td>D 2</td>
<td>J. Dooley, T. J. Ryan</td>
<td>39</td>
</tr>
</tbody>
</table>
### Course for Motor Car Drivers

<table>
<thead>
<tr>
<th>No. of Course</th>
<th>Subject</th>
<th>Day</th>
<th>Hour</th>
<th>Room</th>
<th>Teacher</th>
<th>No. of Syllabus</th>
</tr>
</thead>
<tbody>
<tr>
<td>47B</td>
<td>Motor Car Engineering</td>
<td>Fri.</td>
<td>7:30-9:30</td>
<td>B 15</td>
<td>W. A. Cooney</td>
<td>41B</td>
</tr>
</tbody>
</table>

### Oxy-Acetylene Welding

<table>
<thead>
<tr>
<th>Subject</th>
<th>Day</th>
<th>Hour</th>
<th>Room</th>
<th>Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxy-Acetylene Welding</td>
<td>Fri.</td>
<td>7:30-9:30</td>
<td>D 2</td>
<td>T. J. Ryan</td>
</tr>
</tbody>
</table>

### Motor Car Engineering

**Introductory**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Day</th>
<th>Hour</th>
<th>Room</th>
<th>Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practical</td>
<td>Mon.</td>
<td>7:30-9:30</td>
<td>D 2</td>
<td>W. A. Cooney</td>
</tr>
<tr>
<td>Motor Car Lecture</td>
<td>Mon.</td>
<td>8:35-9:35</td>
<td>B 15</td>
<td>W. A. Cooney</td>
</tr>
<tr>
<td>Practical Drawing</td>
<td>Tues.</td>
<td>7:30-9:30</td>
<td>B 20</td>
<td>B. E. Fee</td>
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</table>

### Four Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Day</th>
<th>Hour</th>
<th>Room</th>
<th>Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metal Plate Work, Lecture and Drawing—III.</td>
<td>Mon.</td>
<td>7:30-9:30</td>
<td>D 2</td>
<td>J. Dooley</td>
</tr>
<tr>
<td>Metal Plate Work, Practical—III.</td>
<td>Wed.</td>
<td>7:30-10:00</td>
<td>D 2</td>
<td>J. Dooley, T. J. Ryan</td>
</tr>
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</table>

### Gas Supply

<table>
<thead>
<tr>
<th>Subject</th>
<th>Day</th>
<th>Hour</th>
<th>Room</th>
<th>Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas Fitting, Practical—IA.</td>
<td>Thurs.</td>
<td>7:30-9:30</td>
<td>B 20</td>
<td>R. B. Clark</td>
</tr>
<tr>
<td>Gas Fitting, Practical—IB.</td>
<td>Wed.</td>
<td>7:30-9:30</td>
<td>B 21</td>
<td>J. Lenihan</td>
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</tbody>
</table>

### Fourth Year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Day</th>
<th>Hour</th>
<th>Room</th>
<th>Teacher</th>
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</thead>
<tbody>
<tr>
<td>Irish—IA.</td>
<td>Mon.</td>
<td>7:30-9:30</td>
<td>C 2</td>
<td>D. S. MacBohn</td>
</tr>
<tr>
<td>Irish—IB.</td>
<td>Thurs.</td>
<td>7:30-9:30</td>
<td>C 2</td>
<td>D. S. MacBohn</td>
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</tbody>
</table>
TECHNICAL SCHOOL
RINGSEND

TEACHING STAFF

MARTIN KEADY, A.R.C.Sc.I., B.Sc. (Eng.), Lond.—Principal.

THE PRINCIPAL.

S. O. EvANS.


I. Lambert, B.Sc. (Hons.), H.Dip.Ed.

B. Devlin, B.E., A.R.C.Sc.I.

P. J. O'Hagan.

J. R. Evans.

V. Grace.

D. Flynn.
### COURSES AND TIME TABLES

#### RINGSEND

### INTRODUCTORY.

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>Section</th>
<th>Day</th>
<th>Hour</th>
<th>TEACHER</th>
<th>Syllabus No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arithmetic</td>
<td></td>
<td>Monday</td>
<td>8.20-10.00</td>
<td>P. J. O'Hagan</td>
<td>2</td>
</tr>
<tr>
<td>English</td>
<td></td>
<td>Monday</td>
<td>7.00-8.30</td>
<td>P. J. O'Hagan</td>
<td>1</td>
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### MECHANICAL ENGINEERING COURSE.

<table>
<thead>
<tr>
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<th>Hour</th>
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<th>Syllabus No.</th>
</tr>
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<tbody>
<tr>
<td>FIRST YEAR</td>
<td></td>
<td>Friday</td>
<td>7.30-9.30</td>
<td>B. Devlin</td>
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<tr>
<td>Mathematics</td>
<td></td>
<td>Tuesday</td>
<td>7.30-9.30</td>
<td>P. J. O'Hagan</td>
<td>9</td>
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<tr>
<td>Geometry</td>
<td></td>
<td>Monday</td>
<td>8.00-10.00</td>
<td>S. O. Evans</td>
<td>22</td>
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<tr>
<td>Workshop Practice (Optional)</td>
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| SECOND YEAR               |         | Friday  | 7.30-9.30 | B. Devlin      | 5            |
| Machine Drawing           |         | Tuesday  | 7.30-9.30 | P. J. O'Hagan  | 12           |
| Mathematics               |         | Monday   | 7.30-9.30 | I. Lambert     | 13           |
| Mechanics                 |         | Monday   | 8.00-10.00| S. O. Evans    | 23           |
| Workshop Practice (Optional) |       |         |            |                |              |

### MECHANICAL ENGINEERING (TRADES) COURSES.

#### ENGINEERING WORKSHOP PRACTICE.

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>Section</th>
<th>Day</th>
<th>Hour</th>
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<th>Syllabus No.</th>
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</thead>
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<tr>
<td>FIRST YEAR</td>
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<td>Monday</td>
<td>8.00-10.00</td>
<td>S. O. Evans</td>
<td>22</td>
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<tr>
<td>Fitting and Turning</td>
<td></td>
<td>Friday</td>
<td>7.30-9.30</td>
<td>B. Devlin</td>
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<tr>
<td>Mathematics</td>
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| SECOND YEAR               |         | Monday  | 8.00-10.00| S. O. Evans    | 23           |
| Fitting and Turning       |         | Friday  | 7.30-9.30 | B. Devlin      | 5            |
| Machine Drawing           |         | Tuesday  | 7.30-9.30 | P. J. O'Hagan  | 12           |
| Mathematics               |         |         |            |                |              |

### SMITHWORK.

<table>
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<tr>
<th>SUBJECT</th>
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<tr>
<td>Smithwork (Practical)</td>
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<td>Monday</td>
<td>8.00-10.00</td>
<td>S. O. Evans</td>
<td>24</td>
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<tr>
<td>Machine Drawing</td>
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<td>Friday</td>
<td>7.30-9.30</td>
<td>B. Devlin</td>
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### OXY-ACETYLENE WELDING.

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<tbody>
<tr>
<td>Oxy-Acetylene Welding</td>
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<td>Monday or Friday</td>
<td>8.00-10.00</td>
<td>B. Devlin</td>
<td>39</td>
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<tr>
<td>Welding Science</td>
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<td>Tuesday</td>
<td>7.30-9.30</td>
<td>B. Devlin</td>
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<tr>
<td>Sketching and Drawing</td>
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<td>Friday</td>
<td>7.30-9.30</td>
<td>B. Devlin</td>
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### MOTOR CAR ENGINEERING (CERTIFICATE) COURSE.

<table>
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<tr>
<th>SUBJECT</th>
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<tr>
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<td>8.00-10.00</td>
<td>S. O. Evans</td>
<td>43 A &amp; B</td>
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<td>Motor Car Engineering</td>
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<td>7.30-9.30</td>
<td>D. R. Harte</td>
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<tr>
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<td></td>
<td>Monday</td>
<td>7.30-9.30</td>
<td>I. Lambert</td>
<td>60</td>
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<tr>
<td>Engineering Science</td>
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<td>Monday</td>
<td>7.30-9.30</td>
<td>P. J. O'Hagan</td>
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<tr>
<td>Workshop Practice</td>
<td></td>
<td>Monday</td>
<td>7.30-9.30</td>
<td>D. Flynn</td>
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### MOTOR CAR ENGINEERING (REPAIR AND MAINTENANCE) COURSE.

<table>
<thead>
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<td>Motor Workshop Practice</td>
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<td>7.30-9.30</td>
<td>S. O. Evans</td>
<td>51 A &amp; B</td>
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<td>Garage Practice</td>
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<td>Monday</td>
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<td>D. R. Harte</td>
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<tr>
<td>Electricity</td>
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<td>Monday</td>
<td>7.30-9.30</td>
<td>I. Lambert</td>
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<td>Engineering Science</td>
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<tr>
<td>Workshop Practice</td>
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<td>Monday</td>
<td>7.30-9.30</td>
<td>D. Flynn</td>
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<thead>
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<td>P. J. O'Hagan</td>
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<td>44 A &amp; B</td>
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<td>7.30-9.30</td>
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<td>52 A &amp; B</td>
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<td>Monday</td>
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<td>I. Lambert</td>
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<tr>
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<td>Monday</td>
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MOTOR CAR ENGINEERING (REPAIR AND MAINTENANCE) COURSE—Continued.

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<td>S. O. Evans</td>
<td>49</td>
</tr>
<tr>
<td>Electricity</td>
<td>F</td>
<td>Friday</td>
<td>7.30-9.30</td>
<td>D. R. Harte</td>
<td>56</td>
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<tr>
<td>Motor Car Engineering</td>
<td>G</td>
<td>Wednesday</td>
<td>7.30-9.30</td>
<td>S. O. Evans</td>
<td>45 &amp; 50</td>
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<td>Electricity</td>
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<td>Friday</td>
<td>7.30-9.30</td>
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FOURTH YEAR.

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<td>Motor Workshop and Garage Practice</td>
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<td>7.30-9.30</td>
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<td>Friday</td>
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<td>D. R. Harte</td>
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<tr>
<td>Motor Car Engineering</td>
<td>J</td>
<td>Wednesday</td>
<td>7.30-9.30</td>
<td>S. O. Evans</td>
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<td>Friday</td>
<td>7.30-9.30</td>
<td>D. R. Harte</td>
<td>56</td>
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</table>

MOTOR VEHICLE ELECTRICIANS' COURSE.

A special course suited to the needs of those engaged in the Electrical side of Motor Car Work. The course follows the syllabuses laid down for the Certificate Course of the City and Guilds of London Institute.

Students should have previously attended for at least two Sessions at suitable classes in Electricity.

FIRST YEAR.

<table>
<thead>
<tr>
<th>SUBJECT</th>
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<th>Hour</th>
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<tr>
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<td>D. R. Harte</td>
<td>55</td>
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<tr>
<td>Electrical Testing &amp; Repairs</td>
<td></td>
<td>Friday</td>
<td>D. R. Harte &amp; V. Grace</td>
<td>37</td>
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SECOND YEAR.

<table>
<thead>
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<td>M. Keady</td>
<td>56</td>
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<tr>
<td>Electrical Testing &amp; Repairs</td>
<td></td>
<td>Friday</td>
<td>D. R. Harte &amp; V. Grace</td>
<td>57</td>
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PHYSICAL TRAINING.

TOWN HALL, BALLSBRIDGE.

Applications are invited for the formation of suitable Classes.

<table>
<thead>
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<th>Hour</th>
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</thead>
<tbody>
<tr>
<td>Physical Training (Men)</td>
<td></td>
<td>Wednesday</td>
<td>8.0-10.0</td>
<td>E. Chandler</td>
<td></td>
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</tbody>
</table>

SPECIAL CLASSES.

Applications are invited from Electricians and others for the formation of Special Classes in Alternating Current Work (Theory and Practice).

SYLLABUSES

SUBJECTS.

1—ENGLISH.

Grammar, parts of speech, punctuation. Reading exercises from technical publications, dictation, letter and essay writing, notetaking. Lectures on simple machines, workshop appliances and engineering materials.

2—WORKSHOP ARITHMETIC.

Signs and symbols, factors, greatest common measure, least common multiple, fractions, decimals. Percentages, ratio and proportion, units of length, the foot rule and its sub-divisions; area, volume and weight. Simple mensuration.

3—PRACTICAL DRAWING.

Use of instruments, lettering, simple geometrical exercises, orthographic projection. Freehand sketches of models and machine parts. Scale drawings of nuts, bolts, screw threads, bearings, brackets, couplings and other simple machine details.

4—MACHINE DRAWING, I.

Use of drawing instruments and materials, precision exercises, orthographic projection. Use of sketch book, dimensioned freehand sketches of simple parts. Scale drawings of brackets, bearings, couplings, bolts, nuts, screws, simple engine details, valves and cocks. Explanation of features of importance in machine and engine parts, and of operations involved in their manufacture.

5—MACHINE DRAWING, II.

6—MACHINE CONSTRUCTION, III.


7—MACHINE CONSTRUCTION AND DESIGN, IV.

Advanced exercises in Machine Drawing, also problems involved in the design of the simpler details of machines and steam engines.


8—MACHINE DESIGN, V.

The application of mechanical science and of empirical knowledge to practical problems in mechanical engineering design. The properties and preparation of materials used and their employment with special regard to modern methods of economic production. The subjects will include:—Boilers, cylinders to sustain internal pressure, valves and valve mechanisms, steam and internal combustion engine details, engine, dynamo and other important bearings, governors, pumps, tanks, cranes and winches, cams and link mechanisms, riveted and welded structures.

9—PRACTICAL GEOMETRY.

Use of instruments, setting out of angles, proportional parts; scales. Exercises on straight lines and curves. Construction of plane figures, areas of figures, and reduction of areas to equal squares, properties of the triangle and parallelogram; application to link work. Construction of angles; circular measure and trigonometrical functions of angles. Proportionals, construction and use of scales. Location of points by rectangular co-ordinates, problems on lines and circles, construction of circles from specified data, tangents, angles in segment. The ellipse; cycloidal and involute curves. Triangles, polygons and curved figures. Vectors and vector quantities, problems on uniplanar forces. Projections and methods of defining positions of points and lines in space, horizontal and vertical traces. Views of solids in various positions, alterations of ground line, inclined and vertical planes. Elevations, plans and sections of prisms, pyramids, cylinders, and cone. Interpenetrations and developments.

11—PRACTICAL MATHEMATICS, I.

*Arithmetic*: Simple and compound rules, calculations of prices and costs, fractions, decimals, contracted methods, percentages, ratio and proportion, square root. *Mensuration*: Square, rectangle, triangle and circle, areas, volumes; applications of geometry to problems. *Algebra*: Symbols, the four simple rules, simple equations, evaluation and transformation of formulae, factors. Elementary graphs.

12—PRACTICAL MATHEMATICS, II.


13—PRACTICAL MATHEMATICS, III.

Simultaneous and quadratic equations, graphical solution of equations of degree higher than the second; maximum and minimum values of quadratic and cubic expressions, logarithmic solution of equations. Applications of Simpson’s trapezoidal rules. Work done by a variable force or expanding gas. General solution of triangles,
formulae for sine, cosine and tangent of sum or difference of two angles, formulae for sum or difference of sines or cosines of two angles; application of the formulae for compound angles to problems on valve displacement, etc. Formulae for the functions of $\frac{1}{2}A$ and $2A$ in terms of $A$. Linear graph law and the reduction thereto of other laws, graphs of the form $y = ax^n$. Trigonometrical and logarithmic functions. Slope of a curve at a point and its interpretation, rate of increase, velocity and acceleration, area of a curve and its interpretation, area of $y = \sin^2x$ and $y = \sin x$. The "root mean square" value of the ordinate.

14—Practical Mathematics, IV.

Binominal expansions and approximations. Exponential and logarithmic theorems. Calculations of logarithms to the exponential base and their transformation to a decimal or other base. Tabular study of the rate of increase and graphical study of the slope of curve of simple functions of a varying quantity, i.e., powers, trigonometrical, logarithmic and exponential functions. Differentials of such simple functions; of their sum, difference of product, and the function of a function. Successive differentiation and determination of the maximum and minimum values of a function. Integration as a process of summation, and as the inverse of differentiation. Further study of curves: conics, cycloids, trochoids, catenary. Discussion of the properties of curves from their cartesian equations. Simple harmonic motion.

15—Practical Mathematics, V.


16a—Engineering Science, Ia.

Force: its effects and measurement, simple stress and ultimate strength. Turning effect of a force: moments; levers, Speed; velocity ratio of wheel trains, of belt and pulley gearing and of simple lifting machines. Work, work diagrams, power, horse power. Resultant force; equilibrium of three forces, the triangle of forces.


20—Heat Engines, II.

The steam engine cylinder, steam distribution, mean effective pressure, calculation of indicated; and of brake horse power. Problems on the simple slide valve. Work done per cubic foot of steam. Effects of superheating. Steam boilers; boiler types, heating surface. Mechanical stokers, economisers, feed-water heaters, feed pumps and injectors, superheaters; boiler efficiency. Fuels, calorific value, air supply per pound of fuel, products of combustion. Transmission of heat from furnace to water, evaporation, air supply to furnace, natural and forced draught. Descriptive treatment of gas, oil and Diesel engines.

21—Heat Engines, III.


22—Engineering Workshop, I.


All work will be done to drawings prepared in connection with the classes in Machine Construction and Design. Patterns and castings made in the Institute will be utilised as far as possible.

23—Engineering Workshop, II.


24—Engineering Workshop, III.


25—Engineering Workshop, IV.

Advanced work on Syllabus of earlier years, involving the complete turning, machine, fitting and assembly of machine and engine details requiring a high degree of accuracy and finish; tool making. The application and use of modern high-grade measuring instruments and gauges. Fine grinding operations on hardened surfaces. Production of spur and ratchet wheels; tapered work; cottered connections, screw jacks and other workshop accessories.

26—Patternmaking, I.

Selection, qualities and application of timbers and other materials used. Use of patternmaking tools and appliances, the contraction rule. Operation of wood-turning lathe. Construction of simple patterns of flanges, brackets, bearings, brasses and cocks. Corebox making; use of core prints.

27—Patternmaking, II.

Patterns of more advanced type; built-up patterns, pedestals, wall brackets, hangers, toothed wheels, pulleys, clutches, pipe bends, valves, cocks, pistons. Use of strickles and loam board.
28—Patternmaking, III.

Cylinders and connections for engines and pumps, hydraulic details. Patterns of complex nature, involving coring of passages, chambers and recesses. Patterns for ornamental castings in iron, brass and bronze.

30—Workshop Drawing and Calculations.

Orthographic projection. Simple exercises in drawing as applied to patternmaking and foundry work. Interpretation of prints and drawings of castings. Elementary calculations required for foundry work.

31—Brass Finishing.

Bench and lathe operations involved in finishing and assembly of cocks, valves, lubricators, injectors, gauges, steam whistles. Turning of screwed spindles and of balls. Preparation of small switches and other simple electrical fittings. Ecclesiastical and ornamental brasswork requiring a high degree of finish. Chasing, knurling, spinning, brazing, polishing and lacquering operations.

32—Boilermaking, Drawing.


33—Boilermaking, Practical.

Marking out, cutting and bending to required shape and dimensions of cylindrical and coned riveted bodies. Preparation of plates for boiler-construction, levelling, squaring, cutting and drilling. Simple riveted joints, caulkling and fullering. Riveted tank work, watertight joints, corner connections, stiffening and staying. Boiler smithwork, heating of angle and channel bars in the fire, bending to required shape and size, welding and finishing. Flanging of boiler end plates. Oxy-acetylene processes applied to boilermakers' work.

34—Smithwork.


35—Metal Plate Work, Drawing and Theory, I.

Lectures: Fuels used in metal plate work. Metals: characteristics and applications of tinplate, zinc, copper and iron. Solders and brazing materials. Galvanising, tinning and re-tinning processes. Calculations of dimensions, capacities and weights of vessels of various designs.

Drawing: Geometrical problems involved in metal plate work; intersections and penetrations. Development of patterns for vessels and other objects of simple form such as:—Cylindrical pipes and branches, coned articles in two or more pieces, equal tapering bodies, baking pans; objects with combined flat and coned surfaces, tee pipes, bends in two or more pieces, V and Y pipes. Patterns for finials, simple mouldings, gutters and other roofwork details. Principal joints used in metal plate work practice.

36—Metal Plate Work, Practical, I.

37—Metal Plate Work, Drawing and Theory, II., III.

The subjects listed for the First Year will be dealt with in their advanced stages. The following will be the principal:

Metals and alloys: their physical and chemical properties. Special uses of tinplate, galvanised and lead-coated iron. Fuels, solid and gaseous; their methods of application. Oxy-acetylene processes. Development of patterns of an advanced type involving triangulation methods. Development of complex patterns and mouldings, and of those required for articles to be welded, brazed, and specially treated.

38—Metal Plate Work, Practical, II., III.

In addition to advanced work on the Syllabus for the First Year, special attention will be given to the following:—Oxy-acetylene processes applied to the cutting and welding of sheet-metal objects; the choice and proper use of blowpipes, welding rods and fluxes. Oxy-acetylene methods in the treatment of sheet copper, aluminium, brass, and stainless steel. Sifbronze welding. Welding, bending and treatment of light panels. Preparation and repair of motor car wings, bonnets and radiators. Domes, finials, ships' ventilators. Lamps, vases, caskets and other ornamental work involving a high degree of finish. Flashings for domes, spires and special roof forms. Kettles, urns, boilerettes, mirrors and other domestic articles of importance.

39—Oxy-Acetylene Welding.

Low pressure acetylene generator: precautions to be observed in the preparation and use of the gas. Storage and preservation of calcium carbide. Dissolved acetylene; care of high pressure acetylene and oxygen cylinders, valves, gauges and other fittings. Choice and use of blow-pipes for various purposes. Cutting and welding processes. Practical exercises in cutting and welding plates, angle and other sectional bars. Welding of framed structures of different designs. Oxy-acetylene methods applied to cast iron, aluminium alloys, brasses; bronzes and copper. Use of welding rods and fluxes for different metals.

40—Welding Science.

Simple chemistry of the atmosphere; oxidation and combustion. Some of the simpler elements, in particular carbon, hydrogen, iron, copper, aluminium; oxidation of these elements.


Force and fluid pressure; elementary ideas of stress and strain.

Metallurgy:—Composition and properties of the principal ferrous metals; effects of carbon, manganese, silicon, sulphur, phosphorus, oxygen and nitrogen on the strength, hardness, ductility, plasticity and malleability of steels. The effect of metallic additions made for the improvement of physical or chemical properties.

Heat treatment of metals. Normalising, annealing, hardening, tempering and case hardening.


Types of electrodes and welding rods, and their compositions. Slags and fluxes.

Expansion and contraction; stresses resulting therefrom in welds.

Modes of testing welds, destructive and non-destructive.

Cast iron and alloy steels.

Composition and properties of the non-ferrous metals, principally copper, aluminium and some of their alloys.

Sketching and Drawing:—Freehand sketching, and drawing to scale of simple elements of machines and structures. The dimensioning and reading of drawings. Sketches showing assembling of elements and methods of holding them in place during welding.
41A—Motor Car Lecture (Introductory):

Simple descriptive lectures designed to familiarise students with note-taking and the expression of their ideas in writing. The lessons will be illustrated by suitable sketches and will include:—The engine, transmission system, differential, back and front axles, steering and brake mechanisms, carburettors, springs, the names and functions of the principal parts and details, etc.

41B—Motor Car Engineering (Lecture).


42—Motor Car Engineering (Lecture).

Cylinder types, pistons, piston and oil rings, gudgeon pins, connecting rod and bearings. Crankshaft arrangements, main bearing adjustment. Valves and valve mechanisms, valve and ignition timing. More advanced construction of carburettors, their adjustment and operation. Engine temperatures, the cooling system, lubrication. Clutches, their construction, various types. Sliding gear and epicyclic change speed mechanisms, universal joints. Rear axles, arrangement and stresses. The suspension system. Front axle and construction in relation to steering, steering columns and mechanism. Various types of brakes.

43A—Motor Car Engineering.


43B.

Preparation of engine for starting, preparation of car for starting, car maneuvring. Simple maintenance work, including chassis lubrication, brake adjustment, detachable wheel work and tyre manipulation. Exercises worked by students on the four-stroke cycle, four-stroke engine and exercises to make clear the principles of operation of clutch, gears, etc.

44A—Motor Car Engineering, 2nd Year.

Four and six cylinder engines, general description, construction and operation of the various forms of clutches and change speed gears in common use, the steering mechanism, brakes and braking, universal joints and transmission to road driving wheels, fuel and ignition systems, operation, maintenance and location of simple faults in the complete power unit, car manœuvreuring.

44B.

General maintenance work such as outlined in car makers' instruction books. Lubrication of complete chassis. Checking of units and parts for loose assemblies, rigging, etc. Study of the behaviour of the running engine under various conditions. Systematic location of simple engine faults.

45A—Motor Car Engineering, 3rd Year.

Systematic location of engine faults arising under the various headings, engine and chassis maintenance in detail including periodic attentions to fuel and ignition systems, locating and practical treatment of troubles arising in clutches, gears, steering and braking systems.

45B—Motor Car Engineering (Lecture), 3rd Year.

More advanced treatment of the subject matter of the Second Year of the Course.

46A—Motor Car Engineering, 4th Year.

The subject matter of the earlier Years of the Course will be dealt with in its higher stages, with particular reference to advanced maintenance work and the systematic location of the more obscure engine faults.

46b—Motor Car Design, 4th Year.

The application of the fundamental laws of mechanics and geometry to elementary problems in motor car design. Proportioned drawings and sketches of details of engine power and valve systems, clutches, gear boxes, rear axles and other important details. Calculations of gas and inertia pressures, crank pin bearing areas, frictional torque in clutches, dimensions of shafts, strength of gear teeth, bearing loads, brake leverages, etc.

47—Motor Workshop Practice, 1st Year.

Vicework and simple fitting work involving the use of hand and bench tools and including filing, chipping, marking out, use of tools for measuring and testing, drilling, reaming, scraping, tapping and screwing, punching, drifting, riveting, grinding, soldering, brazing, simple pipework in copper and the working of sheet metal by hand methods. Making of simple hand tools and appliances for use in the garage.

48—Motor Workshop Practice, 2nd Year.

More advanced bench and fitting work. Simple forging operations, including drawing out, bending, straightening and truing of bent and deformed parts. Simple exercises involving the use of the lathe and drilling machine. Pipework in copper and steel. Spring making and wire working. Annealing, hardening, tempering and case-hardening.

49—Motor Workshop and Garage Practice, 3rd Year.


50—Motor Workshop and Garage Practice, 4th Year.

Various practical forging, fitting, turning, drilling and other machine tools operations. Toolmaking; oxy-acetylene processes. Advanced engine fitting work including re-metalling bearings, aligning and bedding in crankshaft, lapping and grinding operations, scraping, taper and parallel reaming. Chassis frame and unit alignment and setting. Axle straightening. Spring setting.

51a—Garage Practice, 1st Year.

Use of spanners, pliers, screwdrivers, hand brace, files and other small tools. Use of bolts and nuts, removal of stubborn nuts and studs. Disassembly of units, examination and marking of parts. Common repair jobs will be demonstrated, including:—decarbonising and valve grinding, brake re-lining, fitting piston rings, valve and ignition timing, fitting bearings, adjustment of ball and roller bearings.

51b.

Preparation of engine for starting. Preparation of car for starting. Car manouevring. Simple maintenance work including chassis lubrication, brake adjustment, detachable wheelwork and tyre manipulation. Exercises worked by students on the four-stroke cycle (four-cylinder engine). Exercises to make clear the principles of operation of clutch, gear, etc. Systematic location of the simpler engine faults.

52a—Garage Practice, 2nd Year.

More advanced exercises in disassembling and re-assembling. Adjustment of taper and roller bearings. Decarbonising. Truing, facing and re-seating valves. Adjustment of clutches. Valve and
ignition timing. Carburettor overhauls. Maintenance work on electrical equipment such as truing of points, brush races, fitting and bedding of brushes, skimming of commutators, etc.

52b.

General maintenance and servicing work. Lubrication of complete chassis. Checking of units and parts for loose assemblies, rigging, etc. Study of the behaviour of the running engine under various conditions. Systematic location of faults in the power unit arising under the various headings.

53—Motor Car Electricity, I.


54—Motor Car Electricity, II.


55—Motor Car Electricity, III.


Car starter types and circuits. The dynamotor.

56—Motor Car Electricity, IV.


57—Automobile Electrical Equipment, Testing and Repair.

Testing, repair, and adjustments of car electrical equipment, such as dynamos, starters, magnetos, ignition coils, "cut outs," batteries, horns, general wiring, etc.


General Physics: British and metric units of length and mass. Density. Pressure of liquids and gases, atmospheric pressure, Boyle's Law, the Principle of Archimedes.
34

Heat: Temperature, expansion, thermometers, the units of quantity. Change of state, melting and boiling points, vaporisation, condensation. Conduction, convection, radiation.

Chemistry: Chemical change, the meaning of combustion, oxides, the air, brief study of oxygen, nitrogen, sulphuric acid and hydrogen.

59-Science, II. (Motor Car Engineering).


Chemistry: Molecules and atoms, elements and compounds, chemical symbols, the atomic theory, atomic weights, quantitative notation, valency.

Water, carbon, carbon dioxide; carbon monoxide; carbides; combustion; ignition point; flame; the Bunsen burner. Hydrochloric acid, zinc chloride. Lead, its oxide and sulphate, brief treatment of iron, aluminium, tin and zinc. The paraffin group.


61-Mechanics, II. (Motor Car Engineering).


62-General Physics (Gas Engineering).


63-Inorganic Chemistry (Gas Engineering).

dioxide, sulphuretted hydrogen and carbon dioxide. Action of acids on metals; measurement of volumes and density of gases, and reduction of N.T.P. Alkalies; properties and reactions with acids, indicators, preparation and crystallisation of simple salts, simple determinations of equivalents. Recognition of chlorides, sulphates, sulphites, sulphides, carbonates, nitrates and nitrites.

64—ART IRONWORK.

Iron, its nature and properties, various kinds of iron used by art ironworkers; tools, their application and uses. Treatment and manipulation of wrought-iron; forging, welding, jumping, bending and embossing. Methods of joining ironwork, operations in art-smithing; riveting, intersecting, slitting, tenoning, shrinking on collars. Twisting scrolls and volutes.

65—GAS FITTING, LECTURES AND CALCULATIONS, I.


Simple calculations of areas and volumes; cubic contents of tanks, vessels, apartments, etc. Meter reading; units employed in gas measurements; elementary treatment of pressure gauges and recorders.

66—GAS FITTING LECTURES, II.

Blown, screwed and flanged joints; testing and precautions against accidents. Meters; types, connections, reading of indices. Gauges; burners for lighting, heating and cooking appliances; burner governors. Description and fixing of domestic cookers, grills, gas fires, radiators, geysers, etc.

Physical properties of materials used for gas pipes and fittings; their reaction to stretching, compression, bending and twisting; effects of heat on materials.

Gauges; gauge pressures; pressure required for various gas appliances. Volumetric and pressure governors.

67—GAS FITTING LECTURES III.

Internal gas pipes and fittings: joints, pipe laying, lighting fittings; testing for soundness; detection and correction of faults. Relation between loss of pressure, bore and length of pipe and capacity; other circumstances affecting pressure. More advanced treatment of meters, governors and gauges. Illumination; lighting schemes; burners; shades; reflectors and chimneys. Domestic cookers and heaters; water heating: principles of hot water circulation; appliances and fittings; thermostats. Principles of ventilation. Physical effects of heat: temperature, British Thermal Unit. Precautions to be observed in working with gas; method of dealing with gassing.

68—GAS FITTING, PRACTICAL, I.

Gas fitting tools, use, care and upkeep. Cutting and screwing iron, brass and copper tubing. Formation of parallel and taper screw threads; use of stocks, dies and taps. Drilling operations. Simple exercises in joint blowing, pipe fitting, bending and jointing.

69—GAS FITTING, PRACTICAL, II.

More advanced work on the Syllabus of the First Year and, in addition—

Examination and practical study of L.P. lighting burners and lamps; ventilation arrangements; gas and air controls. Burners and castings of small cooking stoves; oven ventilation; spacing of hot plate burners; small gas circulators, burners, waterways and flues. Domestic gas irons; radiators; flueless heaters; thermostatic control arrangements. Gas connections to lighting fittings, burners and gas fires; regulating devices. Pipe-work testing for soundness with gauge; fixing of small type meters. The use of U tubes for ascertaining pressures.

70—GAS FITTING, PRACTICAL, III.

Joint making in larger sized pipes; saddle joints; large screwed connections. Bending larger lead and iron pipes. Use of pressure gauge for locating stoppages. More advanced work on lighting fixtures, gas fires, radiators, cookers, geysers and hot water circulating arrangements, adjustment of thermostats. Practical study of recent improvements.
Irish.

Conversation lessons on simple matters such as the name, home or residence, salutations, the clock, days of the week, months and seasons, the weather, money, easy counting, colours, etc. Location of objects in the classroom and neighbourhood, parts of the body and clothing, giving and carrying out simple orders. With the conversational lessons the student will be familiarised with the use of *is* and *tíd*, and of verbal nouns.

Memorising of simple songs, rhymes, stories, etc., so as to be able to repeat them with correct *bias*. Short stories and recitations.

Each student will keep a note-book to record the salutations phrases, etc., in correct Irish.
GENERAL CURRICULUM OF THE SCHOOLS
UNDER THE CONTROL OF
THE CITY OF DUBLIN VOCATIONAL EDUCATION COMMITTEE.

EVENING SCHOOL COURSES.
Architecture and Building.
Furniture.
Chemistry.
Botany, Materia Medica, Pharmacy.
Mathematics.
Physics.
Electrical Engineering and Allied Trades.
Radio Communication
Mechanical Engineering and Allied Trades.
Motor Car Engineering.
Gas Engineering and Gas Fitting.
Oxy-Acetylene Welding.
Electric Welding.
Brassfinishing.
Printing and Book Production.
Art and Art Crafts—Woodcarving, Enamelling on Metal, Leatherwork, Book Illustration.
Commerc e and Languages.
Domestic Science and Women's Work.
Catering Trades.
Bootmaking.
Hairdressing.
Tailoring.
Watchmaking and Repairing.
Music.
Physical Training, and

DAY SCHOOL COURSES.
Day Apprentice Schools.
Day Junior Technical Schools.
Day Schools of Commerce.
Retail Distribution.
Building Science.
Printing (Apprentices).
Painting (Apprentices).
Radio Telegraphy.
Electro Technology.
Shirtmaking (Power Machines)
Clothing Manufacture (Power Machines)
Art Leatherwork
Dressmaking.
Needlework.
Cookery.

DAY CONTINUATION WORK
(for Boys and Girls between 14 and 16 years).