

| YEAR 4 | Hours per week | | | |
|-------------------------------------|----------------|------------------|-----------|------------------|
| | SESSION 1 | | SESSION 2 | |
| | Lec. | Tut. | Lec. | Tut. |
| 5.051 Thesis | 0 | 6 | 0 | 6 |
| 5.062 Communications | 1 | 1 | 1 | 1 |
| 5.324 Automatic Control Engineering | 2 | 1 | 2 | 1 |
| 18.012 Industrial Engineering IIA | 2 | 1 | 2 | 1 |
| 18.022 Industrial Engineering IIB | 2 | 1 | 2 | 1 |
| 18.551 Operations Research | 2 | 1 | 2 | 1 |
| General Studies Elective | 1 | $\frac{1}{2}$ | 1 | $\frac{1}{2}$ |
| <i>Plus one elective from:—</i> | | | | |
| 4.913 Materials Science | 2 | 1 | 2 | 1 |
| 5.332 Dynamics of Machines II | | | | |
| 5.413 Mechanics of Solids II | | | | |
| 18.431 Design for Production | | | | |
| | <hr/> | <hr/> | <hr/> | <hr/> |
| | 12 | 12 $\frac{1}{2}$ | 12 | 12 $\frac{1}{2}$ |

INDUSTRIAL ENGINEERING—PART-TIME COURSE

Bachelor of Science (Engineering)

This course is of six years' duration and leads to the degree of Bachelor of Science (Engineering).

For outline of the first four stages see the Mechanical Engineering part-time course.

STAGE 5

| | | | | |
|-------------------------------------|-----------------|---------------|-----------------|---------------|
| 5.071 Engineering Analysis | 2 $\frac{1}{2}$ | 1 | 2 $\frac{1}{2}$ | 1 |
| 5.112 Mechanical Engineering Design | 1 $\frac{1}{2}$ | 1 | 1 $\frac{1}{2}$ | 1 |
| 5.331 Dynamics of Machines | 1 $\frac{1}{2}$ | $\frac{1}{2}$ | 1 $\frac{1}{2}$ | $\frac{1}{2}$ |
| 14.001 Introduction to Accounting | 1 $\frac{1}{2}$ | 0 | 1 $\frac{1}{2}$ | 0 |
| 18.011 Industrial Engineering IA | 1 $\frac{1}{2}$ | $\frac{1}{2}$ | 1 $\frac{1}{2}$ | $\frac{1}{2}$ |
| 18.021 Industrial Engineering IB | 1 $\frac{1}{2}$ | $\frac{1}{2}$ | 1 $\frac{1}{2}$ | $\frac{1}{2}$ |
| General Studies Elective | 1 | $\frac{1}{2}$ | 1 | $\frac{1}{2}$ |
| | <hr/> | <hr/> | <hr/> | <hr/> |
| | 11 | 4 | 11 | 4 |

STAGE 6

| | | | | |
|-----------------------------------|-------|-----------------|-------|-----------------|
| 18.012 Industrial Engineering IIA | 2 | 1 | 2 | 1 |
| 18.022 Industrial Engineering IIB | 2 | 1 | 2 | 1 |
| 18.431 Design for Production | 2 | 1 | 2 | 1 |
| 18.551 Operations Research | 2 | 1 | 2 | 1 |
| General Studies Elective | 1 | $\frac{1}{2}$ | 1 | $\frac{1}{2}$ |
| | <hr/> | <hr/> | <hr/> | <hr/> |
| | 9 | 4 $\frac{1}{2}$ | 9 | 4 $\frac{1}{2}$ |

SCHOOL OF SURVEYING

The School of Surveying offers a four-year full-time course and a seven-year part-time course, each leading to the degree of Bachelor of Surveying. The degree can also be attained through a combination of part-time and full-time study.

The course is designed to provide the appropriate academic training for a professional surveyor working in any of the many branches of surveying. Since these branches cover a wide range, the course is broad in its scope. First and second years are concerned mainly with the basic sciences. Basic surveying is also included and in the third year the major surveying subjects appear: geodesy, photogrammetry, astronomy and cadastral surveying. With the addition of some applied sciences, these are continued into fourth year. A feature of the course is the inclusion of General Studies in the later years and stages. The graduate can take up cadastral or property surveying, engineering surveying, geodetic surveying, photogrammetry, cartography or hydrographic surveying.

Throughout the course the theory is illustrated by means of practical applications in field or laboratory exercises. The field work enables the student to use modern optical and electronic instruments. Full-time students must attend a survey camp for two weeks during each of Years 2 and 3 of their course and part-time students must attend a two-week survey camp during each of Stages 4 and 6 of their course. In addition, all full-time students are required to engage in approved training for a period of not less than forty days after the completion of Year 2 and for a further period of not less than forty days after the completion of Year 3. Part-time students are required to obtain a minimum of three years of approved practical experience concurrently with their course of study. The Bachelor of Surveying degree may be awarded as a Pass degree, Honours Class I, or Honours Class II in two divisions. Honours are awarded in recognition of superior performance throughout the course.

Students wishing to become Registered Surveyors after graduation are also strongly advised to gain practical experience under a Registered Surveyor. Some reduction in the period of practical experience required before registration may be sought because of practical experience gained during a student's course of study, provided the Board of Surveyors has given prior agreement to the recognition of this experience. Details are obtainable from the Registrar, Board of Surveyors, Department of Lands.

The degree of Bachelor of Surveying confers exemption from all written examinations of the Board of Surveyors.

SURVEYING—FULL-TIME COURSE

Bachelor of Surveying

Hours per week for 2 sessions

| YEAR 1 | | Lab. | |
|--------|-------------------------|-------|-------|
| | | Lec. | Tut. |
| 1.041 | Physics IC | 3 | 3 |
| 5.001 | Engineering I | 3 | 3 |
| 10.001 | Mathematics I <i>or</i> | 4 | 2 |
| 10.011 | Higher Mathematics I | | |
| 29.801 | Surveying I | 2 | 4 |
| | | <hr/> | <hr/> |
| | | 12 | 12 |

YEAR 2

| | | | |
|--------|---------------------------|-------|-------|
| 2.212 | Physics IIT | 1½ | 1½ |
| 8.711 | Engineering for Surveyors | 2½ | ½ |
| 10.022 | Mathematics | 2 | 2 |
| 10.341 | Statistics | 1½ | 0 |
| 25.131 | Geology for Surveyors† | 1 | 1½ |
| 29.802 | Surveying II | 2 | 2½ |
| 29.841 | Surveying Computations | 1½ | 1 |
| 29.892 | Survey Camp* | | |
| | General Studies Elective | 1 | ½ |
| | | <hr/> | <hr/> |
| | | 13 | 9½ |

†Two one-day excursions are an essential part of the course.

*Students must attend a two-week survey camp which is held during October.

YEAR 3

| | | | |
|--------|--------------------------------------|-------|-------|
| 8.712 | Engineering for Surveyors | 2 | 0 |
| 29.803 | Surveying III | 1½ | 1½ |
| 29.821 | Geodesy I | 2½ | 1½ |
| 29.831 | Astronomy I | 2 | ½ |
| 29.842 | Surveying Computations | 1 | 1 |
| 29.851 | Photogrammetry I | 1½ | 1½ |
| 29.881 | Land Law, Utilization and Valuation† | 3 | 0 |
| 29.893 | Survey Camp* | | |
| | Two General Studies Electives | 2 | 1 |
| | | <hr/> | <hr/> |
| | | 15½ | 7 |

*Lectures cease in Session 2 for three weeks when students must attend the survey camp (29.893).

†Two one-day excursions are an essential part of the course.

Hours per week

| YEAR 4 | | SESSION 1 | | SESSION 2 | |
|--------|--|-----------|-----------|-----------|-----------|
| | | Lec. | Lab. Tut. | Lec. | Lab. Tut. |
| 6.811 | Electronic Instrumentation for Surveyors | 1 | 0 | 1 | 0 |
| 11.411 | Town Planning | 1½ | 1½ | 0 | 0 |
| 25.303 | Geophysics for Surveyors* | 3 | 0 | 0 | 0 |
| 29.081 | Thesis | 3 | 0 | 3 | 0 |
| 29.822 | Geodesy II | 2 | 1½ | 2 | 2½ |
| 29.832 | Astronomy II | 1½ | 1 | 1½ | 1 |
| 29.852 | Photogrammetry II | 1 | 3½ | 1 | 3½ |
| 29.882 | Cadastral Surveying | 1½ | ½ | 1½ | ½ |
| | General Studies Elective | 1 | ½ | 1 | ½ |
| | | <hr/> | <hr/> | <hr/> | <hr/> |
| | | 15½ | 8½ | 11 | 8 |

*A one-day Geophysical field tutorial is an essential part of this subject (Session 1 only).

SURVEYING—PART-TIME COURSE

Bachelor of Surveying

Hours per week for 2 sessions

| STAGE 1 | | Lab. | |
|---------|-------------------------|-------|-------|
| | | Lec. | Tut. |
| 1.041 | Physics IC | 3 | 3 |
| 10.001 | Mathematics I <i>or</i> | 4 | 2 |
| 10.011 | Higher Mathematics I | | |
| | | <hr/> | <hr/> |
| | | 7 | 5 |

| STAGE 2 | | Lab. | |
|---------|---------------|-------|-------|
| | | Lec. | Tut. |
| 5.001 | Engineering I | 3 | 3 |
| 29.801 | Surveying I | 2 | 4 |
| | | <hr/> | <hr/> |
| | | 5 | 7 |

| STAGE 3 | | Lab. | |
|----------|---------------------------|-------|-------|
| | | Lec. | Tut. |
| 1.212 | Physics IIT | 1½ | 1½ |
| 8.711 | Engineering for Surveyors | 2½ | ½ |
| 10.022/1 | Mathematics II, Part I | 1 | 1 |
| 29.841 | Surveying Computations | 1½ | 1 |
| | General Studies Elective | 1 | ½ |
| | | <hr/> | <hr/> |
| | | 7½ | 4½ |

Hours per week for 2 sessions

| | | Lec. | Lab. Tut. |
|----------------|--------------------------|-------|--------------|
| STAGE 4 | | | |
| 10.022/2 | Mathematics II, Part II | 1 | 1 |
| 10.341 | Statistics | 1½ | 0 |
| 25.131 | Geology for Surveyors† | 1 | 1½ |
| 29.802 | Surveying II | 2 | 2½ |
| 29.892 | Survey Camp* | — | — |
| | General Studies Elective | 1 | ½ |
| | | <hr/> | <hr/> |
| | | 6½ | 5½ |

†Two one-day field tutorials are an essential part of the course.

*Students must attend a two-week survey camp which is held during October.

STAGE 5

| | | | |
|--------|--------------------------------------|-------|-------|
| 8.712 | Engineering for Surveyors | 1½ | 0 |
| 29.803 | Surveying III | 1½ | 1 |
| 29.831 | Astronomy I | 1½ | ½ |
| 29.842 | Surveying Computations | 1 | ½ |
| 29.881 | Land Law, Utilization and Valuation* | 2½ | 0 |
| | General Studies Elective | 1 | ½ |
| | | <hr/> | <hr/> |
| | | 9 | 2½ |

*Two one-day excursions are an essential part of the course.

Hours per week

| | | SESSION 1 | | SESSION 2 | |
|----------------|---|-----------|--------------|-----------|--------------|
| | | Lec. | Lab. Tut. | Lec. | Lab. Tut. |
| STAGE 6 | | | | | |
| 6.811 | Electronic Instrumentation for Surveyors | 1 | 0 | 1 | 0 |
| 25.303 | Geophysics for Surveyors† | 3 | 0 | 0 | 0 |
| 29.821 | Geodesy I | 1½ | 1½ | 1½ | 1½ |
| 29.851 | Photogrammetry I | 1½ | 1 | 1½ | 1 |
| 29.882 | Cadastral Surveying | 1½ | ½ | 1½ | ½ |
| 29.893 | Survey Camp* | — | — | — | — |
| | General Studies Advanced Elective | 1½ | 0 | 1½ | 0 |
| | | <hr/> | <hr/> | <hr/> | <hr/> |
| | | 10 | 3 | 7 | 3 |

†A one-day Geophysical field tutorial is an essential part of this subject (Session 1 only).

*During Session 2 students must attend the three-week survey camp (29.893). The camp must be attended in the year in which the student completes the last subject in the group 29.803, 29.821, 29.831 and 29.851.

STAGE 7

| | | | | | |
|--------|-------------------|-------|-------|-------|-------|
| 11.411 | Town Planning | 1½ | 1½ | 0 | 0 |
| 29.822 | Geodesy II | 2 | 1½ | 2 | 2½ |
| 29.832 | Astronomy II | 1½ | 1 | 1½ | 1 |
| 29.852 | Photogrammetry II | 1 | 3½ | 1 | 3½ |
| | | <hr/> | <hr/> | <hr/> | <hr/> |
| | | 6 | 7½ | 4½ | 7 |

DESCRIPTIONS OF SUBJECTS

TEXT AND REFERENCE BOOKS

(For General Studies subjects see the Department of General Studies Handbook.)

SCHOOL OF MECHANICAL AND INDUSTRIAL
ENGINEERING**5.001 Engineering I**A. *Introduction to Engineering*

- (i) *Engineering Technology: Materials*. Classification of materials in common use, occurrence of raw materials, processing of raw materials, refinements and properties of materials.
- (ii) *Computers — Introduction and Concepts*: Introduction to computers to follow the computer work in Mathematics I. To develop:—(a) familiarity with algorithms; (b) the use of procedure oriented languages; and (c) an introduction to computing equipment.
Systems — Introduction and Concepts: Concepts and Introduction to Systems. To give students an appreciation of some of the concepts used in engineering, to relate the concepts to phenomena within their experience, and to illustrate them by case histories and engineering examples. Quantities. Concepts. Components. Systems.
- (iii) *Introduction to Engineering Design*: Engineering method, problem identification, creative thinking, mathematical modelling, materials and processes, communication of ideas, the place of engineering in society.

TEXTBOOKS

Harrisberger, L. *Engineersmanship*. Wadsworth.

or

Krick, E. V. *Introduction to Engineering and Engineering Design*. Wiley.

Karbowiak, A. E. & Huey, R. M. ed. *Information Computers, Machines and Humans*. N.S.W. U.P.

REFERENCE BOOKS

Aitchison, L. *A History of Metals*. Vols. I & II. McDonald & Evans.

Beakley, G. C. & Leach, H. W. *Engineering: An Introduction to a Creative Profession*. Collier-Macmillan.

Dennis, W. H. *Extractive Metallurgy*. Pitman.

or

Gilchrist, J. D. *Extractive Metallurgy*. Pergamon.

or

Newton, J. *Extractive Metallurgy*. Wiley.

Dixon, J. R. *Design Engineering*. McGraw-Hill.

Edel, D. H. *Introduction to Creative Design*. Prentice-Hall.

Guy, A. G. *Physical Metallurgy for Engineers*. Addison-Wesley.