

# Faculty of Engineering and Forestry

## The Degree of Bachelor of Engineering with Honours (BE(Hons))

See also *General Course and Examination Regulations*.

### 1. Requirements of the Degree

Every candidate for the Degree of Bachelor of Engineering with Honours shall follow a course of study and non-academic requirements approved by the Dean of Engineering and Forestry as laid down in these Regulations. In special circumstances the Dean of Engineering and Forestry may modify specific aspects of these degree regulations

### 2. Structure of the Degree

To qualify for the Degree of Bachelor of Engineering with Honours a candidate must complete:

- (a) a programme of study for the Engineering Intermediate Year of not less than 120 points;
- (b) an approved academic writing test;
- (c) a programme of three Professional Year Examinations where each year is not less than 120 points;
- (d) a programme of study which must include not less than 120 points at 400-level or higher;
- (e) the non-academic requirements.

Candidates are not permitted to enrol in any engineering courses of the Third Professional Examination prior to completion of the First Professional Examination.

### 3. Engineering Disciplines

The degree of Bachelor of Engineering with Honours may be awarded in the following programmes:

- (a) meet all requirements as laid down in the current regulations for the Degree of Bachelor of Engineering with Honours;
- (b) meet all requirements as laid down in the current regulations for the Degree of Bachelor of Commerce.

### **9. Concurrent Enrolment in BE(Hons) and BSc Degrees**

A candidate who enrolls concurrently for the Degree of Bachelor of Science and Bachelor of Engineering with Honours shall, in order to qualify for the award of both degrees, be enrolled for a course of study approved under the provisions of the General Course and Examination Regulation A3, and shall:

- (a) meet all requirements as laid down in the current regulations for the Degree of Bachelor of Engineering with Honours;
- (b) meet all requirements as laid down in the current regulations for the Degree of Bachelor of Science

*Note: Candidates should take particular note of Regulation 7 and 8 of the BSc Regulations.*

### **10. Admission to BE(Hons) Candidacy**

Admission to the BE(Hons) shall be by approval of the Dean of Engineering and Forestry. All candidates

the College of Engineering Office of details concerning the employment. The appropriate form is available on the student's practical work record in UC Student Web or can be obtained from the College of Engineering Office or from the College website. Lists of employers' addresses are available at the College of Engineering Office.

- (g) A candidate shall submit two satisfactory written reports covering different types of practical work. Reports shall be submitted not later than the first Monday in April immediately following the period of work reported on. Different deadlines apply to students wishing to graduate (see (i)). Each report shall remain confidential to the student and the College of Engineering and shall not be disclosed to any other party. Note: Practical work will be credited towards a candidate's course only after a satisfactory report is received from the candidate's employer.
- (h) Practical work shall be credited on the following basis:
  - i. Credit is given only for hours worked;
  - ii. A day is defined as eight (8) hours work;
  - iii. Not more than 60 hours are credited in any one week.
- (i) Students wishing to graduate at a ceremony during semester 1 must have completed all practical

*is considered an equivalent standard. Following any exemption from CHEM 111 students must offer in its place another 15 point elective including any unused choice under Requirement (3) above.*

### **Mechatronics Engineering**

- (1) CO C 121 Computer science 1A
- (2) PHY 102 Engineering Physics B: Electromagnetism, Modern Physics and "How things Work"
- (3) ENGR 102 Engineering Mechanics and Materials

Notes:

1. Each of the Engineering Intermediate Courses is a prerequisite for the Engineering First Professional Examination.
2. Introductory courses (MA H 101, PHY 111, CHEM 114) will not be considered for credit towards the BE(Hons) Intermediate Year.

### **14. Restricted Credit**

A candidate may enquire from the Dean of Engineering and Forestry as to the Faculty Guideline

tochastic Modelling

- (6) ENCN 342 Fluid Mechanics and Hydraulics
- (7) ENCN 353 Geotechnical Engineering
- (8)

Notes:

1. *Candidates may only attempt ENCE 427 if they are taking sufficient courses to complete the academic requirements of the degree.*
2. *Not all courses in Schedules A or B will necessarily be available in any one year and candidates should consult the Director of Studies concerning the courses to be taught and the alternative degree courses that might be approved.*

## Electrical and Electronic Engineering

### 24. First Professional Examination

- (1) EM H 210 Engineering Mathematics 2
- (2) EM H 211 Engineering Linear Algebra and Statistics
- (3) ENEL 200 Electrical and Computer Engineering Design
- (4) ENEL 220 Circuits and Signals
- (5) ENEL 270 Principles of Electronics and Devices
- (6) ENEL 280 Principles of Electrical Systems
- (7) ENEL 290 Waves and Materials in Electrical Engineering
- (8) ENCE 260 Computer Systems

### 25. Second Professional Examination

- (1) ENEL 300 Electrical and Computer Engineering Design 2
- (2) ENEL 301 Fundamentals of Engineering Economics and Management
- (3) ENEL 320 Signals and Communications
- (4) ENEL 321 Control Systems
- (5) Sufficient courses selected from:
  - (a) ENEL 370 Electronics 1
  - (b) ENEL 371 Power Electronics 1
  - (c) ENEL 380 Power Systems 1
  - (d) ENEL 381 Electrical Machines 1
  - (e) ENEL 391 Electronic Devices 1
  - (f) ENCE 361 Embedded Systems 1
  - (g) ENCE 362 Digital Electronics
  - (h) Any 15 point 300-level option to be approved by the Director of Studies

*Note: Not all courses in 3(a) to (h) will necessarily be available in any one year. Candidates should consult the concerning the courses to be taught and the alternative degree courses that might be approved*

### 26. Third Professional Examination

- (1) ENEL 427 Project
- (2) Sufficient courses selected from:
  - (a) ENEL 428 Computer Software Engineering 2
  - (b) ENEL 429 Computer Hardware Engineering 2
  - (c) ENEL 430 Control Systems
  - (d) ENEL 432 Electromagnetic Engineering 2
  - (e) ENEL 433 Communications Engineering 2

- (f) ENEL 434 Electronics 2
- (g) ENEL 435 Micro- and Nano-Electronic Device Engineering 2
- (h) ENEL 436 Power Electronics 2
- (i) ENEL 437 Power Systems Engineering
- (j) ENEL 438 Engineering Economics and Management
- (k) ENEL 439 Power Engineering Applications
- (l) ENEL 440 Signal Processing
- (m) ENEL 441 Special Topic
- (n) ENEL 442 Special Topic in Electrical and Electronic Engineering

Notes:

1. *Not all courses in 2(a) to (n) will necessarily be available in any one year and candidates should consult the Director of Studies concerning the courses to be taught and the alternative degree courses that might be approved.*
2. *Candidates may only attempt ENEL 427 if they are taking sufficient courses to -1.417 2*

- (3) FORE 423 Forest Transportation and Road Design
- (4) ENFO 411 Forest Engineering Research and Design
- (5) ENFO 420 Harvest System Evaluation
- (6) Two or more elective courses approved by the Director of Studies.

## Mechanical Engineering

### 30. First Professional Examination

- (1) EM H 210 Engineering Mathematics
- (2) EM H 271 Mathematical Modelling and Computation 2
- (3) ENME 201 Design Communication
- (4) ENME 202 Stress, Strain and Deformation in Machine Elements
- (5) ENME 203 Dynamics and Vibrations
- (6) ENME 204 Introduction to Thermo-fluids Engineering
- (7) ENME 207 Materials Science and Engineering
- (8) ENME 221 Engineering Design and Manufacture

### 31. Second Professional Examination

- (1) ENME 301 Engineering Design and Production Quality
- (2) ENME 302 Computational and Applied Mechanical Analysis
- (3) ENME 303 Controls and Vibrations
- (4) ENME 304 Engineering Fluid Mechanics
- (5) ENME 305 Thermodynamics and Heat Transfer
- (6) ENME 307 Performance of Engineering Materials
- (7) ENME 311 Engineering Design and Production Management
- (8) ENME 313 Electro-technology for Mechanical Engineers

### 32. Third Professional Examination

- (1) ENME 438 Project
- (2) ENME 440 Mechanical System Design - Process
- (3) ENME 450 Industrial Management
- (4) Sufficient courses selected from:
  - (a) ENME 432 Mechanics of Vibration
  - (b) ENME 433 Modern Control Theory
  - (c) ENME 435 Heat and Mass Transfer
  - (d) ENME 436 Manufacturing Technology
  - (e) ENME 441 Mechanical System Design - Special Applications
  - (f) ENME 442 Applied Computational Solid Mechanics
  - (g) ENME 443 Computer Control and Instrumentation
  - (h) ENME 445 Energy Engineering
  - (i) ENME 448 Special Topic: Advanced Materials and Processing

- (j) ENME 449 Special Topic: Physiological Modelling
- (k) ENME 454 Introduction to Acoustics
- (l) ENME 456 Computer Aided Product Development
- (m) ENME 457 Fracture Mechanics and Failure Analysis
- (n) ENME 464 Biofluid Mechanics
- (o) ENME 465 HVAC Engineering
- (p) ENME 466 Manufacturing Optimisation
- (q) ENME 467 Polymeric and Composite Materials
- (r) ENME 474 Aerodynamics
- (s) ENME 477 Polymer Science and Engineering
- (t) ENGR 401 Introduction to Computational Fluid Dynamics
- (u) ENM 463 Robotics
- (v) MDPH 401 Anatomy and Physiology for Medi-

**35. Third Professional Examination**

- (1) ENM 401 Project
- (2) ENME 433 Modern Control Theory
- (3) Sufficient courses selected from the schedule below:
  - (a) CO C 428 Computer Vision
  - (b) ENEL 428 Software Engineering 2
  - (c) ENEL 429 Computer Hardware Engineering 2
  - (d) ENEL 434 Electronics 2
  - (e) ENEL 436 Power Electronics 2
  - (f) ENEL 438 Economics & Management or ENME 450 Industrial Management
  - (g) ENEL 440 Signal Processing
  - (h) ENME 432 Mechanics of Vibration
  - (i) ENME 436 Manufacturing Technology
  - (j) ENME 440 Mechanical System Design - Process
  - (k) ENME 441 Mechanical System Design - Special Applications
  - (l) ENME 456 Computer-Aided Product Development
  - (m) ENME 474 Aerodynamics
  - (n) ENM 443 Measurement Technology
  - (o) ENM 448 Special Topic: Thermo-Fluids Transport
  - (p) ENM 453 Advanced Control
  - (q) ENM 463 Robotics

*Note: Not all courses in 3(a) to (q) will necessarily be available in any one year, and candidates should consult the Director of Studies concerning the courses to be taught.*

**Natural Resources Engineering****36. First Professional Examination**

- (1) EM H 210 Engineering Mathematics 2
- (2) ENCN 213 Design Studio 1
- (3) ENCN 221 Engineering Materials
- (4) ENCN 231 Solid Mechanics
- (5) ENCN 242 Fluid Mechanics and Hydrology
- (6) ENCN 253 Soil Mechanics
- (7) ENCN 261 Transport and Surveying
- (8) ENCN 281 Environmental Engineering

*Note: Students are required to attend the First Professional Examination Camp. Work at the camp will form part of the assessment for ENCN 261 Transport and Surveying.*

**37. Second Professional Examination**

- (1) ENNR 313 Natural Resources Engineering Design Studio 2
- (2) ENNR 320 Integrated Catchment Analysis
- (3) ENNR 322 Ecological Engineering
- (4) ENCN 304 Deterministic Mathematical Methods

- (5) ENCN 305 Computer Programming and Stochastic Modelling
- (6) ENCN 342 Fluid Mechanics and Hydraulics
- (7) ENCN 353 Geotechnical Engineering or ENGE 486 Engineering Geomorphology
- (8) ENCN 371 Project and Infrastructure Management

*Note: Candidates are required to attend the Second Professional Year Camp. Work at the camp will form part of the assessment for ENCN 371.*

**38. Third Professional Examination**

- (1) ENNR 429 Natural Resources Engineering Project
- (2) Sufficient courses selected from schedule A and B listed below. Three courses must be selected from schedule A and three courses from schedule B.

**Schedule A**

- (a) ENNR 405 Ecological Engineering 2
- (b) ENNR 422 Water Resources Engineering
- (c) ENNR 423 Energy Engineering 2
- (d) ENNR 431 Bio-resources Engineering
- (e) ENNR 451 Engineering in Developing Communities

**Schedule B**

- (a) ENNR 404 Water Infrastructure and Design
- (b) ENNR 407 Advanced Hydrology
- (c) ENGR 405 Industrial Pollution Control
- (d) ENCI 445 Coastal and Inland Waters
- (e) ENCI 481 Wastewater Treatment Plant Design
- (f) ENCI 482 Solid Waste Engineering
- (g) Two electives chosen with the approval of the Director of Studies.

*Note: Not all courses in Schedule A or B may be offered in any one year and prospective candidates should consult the Director of Studies concerning which courses will be taught.*

**39. Transitional Regulations**

A candidate who has commenced the BE(Hons) before 2011 shall complete the degree by taking courses approved by the Dean of Engineering and Forestry which are consistent with the regulations in the relevant Calendar.

Students enrolling in the second Professional year for the first time from 2012 will not be eligible to graduate with Third Class Honours. Students enrolled in the second or third Professional Year prior to 2012 will be eligible to graduate with Third Class Honours.



#### 40. Student Affected by Change of Regulations

If the course of study of a candidate is affected by a change in any of the above Regulations for the

Degree of Bachelor of Engineering with Honours, the examinations which must be passed to complete the degree shall be determined by the Dean of Engineering and Forestry.

## The Degree of Bachelor of Forestry Science (BForSc)

See also *General Course and Examination Regulations*.

### 1. Structure of the Degree

Subject to the provisions of the following Regulations, the degree shall consist of a First, Second, Third and Fourth Forestry Examination.

*Note: Prescriptions for these Examinations are given elsewhere in the Calendar.*

- (a) Exemption from the First Forestry Examination  
A candidate who has achieved sufficiently high grades in the appropriate NCEA Level 3 subjects or the University Entrance Bursaries Examination (or any other examination approved for the purpose by the Dean of Engineering and Forestry) may substitute other courses for part of or be exempt all or part of the First Forestry Examination.
- (b) Restricted Credit  
A candidate may enquire from the Dean of Engineering and Forestry as to the Faculty Guideline on the application of restricted credit as described in the General Course and Examination Regulations.
- (c) Approval of Course of Study for First Forestry Examination  
Candidates who intend to take the First Forestry Examination at either the University of Canterbury or any other New Zealand University are required to have their course of study approved by the Dean of Engineering and Forestry prior to, or at the time of, enrolment.

Notes:

1. CHEM 114 - *Introductory Chemistry is the recommended option for the 100-level Chemistry course.*
- 2.

## Forestry Examinations

### 2. First Forestry Examination

The courses of the First Forestry Examination shall normally be as follows:

- (1) BIOL 112 Ecology, Evolution and Conservation
- (2) BIOL 113 Diversity of Life
- (3) FORE 111 Trees, Forests and the Environment
- (4) FORE 131 Trees in the Landscape
- (5) FORE 141 Forest Growth and Measurements
- (6) FORE 151 Commercial Aspects of Forestry
- (7) STA 101 Statistics 1
- (8) Any 15 points of Chemistry at 100-level

- (3) FORE 327 Wood Science
- (4) FORE 342 Geospatial Technologies in Forestry
- (5) One course from either the Bachelor of Forestry Science 400-level schedule elective list or one course of at least 15 points from courses offered for any other degree at the 200-level or above.

*Note: A candidate who has failed to gain a pass in all of the courses of the Second Forestry Examination with the approval of the Dean of Engineering and Forestry, be permitted to repeat the course or courses failed or enrol for approved substitutes concurrently with courses of the Third Forestry Examination.*

### **5. Fourth Forestry Examination**

The courses for the Fourth Forestry Examination shall normally be as follows:

- (1) FORE 419 Management Case Study
- (2)

whole or part of both the First and Second Forestry Examinations. A special course of study, which could include both Year 2 and Year 3 papers, may be approved by the Dean of Engineering and Forestry.

#### 10. Exemption for Candidates with NZ Certificate in Forestry, NZ Diploma in Forestry or NZ Certificate in Science

- (a) Notwithstanding anything contained in these Regulations, a candidate who has qualified for the New Zealand Diploma in Forestry may, with the approval of the Dean of Engineering and Forestry, be exempted from parts of the first three Forestry Examinations but the Dean will require a special course of study of at least one year but normally two years prior to entry into the Fourth year.
- (b) Notwithstanding anything contained in these Regulations, a candidate who has qualified with outstanding merit for the New Zealand Certificate in Forestry and who has completed the practical requirements for the award of that Certificate may, with the approval of the Dean of Engineering and Forestry, be exempted from the whole or part of the First and Second Forestry Examinations. A special course of study may be approved by the Dean.

*Note: Candidates should be adequately prepared in Mathematics and other basic sciences and may be required to undertake additional studies in these subjects before being accepted into the Third Forestry Examination. Candidates should consult with the Dean before completing enrolment.*

- (c) Notwithstanding anything contained in these Regulations, a candidate who has qualified with outstanding merit for the New Zealand Certificate in Science may, with the approval of the Dean of Engineering and Forestry, be exempted from all or part of the First Forestry Examination.

*Note: This regulation does not make provision for credit towards a BSc degree. If sought this must be applied for separately. See the BSc Regulation 9.*

#### 11. Cross Credits between BForSc and BCom Degrees

A candidate for the Degree of Bachelor of Forestry Science who is or has been enrolled for the Degree of Bachelor of Commerce shall, in addition to the credit permitted under Regulation K1 of the General Course and Examination Regulations, be permitted, with the approval of the Dean of Engineering and Forestry, to cross credit a further 15 points (0.125 EF ) from the Bachelor of Commerce schedule in place of any FORE 400-level elective.

#### 12. Cross Credits and Substitutes between BForSc and BSc Degrees

- (a) A candidate for the Degree of Bachelor of Forestry Science who is or has been enrolled for the Degree of Bachelor of Science shall, in order to qualify for the award of both degrees, meet all requirements as laid down in the Regulations for the Degree of Bachelor of Forestry Science and obtain 180 points above 100-level in courses selected from the schedule of Bachelor of Science which have not been credited to the Degree of Bachelor of Forestry Science or used to obtain exemption from a course in that degree. Of these points, 90 must be from 300-level courses, and include at least 60 points from a single subject or as required by the subject major. The remainder of the points must come from approved 200-level or 300-level courses.
- (b) With the approval of the Dean of Engineering and Forestry a candidate may substitute additional 200-level courses equivalent to 15 points or 300-level courses equivalent to 15 points from the Bachelor of Science schedule for any FORE 400-level elective.

#### 13. Transitional Regulation

A candidate who has commenced a Bachelor degree before 1999 shall complete the degree by taking courses approved by the Dean of Engineering and Forestry which are consistent with the regulations in this Calendar.

## Graduate Diploma in Forestry (GradDipFor)

See also General Course and Examination Regulations.

#### 1. Qualifications Required to Enrol in the Diploma

- (a) Every candidate for the Graduate Diploma in Forestry shall, before enrolling in the diploma, fulfil one of the following conditions, either:
  - i. qualify for a bachelor's degree; or

- ii. be admitted ad eundem statum as entitled to enrol for the Graduate Diploma in Forestry.
- (b) Every candidate for the Diploma shall have been approved as a candidate by the Dean of Engineering and Forestry.

*Note: Graduates of the BForSc will not be admitted to the GradDipFor but may apply for the MForSc or PGDipFor.*

## 2. Structure of the Diploma

To qualify for the diploma a candidate must complete courses which have a minimum weighting of 120 points. At least 90 points shall be from the

requirements for the chosen specialisation in schedule A.

*Note: Not all courses may be available in a given discipline in any year.*

- (c) Each programme of study must be approved by the Head of Department and Dean of Engineering and Forestry.
- (d) In exceptional circumstances the Dean of Engineering and Forestry may approve appropriate substitutions for courses listed in Regulation 3(b) above.

#### 4. Exemptions

Subject to the approval of the Dean of Engineering and Forestry, students with relevant previous postgraduate study, or extensive relevant industry experience, may apply for exemption from some, or all, of the coursework (48 points) component of the degree.

#### 5. Full-time and Part-time Enrolment

- (a) A candidate shall normally enrol as a full-time candidate.
  - i. A full-time candidate will enrol for not less than one year four months and not more than three years; or
  - ii. if a candidate has been exempted courses under Regulation 4, then a minimum and maximum period of enrolment, consistent with the level of exemption, will be determined by the Dean of Engineering and Forestry at the time of enrolment, such that the minimum period is not less than one year.

*Note: With the approval of the supervisor and Head of Department, a full-time candidate may be employed in the university in academically relevant work for up to an average of 6 hours per week over the calendar year.*

- (b) With the approval of the Dean of Engineering and Forestry, a candidate may be enrolled as a part-time candidate. A part-time candidate is one who, because of health, employment, family, or other circumstances, is unable to devote himself or herself to full-time study and research.
  - i. A part-time candidate will enrol part-time for not less than two years six months and not more than four years; or
  - ii. if a candidate has been exempted courses under regulation 4, then a minimum and maximum period of part-time enrolment, consistent with the level of exemption, will be determined by the Dean of Engineering and Forestry at the time of enrolment.

*Note: Candidates are expected to be enrolled either part-time or full-time on a continuous basis. If a candidate can not be enrolled continuously due to circumstances beyond their control they must apply to the Dean of Engineering and Forestry for a suspension.*

#### 6. ME with Distinction

Candidates who obtain a GPA of 8.00 or more in their programme of study will be eligible for the award of ME with Distinction.

#### 7. Theses

The presentation of the thesis shall conform to the requirements of the General Course and Examination Regulations: L, to the Guidelines for Master's Thesis Work, and to the Library Guide to the Presentation of Theses.

#### 8. Transfer from ME to MEngSt

Subject to approval of the Dean of Engineering and Forestry, a candidate may transfer from the Master of Engineering to the Master of Engineering Studies subject to satisfying the regulation requirements of the MEng St.

#### 9. Transfer from ME to PhD

Where a candidate has demonstrated high research potential and has the support of the Head of Department, the candidate may abandon the Master of Engineering degree and apply to transfer to a PhD degree with such backdating of research thesis enrolment as may be approved by the Academic Board.

#### 10. Award of ME instead of PhD

Where a thesis has been presented for the degree of Doctor of Philosophy in the Faculty of Engineering and Forestry, and the examiners are of the opinion that it does not justify the award of that degree they may recommend that it be presented for the degree of Master of Engineering. In this case the Dean of Engineering and Forestry may, if required for the award of the degree, exempt 0.8 a GPf

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**12. Transfer from PGCertEng to ME**

Where a candidate has demonstrated research potential and has the support of the Head of Department or the appropriate Programme Director, he or she may abandon the Postgraduate Certificate before the completion of the qualification, and transfer to the Master of Engineering (ME), with such backdating of enrolment as may be approved by Academic Board.

- (a) Subject to approval of the Dean of Engineering and Forestry, a candidate for the Postgraduate Certificate in Engineering may transfer to the Master of Engineering provided the following conditions have been met:
- i. the candidate has completed 48 points (0.4 EF ) of the course requirements for the PGCertEng.
  - ii. the candidate has achieved an average GPA of 5.0 or better in the completed courses; and
  - iii. the courses completed by the candidate fulfil the coursework requirements of one of the

- ME specialisations, given in schedule A of the ME Regulations; and
- iv. suitable thesis supervision and research resource available to the candidate.
- Conditions for transfer to the Master of Engineering (ME) are set out in the ME Regulations; and

- (5) ENCI 612 Bridge structure
- (6) ENCI 613 structural Dynamics and Earthquake Engineering
- (7) ENCI 614 Advanced Timber Engineering
- (8) ENCI 615 Advanced structural Concrete; Displacement Based seismic Design and Retrofit techniques
- (9) ENCI 616 Finite Element Analysis
- (10) ENCI 617 Engineering seismology
- (11) ENCI 618 Foundation Engineering
- (12) ENCI 620 Geotechnical Earthquake Engineering
- (13) ENCI 621 Concrete Materials and Practice
- (14) ENCI 629 special topic: structural Bridge Engineering
- (15) ENCI 630 special topic: Nonlinear Concrete Mechanics
- (16) ENCI 632 Ground Water Flow
- (17) ENCI 634 Water and Soil Chemistry
- (18) ENCI 635 Ecological Engineering
- (19) ENCI 636 Advanced Biological Waste Processes
- (20)

- (5) ENME 635 Advanced Heat and Mass Transfer
- (6) ENME 636 Advanced Manufacturing Technology
- (7) ENME 640 Advanced Mechanical System Design  
- Process
- (8) ENME 641 Advanced Mechanical System Design  
- Special Applications
- (9) ENME 643 Advanced Computer Control and  
Instrumentation
- (10) ENME 645 Advanced Energy Engineering
- (11) ENME 654 Introduction to Acoustics
- (12) ENME 656 Advanced Computer-Aided Product  
Development
- (13) ENME 657 Advanced Fracture Mechanics and  
Failure Analysis
- (14) ENME 664 Biofluid Mechanics
- (15)



## 2. Structure of the Degree

For each candidate, the Dean of Engineering and Forestry will approve, on the basis of academic background and work experience, the programme of study to be followed to qualify for the degree.

The degree must be completed full time by examination and thesis. A full-time candidate is one who throughout the calendar year regards study and research for the Master of Engineering in Fire Engineering as a full-time occupation.

Note:

1. *With the approval of the supervisor and Director of the Fire Engineering programme, a candidate may be employed in the university in academically relevant work for up to an average of 6 hours a week over the calendar year.*
2. *Candidates are expected to be enrolled full-time on a continuous basis. If a candidate cannot be enrolled continuously due to circumstances beyond their control they must apply to the Dean of Engineering and Forestry for a suspension.*

## 3. Programme of Study

A candidate for the Degree of Master of Engineering in Fire Engineering shall:

- (a) enrol in and pursue full-time study for not less than one year four months and not more than three years a programme of study approved by the Dean of Engineering and Forestry; and
- (b) pass an examination in six courses selected from the schedule to these regulations; and
- (c) present a thesis and satisfy the examiners therewith.

## 4. MEFE with Distinction

Candidates who obtain a GPA of 8.00 or more in their programme of study will be eligible for the award of MEFE with distinction.

## 5. Theses

The following conditions shall apply to the preparation, presentation and examination of the thesis:

- (a) the presentation of the thesis shall conform to the requirements of the General Course and Examination Regulations, Part L, to the Guidelines for Masters Thesis Work and to the Library's guide to thesis production;
- (b) the thesis shall describe the work done by the candidate in an investigation in a subject approved by the Director of the Fire Engineering programme. The investigation shall be carried out at the University by the candidate under the direct supervision of a member of the academic

staff. In special circumstances the investigation may be carried out in such other places for such period or periods as may be determined by the Head of Department;

- (c) the candidate shall submit for examination two copies of the thesis;
- (d) the thesis shall be examined by an external examiner appointed by Council and by one or more internal examiners appointed by Council (Note: see also General Course and Examination Regulations, Part D);
- (e) if the thesis at its first presentation is inadequate to secure a pass the Academic Board may, on the recommendation of the examiners, permit the candidate to revise the thesis and resubmit it by a specified date; except with the approval of the Dean of Engineering and Forestry the thesis shall be submitted within the time limit of this degree.

## 6. Transfer from MEFE to PhD

Where a candidate has demonstrated high research potential and has the support of the Director of the Fire Engineering programme, he or she may apply for transfer to a PhD degree with such backdating of enrolment as may be approved by the Academic Board.

## 7. Award of the Master of Engineering Studies instead of MEFE

If a candidate fails to complete the requirements for the degree of MEFE he or she, after completing such extra work, if any, as may be required by the Director of the Fire Engineering Programme, may apply to the Academic Board for the award of a Master of Engineering Studies.

## 8. Award of a Postgraduate Certificate in Engineering Instead of MEFE

If a candidate fails to complete the requirements for the degree of MEFE he or she, after completing such extra work, if any, as may be required by the Director of the Fire Engineering Programme, may apply to the Academic Board for the award of a Postgraduate Certificate in Engineering.

## 9. Transfer from PGCertEng to MEFE

Where a candidate has demonstrated research potential and has the support of the Fire Programme Director, he or she may abandon the Postgraduate Certificate before the completion of the qualification, and transfer to the Master of Engineering in Fire Engineering (MEFE) with such backdating of enrolment as may be approved by

Academic Board.

- (a) subject to approval of the Dean of Engineering and Forestry, a candidate for the Postgraduate Certificate in Engineering may transfer to the Master of Engineering in Fire Engineering provided the following conditions have been met:
- i. the candidate has completed a minimum of 48 points (0.4 EFTS) of the course requirements for the PGCertEng.
  - ii. the candidate has achieved an average GPA of 5.0 or better in the completed courses; and
  - iii. suitable thesis or project supervision and research resources are available.
- (b) Where the transfer of a candidate from the PGCertEng to the MEFE has been approved, the Dean of Engineering and Forestry will transfer appropriate courses from the candidate's PGCertEng studies towards their MEFE degree.

*Note: Candidates may be required to complete further course requirements depending on which programme of study they enrol in. See also MEFE Degree Regulations.*

### 10. Transfer from MEngSt to MEFE

Where a candidate has demonstrated research potential and has the support of the Fire Programme Director, he or she may abandon the Master of

Engineering studies before the completion of the qualification, and transfer to the Master of Engineering in Fire Engineering (MEFE) with such backdating of enrolment as may be approved by Academic Board.

- (a) subject to approval of the Dean of Engineering and Forestry, a candidate for the Master of Engineering studies may transfer to the Master of Engineering in Fire Engineering provided the following conditions have been met:
- i. the candidate has completed a minimum of 48 points (0.4 EFTS) of the course requirements for the PGCertEng.
  - ii. the candidate has achieved an average GPA of 5.0 or better in the completed courses; and
  - iii. suitable thesis or project supervision and research resources are available.
- (b) Where the transfer of a candidate from the MEngSt to the MEFE has been approved, the Dean of Engineering and Forestry will transfer appropriate courses from the candidate's MEngSt studies towards their MEFE degree.

*Note: Candidates may be required to complete further course requirements depending on which programme of study they enrol in. See also MEFE Degree Regulations.*

## Schedule to the Regulations for the Degree of Master of Engineering in Fire Engineering

For full course information, go to [www.canterbury.ac.nz/courses](http://www.canterbury.ac.nz/courses)

### Courses

- (1) ENCI 601 Risk Management
- (2) ENFE 601 Structural Fire Engineering
- (3) ENFE 602 Fire Dynamics
- (4) ENFE 603 Fire Safety Systems
- (5) ENFE 604 Fire Design Case Study
- (6) ENFE 610 Advanced Fire Dynamics
- (7) ENFE 612 Special Topic
- (8) ENFE 613 Special Topic: Human Behaviour in Fire
- (9) ENFE 614 Special Topic

### Thesis

ENFE 690

Certain courses offered at the University of Auckland may be offered in lieu of one or more of the above courses. Intending students must consult the Director of the Fire Engineering Programme for details of these courses, and to determine which courses ENFE 610-614 will be offered in any one year, and their subject matter.

# The Degree of Master of Engineering in Management (MEM)

See also General Course and Examination Regulations.

## 1. Qualifications Required to Enrol in the Degree

A candidate for the Degree of Master of Engineering in Management shall have:

- (a) either
  - i. qualified for the award of the Degree of Bachelor of Engineering with Honours; or
  - ii. qualified for the award of the Degree of Bachelor of Engineering; or
  - iii. qualified for the award of an appropriate degree in New Zealand; or
  - iv. been admitted ad eundem statum as entitled to proceed to the Degree of Master of Engineering in Management; and
- (b) been approved as a candidate for the degree by the Dean of Engineering and Forestry.

Notes:

- 1. *Relevance and standard of undergraduate studies are the main criteria for approval.*
- 2. *Candidates will only be approved if appropriate research supervision is available.*

## 2. Structure of the Degree

A candidate for the Degree of Master of Engineering in Management shall:

- (a) enrol in and pursue full-time for one year a programme of study approved by the Dean of Engineering; and
- (b) during the year of study, pass an examination in six courses selected from the schedule to these Regulations; and
- (c) during the year of study, present a project report and satisfy the examiners therewith.

## 3. MEM with Distinction

In cases of exceptional merit candidates may, on the recommendation of the examiners, have the degree

awarded with Distinction

## 4. Standards required for MEM with Distinction

In recommending a candidate for admission to the degree and in recommending Distinction the examiners will take into consideration the combined results of the project report and of all courses taken.

Note: Candidates may enquire from the Dean of Engineering and Forestry as to the standards required for Distinction.

## 5. Project Reports

The following conditions shall apply to the preparation, presentation and examination of the project report:

- (a) the project report shall describe work done by the candidate on a project approved by the Director of the Master of Engineering in Management programme. The project shall be carried out by the candidate at the University under the direct supervision of a member of academic staff. In particular circumstances the project may be carried out in such other place as the examiners may determine.

## Project

ENMG 680

*Note: Not all courses will be offered in a single year. Intending students must consult the Director of the Master of Engineering in Management Programme to determine which courses in ENMG 601-9 will be offered in any one year, and their subject matter.*

# The Degree of Master of Engineering in Transportation (MET)

*See also General Course and Examination Regulations.*

## 1. Qualifications Required to Enrol in the Degree

A candidate for the Degree of Master of Engineering in Transportation shall have:

- (a) either
  - i. qualified for the award of the Degree of Bachelor of Engineering with First or Second Class Honours; or
  - ii. qualified for the award of the Postgraduate Diploma or Postgraduate Certificate in Engineering with a GPA of 5 or more; or
  - iii. qualified for the award of the Degree of Bachelor of Science with Honours in appropriate subjects; or
  - iv. in exceptional circumstances, qualified for the award of an appropriate degree in New Zealand; or
  - v. been admitted ad eundem statum as entitled to proceed to the Degree of Master of Engineering in Transportation; and
- (b) been approved as a candidate for the degree by the Dean of Engineering and Forestry.

Notes:

1. *The relevance and standard of undergraduate studies and any subsequent professional experience are the main criteria for approval.*
2. *Candidates will only be approved if appropriate research supervision is available.*

## 2. Qualifying Programmes

If a candidate does not hold any of the qualifications noted in Regulation 1(a) above, or has not demonstrated to the satisfaction of the Dean of Engineering and Forestry a suitable standard in previous work, he or she may be admitted to a qualifying programme of study, specified by the Director of the Transportation Engineering Programme and approved by the Dean of Engineering and Forestry. Completion of

this programme to a satisfactory standard and approval as a candidate for the degree by the Dean of Engineering and Forestry will qualify the candidate for enrolment in a Master of Engineering in Transportation

*Note: Candidates will be approved for the degree by the Dean of Engineering and Forestry only if an appropriate research topic is identified during the qualifying programme and supervision is available for that topic.*

## 3. Structure of the Degree

For each candidate the Dean of Engineering and Forestry will approve, on the basis of academic background and work experience, the programme of study to be followed to qualify for the degree.

The degree may be completed:

- (a) by examination and project report, or
- (b) by examination and thesis, or
- (c) by thesis.

*Note: In any year not all programmes of study may be available.*

## 4. Full-time and Part-time Enrolment

- (a) Full-time study:
  - i. A candidate may be enrolled as a full-time or part-time candidate.
  - ii. A full-time candidate is one who throughout the calendar year regards study and research for the Master of Engineering in Transportation as a full-time occupation. Note: With the approval of the supervisor and Director of the Transportation Engineering Programme, a full-time candidate may be employed in the university in academically-relevant work for up to an average of six hours a week over the calendar year.
- (b) Part-time study:
  - i. With the approval of the Dean of Engineering and Forestry, a candidate may be enrolled as a part-time candidate.
  - ii. A part-time candidate is one who, because of



the candidate at the University under the direct supervision of a member of academic staff; in particular circumstances the project may be

4.

apply to the Dean of Engineering and Forestry for a suspension.

### 5. MEngSt with Distinction

Candidates who obtain a GPA of 8.00 or more in their programme of study will be eligible for the award of MEng t with Distinction.

### 6. Transfer from MEngSt to ME/MEFE/MET

- (a) Subject to the approval of the Dean of Engineering and Forestry, a candidate for the Master of Engineering Studies may transfer to a Master of Engineering, Master of Engineering in Fire Engineering or Master of Engineering in Transportation provided the following conditions have been met:
- the candidate has completed a minimum of 48 points (0.4EF) of the course requirements for the MEng t; and
  - the candidate has achieved an average GPA of 5 or more in the completed courses; and
  - the courses completed by the candidate fulfil

the coursework requirements of one of the ME specialisations given in schedule A of the ME regulations, or the schedule to the regulation of the MEFE, or the schedule to the regulations of the ME ; and

- suitable thesis supervision and research resources are available
- Where the transfer of a candidate from the MEng t to a suitable ME endorsement has been approved, the Dean of Engineering and Forestry will transfer appropriate courses from the candidate's MEng t studies towards their ME degree.

### 7. Award of PGCertEng instead of MEngSt

Should a candidate fail to complete the requirements for the Master of Engineering Studies degree, but successfully complete the requirements for the award of the Postgraduate Certificate in Engineering, he or she may be awarded, upon the recommendation of the Academic Board, a Postgraduate Certificate in Engineering instead.

## Schedule to the Regulations for the Degree of Master of Engineering Studies (un-endorsed)

see Regulation 3 above.

*Note: Not all courses will be offered in any one year.*

## Schedule to the Regulations for the Degree of Master of Engineering Studies (endorsed)

For full course information, go to [www.canterbury.ac.nz/courses](http://www.canterbury.ac.nz/courses)

### Civil Engineering

Courses with a total course weighting of not less than 72 points (0.6 EF) shall be selected from the ENCI course list listed in schedule B of the Master of Engineering regulations and subject to approval of the Programme Director.

With the approval of the Head of Department, students may credit up to two ENFE, EN R or ENCM courses towards the 72 points.

### Construction Management

Courses with a total course weighting of not less than 72 points (0.6 EF) shall be selected from the Construction Management course list listed in schedule B of the Master of Engineering regulations and subject to approval of the Programme Director.

*Note: With the approval of the Director of the Construction Management Programme, students may credit up to two courses offered in the Construction Management Programme at the University of Auckland or other approved University*

### Fire Engineering

Required courses:

- ENFE 601 Structural Fire Engineering
- ENFE 602 Fire Dynamics
- ENFE 603 Fire Safety Systems
- ENFE 604 Fire Design Case Study
- ENFE 610 Advanced Fire Dynamics

### Mechanical Engineering

Courses with a total course weighting of not less than 72 points (0.6 EF) shall be selected from ENME courses listed in schedule B of the Master of Engineering Regulations.



# The Degree of Master of Forestry Science (MForSc)

See also General Course and Examination Regulations.

## 1. Qualifications Required to Enrol in the Degree

Every candidate for the Degree of Master of Forestry Science shall before entering upon a course of study for the degree satisfy the Dean of Engineering and Forestry of his or her ability to undertake the course and in particular shall have either:

- qualified for the award of the Degree of Bachelor of Forestry Science with or without Honours; or
- qualified, with appropriate subjects, for the award of a degree other than the Bachelor of Forestry Science; or
- qualified for the award of Postgraduate Diploma in Forestry; or
- been admitted ad eundem statum as entitled to proceed to the Degree of Master of Forestry Science.

## 2. Course of Study

The Dean of Engineering and Forestry shall determine, for each candidate, whether he or she shall follow a course of study to qualify for the degree either:

- by examination and report; or
- by examination and thesis; or
- by thesis.

*Note: Eligibility for the above options will depend on the nature and standard of the candidate's prior qualification, and the nature of any proposed research topic.*

## 3. Part-time Study

A candidate may be enrolled for the degree either full-time or part-time. A part-time candidate is one who, because of employment, health, family or other reasons, is unable to devote his or her fulltime to study; part-time enrolment requires the approval of the Academic Board.

## 4. Courses and Time Requirements

- A candidate for the degree by Examination and Report must pass six courses from the schedule to these Regulations and present a satisfactory project report which has the weight of two courses. The minimum and maximum times for full-time study will normally be two years and three years respectively; the minimum and maximum times for part-time study will normally be three years and four years respectively.

*Note: Normally a full-time student will complete four courses in the first year and two courses and*

*the report in the second year.*

- A candidate for the degree by Examination and Thesis must pass four courses from the schedule to these Regulations, and present a satisfactory thesis which has the weight of four courses. The minimum and maximum times for full-time study will normally be two years and three years respectively; the minimum and maximum times for part-time study will normally be three years and four years respectively.

*Note: Normally a full-time student will complete four courses in the first year and the thesis in the second year.*

- The minimum and maximum times for full-time study for the degree by thesis will normally be one year and two years respectively; the minimum and maximum times for part-time study for the degree by thesis will normally be 18 months and three years respectively.
- To qualify for the award of the degree, all requirements must be completed within the times listed above, from the date of commencing the course of study, unless the candidate is granted an extension of time by the Academic Board because of special circumstances.

## 5. Courses from Other Degrees

A candidate may with the approval of the Head of School of Forestry and of the Head of the other Department concerned replace up to two of the courses prescribed for this degree by courses from a subject listed for another Masters degree or at an equivalent level for another Honours degree.

## 6. Examination of Theses

Where a candidate is taking the degree by Thesis or by Examination and Thesis the candidate will present a thesis embodying the results of an investigation conducted by the candidate in a subject approved by the Dean and satisfy the examiners therewith and, if so required, take an oral examination on the subject of the thesis.

## 7. Thesis Requirements

Where a thesis is required, the requirements of the General Course and Examination Regulations Part L, and the following conditions shall be met:

- The thesis shall describe the work done by the candidate in an investigation in a subject approved by the Dean. The investigation shall be carried out by the candidate under the direct supervision of a university teacher at a



## Notes:

1. *Relevance and standard of previous study are the main criteria for approval.*
2. *Candidates will be approved only if appropriate research supervision and resources are available.*
3. *Candidates who do not have an appropriate background may be required to take an approved course or courses prior to approval into the programme.*

**2. Structure of the Degree**

A candidate shall:

- (a) Enrol in and pursue full-time study for one year; and
- (b) Complete a programme of study with a minimum total weight of 1.0EF. The programme of study consists of a thesis (HI D690 0.75 EF) and one course (HI D601 0.25 EF).

## Notes:

1. *The Master of Human Interface Technology is a full-time programme only and cannot be taken part time.*
2. *Normally the programme will be completed in one year of study; Students will need to have prior approval by the Dean of Engineering and Studies to extend their enrolment into the second year.*

**3. Masters of Human Interface Technology with Distinction**

Candidates who obtain a GPA of 8.00 or more in their programme of study will be eligible for the award of MHI with Distinction.

# Postgraduate Certificate in Engineering (PGCertEng)

See also *General Course and Examination Regulations*.

**1. Certificate programmes**

- (a) The qualification of Postgraduate Certificate in Engineering (PGCertEng) is offered by the Departments of Chemical and Process Engineering, Civil and Natural Resources Engineering, Electrical and Computer Engineering, and Mechanical Engineering.
- (b) It may be awarded endorsed in the following subjects:
  - i. Civil Engineering
  - ii. Construction Management
  - iii. Fire Engineering;
  - iv. Mechanical Engineering
  - v. Transportation Engineering.

**4. Theses**

The presentation of the thesis shall conform to the requirements of the General Course and Examinations Regulations: L to the guidelines for Master's thesis Work and to the Library Guide to the Presentation of thesis.

**5. Transfer from Master of Human Interface Technology to PhD**

When a candidate has demonstrated high research potential and has the support of the supervisor, Head of the Department and Hit Lab Board of studies, the candidate may apply to transfer to a Ph.D. in Human Interface Technology, with such a backdating of research thesis enrolment as may be approved by the Dean of Postgraduate Research.

**6. Award of a MHIT instead of a PhD**

Where a thesis has been presented for the degree of Doctor of Philosophy in Human Interface Technology and the examiners are of the opinion that it does not justify the award of that degree, they may recommend that it be presented for the degree of Master of Human Interface Technology. In such a case, the Dean of Engineering and Forestry may, if required for the award of the degree, exempt the course work component of the degree.

**2. Qualifications required to enrol in the Certificate**

A candidate shall have:

- (a) either
  - i. qualified for the award of the Degree of Bachelor of Engineering with Honours; or
  - ii. qualified for the award of the Degree of Bachelor of Engineering; or
  - iii. qualified for the award of the Degree of Bachelor of Science with Honours in appropriate subjects; or
  - iv. in exceptional circumstances, qualified for the award of another appropriate degree in New Zealand; or
  - v. been admitted ad eundem statum and entitled to proceed to the qualification of Postgraduate Certificate in Engineering; and
- (b) been approved as a candidate for the Postgraduate Certificate by the Dean of Engineering and

Forestry.

*Note: The relevance and standard of undergraduate studies and any subsequent professional work experience are the main criteria for approval.*

### 3. Structure of the Certificate

- (a) To qualify for the award of the Postgraduate Certificate in Engineering, a candidate shall pass the prescribed courses in the schedule to the value of 60 points (0.5 EFU). The courses must be selected as follows:
- courses with a total course weighting of not less than 36 points (0.3EFU) must be selected from the courses listed in schedule B of the Master of Engineering regulations, or from postgraduate courses offered outside the Engineering programmes; and
  - any remaining courses, that ensure that the total course weight is not less than 60 points (0.5 EFU) may be selected from the list of 400-level courses offered by the Engineering programmes; and
  - the total course weight of courses selected from outside the Engineering programmes may not amount to more than 15 points (0.125 EFU).

- (b) Each programme of study must be approved by the Head of Department or Director of Studies and the Dean of Engineering and Forestry.

### 4. Full-time and Part-time enrolment

A candidate may be enrolled, either part-time or full-time, for not more than 4 years.

*Note: Candidates are expected to be enrolled either part-time or full-time on a continuous basis. If a candidate cannot be enrolled continuously due to circumstances beyond their control they must apply in writing to the Dean of Engineering and Forestry for a suspension of studies.*

### 5. Award of PGCertEng instead of ME or MEFE or MET or MEngSt

If a candidate fail to complete the requirements for the Master's degree, but successfully completes the requirements for the award of the Postgraduate Certificate in Engineering, he or she may be awarded, upon the recommendation of the Academic Board, a Postgraduate Certificate in Engineering instead.

## Schedule to the Regulations for the Postgraduate Certificate in Engineering (un-endorsed)

See Regulation 3 above.

