

College of Engineering

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, or those consistent with the regulations in the relevant Calendar at the time they began their candidacy. The Dean of Engineering and Forestry may modify specific aspects of these degree regulations for individual candidates under the following special circumstances:

- (a) If the candidate's course of study is affected by a change in any regulations;
- (b) Prior learning and work experience; or
- (c) Other exceptional circumstances.

Any modification to a programme of study must maintain the integrity of the programme and align with the Institution of Professional Engineers New Zealand (IPENZ) accreditation guidelines for the discipline that the candidate is undertaking.

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 and Minors

- (a) The degree of Bachelor of Engineering with Honours may be awarded in the following programmes: Chemical and Process, Civil, Computer,

Electrical and Electronic, Forest, Mechanical, Mechatronics, Natural Resources, and Software.

- (b) The degree may also be completed with a Minor that denotes sub-specialisation within an engineering discipline.

4. Admission to BE(Hons) Candidacy

- (a) Admission to the BE(Hons) shall be by approval of the Dean of Engineering and Forestry. All candidates must pass an approved academic writing test prior to approval into the professional programme. Further, a candidate:
 - (b) may qualify for admission upon successful completion of the Engineering Intermediate Examination principally on the basis of the grades obtained in that Examination; or
 - (c) may complete an approved intermediate examination at another university. Admission to the BE(Hons) programme will be principally on the basis of grades obtained in that examination; or
 - (d) who achieved sufficiently high grades in appropriate NCEA Level 3 subjects, or the New Zealand University Entrance, Scholarships qualification in appropriate subjects, or in other examinations approved by the Dean of Engineering and Forestry for the purposes of this regulation, may be considered for direct entry to the First Professional Examination of the BE(Hons) degree; or
 - (e) who has completed a qualification from a tertiary institution with excellent grades may be considered for direct entry to either the First or Second Professional Examination of the BE(Hons) degree.

Notes:

1. A candidate who is not exempted from the Intermediate Examination will not normally be admitted to the First Professional Examination unless he or she has passed the whole Intermediate Examination in not more than two years of study.
2. The entire BE(Hons) Intermediate Year is a prerequisite for the Engineering First Professional Examination.

3. *The Dean of Engineering and Forestry reserves the right to decline entry to a student who has been offered a place in the Professional Examination of the BE(Hons) degree and who has not completed his or her enrolment by the Friday preceding the first day of lectures of Semester 1.*
4. *Special admission on the basis of clause (d) must be made by written application to the Dean of Engineering and Forestry where an interview may also be required. Applicants are encouraged to approach the Dean for a copy of the entry standard guideline at the earliest possible stage.*
5. *Special admission on the basis of clause (e) must be made by written application to the Dean of Engineering and Forestry. The Dean, in consultation with the relevant Director of Studies, will consider the applicant's prior learning, in particular their preparation in Mathematics, Physics, and where applicable Chemistry or Computer Science, and any relevant work experience in industry.*

5. Time Limitation for Degree Completion and Suspension of Study

- (a) Candidates enrolled, either full-time or part-time, in the Degree of Bachelor of Engineering with Honours must complete the Professional Year Examinations and the non-academic requirements in no more than six years of study.
- (b) Candidates enrolled concurrently in the Degree of Bachelor of Engineering with Honours and with another programme of study must complete the Professional Year Examinations and the non-academic requirements in a timeframe approved by the Dean of Engineering and Forestry at the time of approval into the double degree.
- (c) Candidates may seek approval from the Dean of Engineering and Forestry to suspend their studies. Where approved, this will extend the time limitation for the completion of the degree.
- (d) Candidates who have an approved suspension in study may be required to undertake a preparatory programme prior to the resumption of their studies in the Degree of Bachelor of Engineering with Honours. Any preparatory programme of study must be completed while on suspension, and immediately prior to the end of their suspension.

Notes:

1. *Candidates normally enrol for full-time study unless there are exceptional circumstances which prevent them from studying full time. Candidates must apply in writing to the Dean of Engineering*

and Forestry to apply for part-time study.

2. *Preparatory programmes of study will not normally be required where the suspension is for a calendar year or less.*

6. Class of Honours

- (a) The Degree of Bachelor of Engineering with Honours may be awarded with First Class Honours, or with Second Class Honours, or with Third Class Honours. The list of candidates obtaining Second Class Honours shall be listed in two Divisions (Division I and Division II).
- (b) First and Second Class Honours are awarded for outstanding and meritorious achievement based on completion of the academic requirements in a timely manner and on the basis of academic achievement measured by weighted GPA, as stipulated below.
- (c) To be eligible for First or Second Class Honours a candidate must meet one of the time limit requirements:
 - i. if entering the programme at the First Professional Examination, he or she must complete the three professional years in no more than four years of study.
 - ii. if entering the programme at the Second Professional Examination, he or she must complete the Second and Third Professional Examinations in no more than three years of study.
 - iii. candidates approved into part-time study must complete the Second and Third Professional Examination in no more than four years of study. Approval into part-time study must be obtained prior to entering the Second Professional Examination.
- (d) The class of honours will be determined as a weighted average of the candidates GPA, with a 20% weighting on the Second Professional Examination and 80% on the Third Professional Examination. The weighted GPA will be computed to the first decimal place using the algorithm of 'round half up towards infinity'. Only first attempts at a course, or its substitute, will be considered in the calculation.
- (e) The classes and divisions of honours will be:
 - i. First Class Honours, weighted GPA in the range 7.0 – 9.0;
 - ii. Second Class Honours Division I, weighted GPA in the range 5.5 – 6.9;
 - iii. Second Class Honours Division II, weighted GPA in the range 4.0 – 5.4.
- (f) Those candidates not eligible for First or Second Class Honours, but having met all the academic

requirements, will be eligible for the award of Third Class honours.

7. BE without Honours

In exceptional circumstances a candidate may be permitted by the Dean of Engineering and Forestry to complete all the requirements, both academic and non-academic, of the award outside the time limitation. In such circumstances the candidate will be awarded a degree of Bachelor of Engineering.

8. Concurrent Enrolment in BE(Hons) and another award

A candidate who enrolls concurrently for the Degree of Bachelor of Engineering with Honours and another award 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 other award;
- (c) be approved into the concurrent programme of study by the relevant Deans of both awards.

9. Requirements in Subjects in Other Degrees

A candidate wishing to be enrolled in any subject which is also a subject of examination for another degree shall comply with the regulations for that degree relating to prerequisites, combinations of subjects, and practical work, as are applicable to that subject.

10. 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.

11. Completion of the Non-academic Requirements

- (a) The non-academic requirements are:
 - i. an approved, valid first aid certificate;
 - ii. approved course(s) of workshop training and/or workplace safety;
 - iii. at least 800 hours (100 days) of approved practical work; and
 - iv. submission of two satisfactory written work reports based on the practical work completed.
- (b) A candidate shall present a university approved first aid certificate which is valid at some time

during the candidate's enrolment in the three professional years.

- (c) A candidate shall complete an approved course(s) of workshop training and/or workplace safety. This course(s) shall be completed before a candidate enrolls for any subject of the Second Professional Examination or within the first year of study if admitted directly to the Second Professional Examination.
- (d) A candidate may apply in writing for exemption from any workshop training or workshop safety course to the Department Administrator.
- (e) The practical work requirement shall normally be completed in no more than three periods. Details of the nature of the work required by each Department may be obtained from the College of Engineering Office or on the College of Engineering website.
- (f) Prior to commencement of each practical work period of employment a candidate shall notify the College of Engineering Office of details concerning the employment. The appropriate form is available on the student's practical work record in myUC 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 (j)). 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) Candidates wishing to graduate at a ceremony during Semester 1 must have completed all practical work requirements by the first Monday in March. Those wishing to graduate at a December ceremony must have completed all practical work requirements by the first Monday in November.

- (j) On receipt of a written application accompanied by supporting documents from a student who has served an indentured engineering apprenticeship or who has performed similar work for a satisfactory period, the Dean of Engineering and Forestry may accept such work as partial or total exemption from the above practical work requirements. Candidates may apply in writing for an exemption of the practical work requirements to the College Practical Work Coordinator.
- (k) Candidates are required to familiarise themselves with the practical work requirements by reading the guidelines on the College website.
- (l) The Dean of Engineering and Forestry may modify the application of clauses (a)-(k) in individual cases.

Schedule A - Compulsory for all Engineering Intermediate students

- (1) ENGR 100 Academic Writing Assessment*
- (2) ENGR 101 Foundations of Engineering
- (3) EMTH 118 Engineering Mathematics 1A

* ENGR 100 is a zero-EFTS course (no fees).

12. Intermediate Examination

The Programme of Study shall consist of:

- (a) All courses in Schedule A.
- (b) Courses from Schedule B to meet the prerequisites of at least one engineering programme.
- (c) Additional courses, where required, to ensure a workload of not less than 60 points during each of Semesters 1 and 2.
- (d) Subject to the approval of the Dean of Engineering and Forestry, candidates may be approved into a modified Intermediate Year based on high achievement in NCEA or other equivalent examination, or through recognised prior learning at another tertiary institution.

- (4) EMTH 119 Engineering Mathematics 1B
- (5) PHYS 101 Engineering Physics A: Mechanics, Waves and Thermal Physics

Schedule B - Engineering disciplines

Chemical and Process Engineering

- (1) CHEM 111 Chemical Principles and Processes
- (2) EMTH 171 Mathematical Modelling & Computation

Civil Engineering, Forest Engineering and Natural Resources Engineering

- (1) CHEM 111 Chemical Principles and Processes
- (2) EMTH 171 Mathematical Modelling & Computation
- (3) ENGR 102 Engineering Mechanics

Computer Engineering and Electrical and Electronic Engineering

- (1) COSC 121 Introduction to Computer Programming
- (2) Either EMTH 171 Mathematical Modelling & Computation, or MATH 120 Discrete Mathematics

Mechanical Engineering

- (1) EMTH 171 Mathematical Modelling & Computation
- (2) ENGR 102 Engineering Mechanics
- (3) CHEM 111 Chemical Principles and Processes*

* Note: See www.engf.canterbury.ac.nz/behons/intermediateyear.shtml for transitional arrangements for students who have not taken NCEA level 3 chemistry.

Mechatronics Engineering

- (1) COSC 121 Introduction to Computer Programming
- (2) ENGR 102 Engineering Mechanics
- (3) EMTH 171 Mathematical Modelling & Computation

Software Engineering

- (1) COSC 121 Introduction to Computer Programming
- (2) COSC 122 Introduction to Computer Science
- (3) MATH 120 Discrete Mathematics

13. Professional Examination

The professional examinations are laid out in regulations 13 – 42.

Candidates should note the following:

- (a) Not all elective courses will necessarily be available in any one year. Candidates should consult the relevant Director of Studies concerning the courses to be taught and the alternative degree courses that might be approved.
- (b) In consultation with employers, the department recommends candidates select certain courses or pathways of elective courses. Candidates are advised to consult the relevant department's website for the latest recommended pathways.
- (c) Candidates may attempt the Third Professional Year Project if they will be completing their degree within three semesters or less.

Chemical and Process Engineering*

* Subject to Universities New Zealand CUAP approval, due December 2016.

14. First Professional Examination

- (1) ENCH 199 Workshop Training Course for Chemical and Process Engineering
- (2) ENCH 241 Engineering Chemistry 2
- (3) ENCH 281 Principles of Biology for Engineers
- (4) ENCH 291 Mass & Energy Balances
- (5) ENCH 292 Heat & Mass Transfer Operations
- (6) ENCH 293 Fluid Mechanics 1
- (7) ENCH 295 Chemical Engineering Professional Practice
- (8) ENCH 296 Chemical Engineering Thermodynamics
- (9) ENCH 298 Chemical Engineering Mathematics

15. Second Professional Examination

- (1) ENCH 390 Process Analysis
- (2) ENCH 391 Process Systems and Control
- (3) ENCH 392 Thermodynamics and Chemical Reaction Engineering
- (4) ENCH 393 Fluid Mechanics and Heat Transfer
- (5) ENCH 394 Process Engineering Design 2
- (6) ENCH 395 Process Engineering Laboratories
- (7) ENCH 396 Chemical Engineering Separations 1
- (8) One course selected from Schedule A listed below.

16. Third Professional Examination

- (1) ENCH 494 Process Engineering Design 3
- (2) ENCH 495 Research Project
- (3) ENCH 496 Advanced Separation
- (4) ENCH 497 Process Management
- (5) One course selected from Schedule B listed below
- (6) One course selected from either Schedule A or B listed below or any 400-level 15 point Engineering course

Schedule A

- (a) ENGR 404 Renewable Energy Technologies and Management
- (b) ENGR 405 Industrial Pollution Control
- (c) ENGR 406 Wood and Engineered Wood Products Processing
- (d) ENGR 407 Bioprocess Engineering 1
- (e) ENCH 486 Special Topic in Chemical and Process Engineering

Schedule B

- (a) ENGR 401 Computational Fluid Dynamics
- (b) ENCH 482 Bioprocess Engineering 2
- (c) ENCH 487 Special Topic in Chemical and Process Engineering

- (d) ENCH 491 Advanced Process Control and Simulation
- (e) ENCH 492 Advanced Reaction Engineering
- (f) Any 400-level Engineering course approved by the Director of Studies

17. Minor in Bioprocess Engineering*

- (a) ENCH 281 Principles of Biology for Engineers
- (b) ENGR 407 Bioprocess Engineering 1
- (c) ENCH 482 Bioprocess Engineering 2
- (d) ENCH 494 Process Engineering Design 3**
- (e) ENCH 495 Research Project**

** Note: ENCH 494 Process Engineering Design 3 or ENCH 495 Research Project must be taken with an approved bioprocess engineering focus as approved by the Director of Studies.

The Minor will only be awarded upon completion of all other normal requirements of a BE(Hons) in Chemical and Process Engineering.

18. Minor in Energy Processing Technologies*

- (a) ENCH 392 Thermodynamics and Chemical Reaction Engineering
- (b) ENGR 404 Emerging Energy Technologies and Management
- (c) ENCH 483 Advanced Energy Processing Technologies and Systems
- (d) ENCH 494 Process Engineering Design 3** OR ENCH 495 Research Project**

** Note: ENCH 494 Process Engineering Design 3 and ENCH 495 Research Project must be taken with an approved energy processing technologies focus as approved by the Director of Studies.

The Minor will only be awarded upon completion of all other normal requirements of a BE(Hons) in Chemical and Process Engineering.

Civil Engineering

19. First Professional Examination

- (1) ENCI 199 Health & Safety on the Worksite
- (2) ENCN 201 Communication Skills Portfolio 1
- (3) EMTH 210 Engineering Mathematics 2
- (4) ENCN 213 Design Studio 1
- (5) ENCN 221 Engineering Materials
- (6) ENCN 231 Solid Mechanics
- (7) ENCN 242 Fluid Mechanics and Hydrology
- (8) ENCN 253 Soil Mechanics
- (9) ENCN 261 Transport and Surveying
- (10) ENCN 281 Environmental Engineering

Note: Candidates 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.

20. Second Professional Examination

- (1) ENCN 301 Communication Skills Portfolio 2
- (2) ENCI 313 Civil Engineering Design Studio 2
- (3) ENCI 335 Structural Analysis
- (4) ENCI 336 Structural Design
- (5) ENCN 304 Deterministic Mathematical Methods
- (6) ENCN 305 Computer Programming and Stochastic Modelling
- (7) ENCN 342 Fluid Mechanics and Hydraulics
- (8) ENCN 353 Geotechnical Engineering
- (9) ENCN 371 Project and Infrastructure Management

21. Third Professional Examination

- (1) ENCN 493 Project
- (2) ENCN 470 Professional Engineering Development
- (3) Sufficient courses selected from:
 - (a) ENCI 423 Advanced Structural Analysis and Dynamics
 - (b) ENCI 425 Structural Steel
 - (c) ENCI 426 Structural Concrete
 - (d) ENCI 427 Timber Structures
 - (e) ENCI 429 Structural Systems
 - (f) ENCN 401 Engineering in Developing Communities
 - (g) ENCN 412 Traffic Engineering
 - (h) ENCN 415 Pavement Engineering
 - (i) ENCN 444 Water Infrastructure and Design
 - (j) ENCN 445 Environmental Fluid Mechanics
 - (k) ENCN 452 Advanced Geotechnical Engineering
 - (l) ENCN 454 Geotechnical Earthquake Engineering
 - (m) ENCN 481 Environmental Engineering Design
 - (n) ENGR 403 Fire Engineering
 - (o) ENGE 411 Engineering Construction Practice
 - (p) ENGE 412 Rock Mechanics and Rock Engineering
 - (q) ENGE 415 Engineering Geomorphology and Geohazards
 - (r) GEOL 475 Engineering and Environmental Geophysics
 - (s) Any 15 point 400-level option to be approved by the Director of Studies
 - (t) Candidates with a GPA of 6 or more may apply to take one 600-level course approved by the Director of Studies.

Note: In exceptional circumstances, approved by the Director of Studies, a candidate may offer ENCN 494 in lieu of ENCN 493

Computer Engineering*

* Subject to Universities New Zealand CUAP approval, due December 2016.

22. First Professional Examination

- (1) ENEL 198 Electrical Workshop Course
- (2) ENEL 199 Basic Workshop Course
- (3) COSC 264 Introduction to Computer Networks and the Internet
- (4) EMTH 210 Engineering Mathematics 2
- (5) EMTH 211 Engineering Linear Algebra and Statistics
- (6) ENCE 260 Computer Systems
- (7) ENEL 200 Electrical and Computer Engineering Design
- (8) ENEL 220 Circuits and Signals
- (9) ENEL 270 Principles of Electronics and Devices
- (10) SENG 201 Software Engineering 1

23. Second Professional Examination

- (1) ENCE 360 Operating Systems
- (2) ENCE 361 Embedded Systems 1
- (3) ENEL 300 Electrical and Computer Engineering Design 2
- (4) ENEL 301 Fundamentals of Engineering Economics and Management
- (5) ENEL 320 Signals and Communications
- (6) ENEL 321 Control Systems
- (7) ENEL 373 Digital Electronics and Devices
- (8) Sufficient courses selected from:
 - (a) SENG 301 Software Engineering 2
 - (b) COSC 363 Computer Graphics
 - (c) COSC 364 Internet Technology and Engineering
 - (d) COSC 368 Humans and Computers
 - (e) Any 15 point 300-level option to be approved by the Director of Studies

24. Third Professional Examination

- (1) ENEL 400 Electrical and Computer Engineering Research Project
- (2) ENCE 461 Embedded Systems 2
- (3) ENCE 464 Embedded Software and Advanced Computing
- (4) Sufficient courses selected from:
 - (a) COSC 411 Advanced Topics in HCI
 - (b) COSC 418 Wireless Ad-hoc and Sensor Networks
 - (c) COSC 422 Advanced Computer Graphics
 - (d) COSC 428 Computer Vision
 - (e) ENEL 420 Advanced Signals
 - (f) ENEL 422 Communications Engineering
 - (g) ENEL 470 Electronics 2
 - (h) ENEL 490 Electromagnetics

- (i) ENME 403 Linear Systems Control and System Identification
- (j) ENMT 482 Robotics
- (k) Any 15 point 400-level option to be approved by the Director of Studies

25. Minor in Communications and Network Engineering

- (1) COSC 264 Introduction to Computer Networks and the Internet
- (2) COSC 364 Internet Technology and Engineering
- (3) COSC 418 Wireless Ad-hoc and Sensor Networks
- (4) ENEL 320 Signals and Communications
- (5) ENEL 400 Electrical and Computer Engineering Research Project*
- (6) ENEL 422 Communications Engineering

* Note: ENEL 400 Electrical and Computer Engineering Research Project must be taken with a communications or networking focus as approved by the Director of Studies.

The Minor will only be awarded upon completion of all other normal requirements of a BE(Hons) in Computer Engineering.

Electrical and Electronic Engineering*

* Subject to Universities New Zealand CUAP approval, due December 2016.

26. First Professional Examination

- (1) ENEL 198 Electrical Workshop Course
- (2) ENEL 199 Basic Workshop Course
- (3) EMTH 210 Engineering Mathematics 2
- (4) EMTH 211 Engineering Linear Algebra and Statistics
- (5) ENEL 200 Electrical and Computer Engineering Design
- (6) ENEL 220 Circuits and Signals
- (7) ENEL 270 Principles of Electronics and Devices
- (8) ENEL 280 Principles of Electrical Systems
- (9) ENEL 290 Waves and Materials in Electrical Engineering
- (10) ENCE 260 Computer Systems

27. Second Professional Examination

- (1) ENCE 361 Embedded Systems 1
- (2) ENEL 300 Electrical and Computer Engineering Design 2
- (3) ENEL 301 Fundamentals of Engineering Economics and Management
- (4) ENEL 320 Signals and Communications
- (5) ENEL 321 Control Systems
- (6) ENEL 372 Power and Analogue Electronics
- (7) ENEL 373 Digital Electronics and Devices
- (8) ENEL 382 Electric Power and Machines

28. Third Professional Examination

- (1) ENEL 400 Electrical and Computer Research Project
- (2) Sufficient courses selected from:
 - (a) ENCE 461 Embedded Systems 2
 - (b) ENCE 464 Embedded Software and Advanced Computing
 - (c) ENEL 420 Advanced Signals
 - (d) ENEL 422 Communications Engineering
 - (e) ENEL 470 Electronics 2
 - (f) ENEL 471 Power Electronics 2
 - (g) ENEL 480 Electrical Power Systems
 - (h) ENEL 481 Electrical Machines
 - (i) ENEL 490 Electromagnetics
 - (j) ENEL 491 Nano Engineered Electronics
 - (k) ENME 403 Linear Systems Control and System Identification
 - (l) ENMT 482 Robotics
 - (m) Any 15 point 400-level or higher option to be approved by the Director of Studies

29. Minor in Power Engineering*

- (1) ENEL 480 Power Systems
- (2) ENEL 371 Power Electronics 1
- (3) ENEL 382 Electric Power and Machines

And two of the following:

- (1) ENEL 481 Electrical Machines
- (2) ENEL 471 Power Electronics
- (3) ENEL 667 Renewable Energy Systems Design

Note: The Minor will only be awarded upon completion of all other normal requirements of a BE(Hons) in Electrical and Electronic Engineering.

Forest Engineering

30. First Professional Examination

- (1) FORE 199 Workshop Training Course
- (2) EMTH 210 Engineering Mathematics 2
- (3) FORE 205 Introduction to Forest Engineering
- (4) FORE 215 Introduction to Forest Economics
- (5) ENCN 213 Design Studio 1
- (6) ENCN 221 Engineering Materials
- (7) ENCN 231 Solid Mechanics
- (8) ENCN 253 Soil Mechanics
- (9) ENFO 204 Forest Measurement

31. Second Professional Examination

- (1) ENCN 305 Computer Programming and Stochastic Modelling
- (2) ENCN 353 Geotechnical Engineering
- (3) ENCN 371 Project and Infrastructure Management
- (4) ENFO 327 Wood Science
- (5) ENNR 320 Integrated Catchment Analysis or ENCI 335 Structural Analyses

- (6) FORE 316 Forest Management
- (7) FORE 342 Geospatial Science in Forest Monitoring and Management

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

32. Third Professional Examination

- (1) FORE 422 Forest Harvest Planning
- (2) FORE 423 Forest Transportation and Road Design
- (3) ENFO 410 Forest Engineering Research (30 points)
- (4) Sufficient courses selected from:
 - (a) FORE 426 Forest Products Marketing and International Trade
 - (b) FORE 435 Advanced Forest Economics 2
 - (c) FORE 443 Biosecurity Risk Management
 - (d) ENGR 403 Fire Engineering
 - (e) ENGR 406 Wood and Engineered Wood Products Processing
 - (f) ENNR 423 Sustainable Energy Systems
 - (g) ENCN 415 Pavement Engineering
 - (h) ENCN 452 Advanced Geotechnical Engineering
 - (i) ENGE 412 Rock Mechanics and Rock Engineering
 - (j) Any 15 point 400-level option to be approved by the Director of Studies

Mechanical Engineering*

* Subject to Universities New Zealand CUAP approval, due December 2016.

33. First Professional Examination

- (1) ENME 199 Workshop Training Course for Mechanical and Mechatronics Engineering
- (2) EMTH 210 Engineering Mathematics 2
- (3) EMTH 271 Mathematical Modelling and Computation 2
- (4) ENME 201 Design Communication
- (5) ENME 202 Stress, Strain and Deformation in Machine Elements
- (6) ENME 203 Dynamics and Vibrations
- (7) ENME 207 Materials Science and Engineering
- (8) ENME 215 Thermodynamics
- (9) ENME 221 Engineering Design and Manufacture

34. 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 307 Performance of Engineering Materials
- (5) ENME 311 Engineering Design and Production Management
- (6) ENME 313 Electro Technology for Mechanical Engineers
- (7) ENME 314 Fluid Mechanics
- (8) ENME 315 Heat Transfer

35. Third Professional Examination

- (1) ENME 408 Honours Research and Development Project
- (2) ENME 401 Mechanical Systems Design
- (3) ENME 418 Engineering Management and Professional Practice for Mechanical Engineers
- (4) Sufficient courses selected from:
 - (a) ENGR 401 Computational Fluid Dynamics
 - (b) ENME 402 Advanced Vibrations and Acoustics
 - (c) ENME 403 Linear Systems Control and System Identification
 - (d) ENME 404 Aerodynamics and Ground Vehicle Dynamics
 - (e) ENME 405 Energy Systems Engineering
 - (f) ENME 406 Engineering Product Design and Analysis
 - (g) ENME 407 Advanced Materials Science and Engineering
 - (h) ENME 409 Physiological Modelling
 - (i) ENME 411 Advanced Mechanical System Design
 - (j) ENME 415 Advanced Heat and Mass Transfer
 - (k) ENME 417 Advanced Composite, Polymeric and Ceramic Materials
 - (l) ENME 419 Biological Fluid Dynamics
 - (m) ENME 423 Instrumentation and Sensors
 - (n) ENME 480 Independent Course of Study
 - (o) MDPH 401 Anatomy and Physiology
 - (p) ENMT 482 Robotics
 - (q) Any 15 point 400-level option approved by the Director of Studies

Mechatronics Engineering*

* Subject to Universities New Zealand CUAP approval, due December 2016.

36. First Professional Examination

- (1) ENEL 198 Electrical Workshop Course
- (2) ENME 199 Workshop Training Course for Mechanical and Mechatronics Engineering
- (3) EMTH 210 Engineering Mathematics 2
- (4) EMTH 211 Engineering Linear Algebra and Statistics
- (5) ENCE 260 Computer Systems
- (6) ENEL 270 Principles of Electronics and Devices
- (7) ENME 202 Stress, Strain and Deformation in Machine Elements
- (8) ENME 203 Dynamics and Vibrations
- (9) ENMT 201 Mechatronics Design

37. Second Professional Examination

- (1) ENCE 361 Embedded Systems 1
- (2) ENEL 301 Fundamentals of Engineering Economics and Management
- (3) ENEL 372 Power and Analogue Electronics
- (4) ENME 302 Computational and Applied Mechanical Analysis
- (5) ENME 303 Controls and Vibrations
- (6) ENMT 301 Mechatronics System Design
- (7) Sufficient courses selected from:
 - (a) ENME 215 Thermodynamics
 - (b) ENME 314 Fluid Mechanics
 - (c) ENEL 373 Digital Electronics and Devices
 - (d) Any 15 point 300-level option to be approved by the Director of Studies

38. Third Professional Examination

- (1) ENMT 401 Mechatronics Honours Research and Development Project
- (2) ENCE 461 Embedded Systems 2
- (3) ENME 403 Linear Systems Control and System Identification
- (4) Sufficient courses selected from:
 - (a) ENMT 482 Robotics
 - (b) COSC 428 Computer Vision
 - (c) ENCE 464 Embedded Software and Advanced Computing
 - (d) ENEL 471 Power Electronics 2
 - (e) ENME 402 Advanced Vibrations and Acoustics
 - (f) ENME 406 Engineering Product Design and Analysis
 - (g) ENME 423 Instrumentation and Sensors
 - (h) Any 15 point 400-level option to be approved by the Director of Studies

Natural Resources Engineering

39. First Professional Examination

- (1) ENCI 199 Health & Safety on the Worksite
- (2) EMTH 210 Engineering Mathematics 2
- (3) ENCN 201 Communication Skills Portfolio 1
- (4) ENCN 213 Design Studio 1
- (5) ENCN 221 Engineering Materials
- (6) ENCN 231 Solid Mechanics
- (7) ENCN 242 Fluid Mechanics and Hydrology
- (8) ENCN 253 Soil Mechanics
- (9) ENCN 261 Transport and Surveying
- (10) ENCN 281 Environmental Engineering

Note: Candidates 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.

40. 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 301 Communication Skills Portfolio 2
- (5) ENCN 304 Deterministic Mathematical Methods
- (6) ENCN 305 Computer Programming and Stochastic Modelling
- (7) ENCN 342 Fluid Mechanics and Hydraulics
- (8) ENCN 353 Geotechnical Engineering
- (9) ENCN 371 Project and Infrastructure Management

Note: Candidates are required to attend the Second Professional Year site visit tour. The tour will form part of the assessment for ENNR 313 Natural Resources Engineering Design Studio 2.

41. Third Professional Examination

- (1) ENCN 493 Project
- (2) ENCN 470 Professional Engineering Development
- (3) Sufficient courses selected from:
 - (a) ENNR 405 Ecological and Bioresources Engineering
 - (b) ENNR 422 Water Resources and Irrigation Engineering
 - (c) ENNR 423 Sustainable Energy Systems
 - (d) ENCN 401 Engineering in Developing Communities
 - (e) ENCN 412 Traffic Engineering
 - (f) ENCN 415 Pavement Engineering
 - (g) ENCN 444 Water Infrastructure and Design
 - (h) ENCN 445 Environmental Fluid Mechanics
 - (i) ENCN 452 Advanced Geotechnical Engineering

- (j) ENCN 454 Geotechnical Earthquake Engineering
- (k) ENCN 481 Environmental Engineering Design
- (l) ENGR 403 Fire Engineering
- (m) ENGE 411 Engineering Construction Practice
- (n) ENGE 412 Rock Mechanics and Rock Engineering
- (o) ENGE 415 Engineering Geomorphology and Geohazards
- (p) GEOL 475 Engineering and Environmental Geophysics
- (q) Any 15 point 400-level option to be approved by the Director of Studies
- (r) Candidates with a GPA of 6 or more may apply to take one 600-level course approved by the Director of Studies

Note: In exceptional circumstances, approved by the Director of Studies, a candidate may offer ENCN 494 in lieu of ENCN 493.

Software Engineering

42. First Professional Examination

- (1) SENG 199 Software Engineering Workshop Training Course
- (2) SENG 201 Software Engineering 1
- (3) SENG 202 Software Engineering Project Workshop
- (4) COSC 261 Formal Languages and Compilers
- (5) COSC 262 Algorithms
- (6) COSC 265 Relational Database Systems
- (7) ENCE 260 Computer Systems
- (8) Sufficient courses selected from schedules A and B below. Course selection must include at least one course from Schedule A.

Schedule A

- (a) EMTH 210 Engineering Mathematics 2
- (b) MATH 220 Discrete Mathematics and Cryptography

Schedule B

- (a) COSC 264 Introduction to Computer Networks and the Internet
- (b) EMTH 211 Engineering Linear Algebra and Statistics
- (c) MATH 230 Logic, Automata, and Computability

43. Second Professional Examination

- (1) SENG 301 Software Engineering II
- (2) SENG 302 Software Engineering Group Project
- (3) SENG 365 Web Computing Architectures
- (4) COSC 368 Humans and Computers
- (5) ENEL 301 Design and Management
- (6) Sufficient courses selected from:
 - (a) COSC 362 Network and Data Security
 - (b) COSC 363 Computer Graphics
 - (c) COSC 364 Internet Technology and Engineering
 - (d) COSC 367 Computational Intelligence
 - (e) ENCE 360 Operating Systems
 - (f) ENCE 361 Embedded Systems 1
 - (g) Any 15 point 300-level option to be approved by the Director of Studies

44. Third Professional Examination

- (1) SENG 401 Software Engineering III
- (2) SENG 402 Software Engineering Research Project
- (3) COSC 424 Secure Software
- (4) Sufficient 400-level courses selected from COSC, SENG and ENCE approved by the Director of Studies

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 in the UC 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.

Forestry Examinations

2. First Forestry Examination

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

- (1) BIOL 111 Cellular Biology and Biochemistry
- (2) BIOL 112 Ecology, Evolution and Conservation
- (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) STAT 101 Statistics 1
- (8) Any 15 points of Chemistry at 100-level.

Notes:

1. CHEM 114 *Foundations of Chemistry* is the recommended option for the 100-level Chemistry course.
2. Students enrolling in the First Forestry Examination at Canterbury must complete FORE 111. Students completing the First Forestry Examination at another university should complete FORE 102 as part of their examination, in lieu of FORE 111. FORE 102 is also available for students who are intending to do Forestry and who are unable to attend FORE 111 on campus.
3. A candidate who has failed to gain a pass in all of the courses of the First Forestry Examination may, 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 Second Forestry Examination.
4. The Chair, Forestry Board of Studies, in consultation with the Dean of Engineering and Forestry, may modify the First Forestry Examination based on prior learning. That modified course of study may include FORE 105.

3. Second Forestry Examination

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

- (1) FORE 205 Forest Engineering
- (2) FORE 215 Introduction to Forest Economics
- (3) FORE 218 Forest Biology
- (4) FORE 219 Introduction to Silviculture
- (5) FORE 222 Biometry 1A
- (6) FORE 224 Biometry 1B

- (7) SOIL 203 Soil Fertility.

Note: A candidate who has failed to gain a pass in all of the courses of the Second Forestry Examination may, 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.

4. Third Forestry Examination

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

- (1) FORE 307 Plantation Silviculture
- (2) FORE 316 Forest Management
- (3) FORE 327 Wood Science
- (4) FORE 342 Geospatial Science in Forest Monitoring and Management
- (5) One course from either the Bachelor of Forestry Science 400-level schedule of electives, or one course offered for any other degree at 200-level or above.

Note: A candidate who has failed to gain a pass in all of the courses of the Third Forestry Examination may, 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 Fourth 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) FORE 422 Forest Harvest Planning
- (3) FORE 447 Environmental Forestry
- (4) Three courses from the 400-level schedule of electives:
 - (a) FORE 423 Forest Transportation and Road Design
 - (b) FORE 426 Forest Products Marketing and International Trade
 - (c) FORE 435 Forest Economics 2
 - (d) FORE 436 Forest Tree Breeding
 - (e) FORE 443 Biosecurity Risk Management
 - (f) FORE 475 Independent Course of Study

Notes:

1. FORE 422 *Forest Harvest Planning* is a required course and may be taken in either Year Three instead of an elective or in Year Four.
2. Candidates are required to complete four electives in total across Years Three and Four from the Forestry Science 400-level schedule.
3. A candidate's course of study shall be subject to the approval of the Dean of Engineering and Forestry.

4. A BForSc student may credit no more than 30 points from other degrees toward BForSc in total in Year Three and Four.

6. Field Courses and First Aid Certificate

Every candidate shall complete to the satisfaction of the Board of Studies in Forestry four Field Trips and present proof of completion of NZQA Unit Standard 17769 (Demonstrate Knowledge of General Health, Safety and Environmental Requirements in Forestry), a current approved First Aid Certificate during their period of study, and practical work experience.

Practical Work

Candidates are required to obtain practical work experience in forestry, conservation or forest industry during the summer vacations. The School may assist students in obtaining such work, which will be credited to a candidate's non academic requirements only if performed in accordance with the following requirements:

- A candidate shall have completed 90 days' work in employment approved by the Head of the School of Forestry no later than the end of examinations in the final year of study.
- Practical work will be credited to a candidate's course only after confirmation by the candidate's employer of the number of days worked.
- The Head of the School of Forestry may relax or modify the application of clauses (a) and (b) in individual cases.

7. Requirements in Subjects in Other Degrees

Except as otherwise provided in these Regulations, a candidate enrolling for any course of the BForSc degree which is also a course for examination for any other degree shall comply with such of the Regulations for that degree relating to prerequisites, combinations of courses and practical work as are applicable to that course.

8. BForSc with Honours

Admission to candidacy for the BForSc with Honours shall be by approval of the Dean of Engineering and Forestry.

A candidate may qualify for admission at the end of Year 3 of the BForSc on the basis of grades in courses taken in Years 2 and 3. A candidate for BForSc with Honours will be required to enrol in FORE 414 Dissertation in addition to satisfying the requirements of the Fourth Forestry Examination. A candidate whose work has been of a sufficiently high standard shall be recommended for admission to the Degree with First or Second Class Honours. Each candidate obtaining Second Class Honours

shall be listed in either of two divisions (Division I or Division II).

9. Exemption for BSc and BSc(Hons) Graduates

With the approval of the Academic Board, a candidate who has previously qualified at any New Zealand university for the award of the degree of Bachelor of Science (with or without Honours) or for any other degree may be exempted from the 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

- 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.
- 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.

- 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 EFTS) 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

(5) A candidate who has commenced a BForSc degree before 2015 shall complete the degree by taking courses approved by the Dean of Engineering and Forestry which are consistent with the regulations in this Calendar.

The Degree of Bachelor of Product Design* (BProdDesign)

* Subject to Universities New Zealand CUAP approval, due December 2016. This degree will not be open for enrolments until 2018.

See also General Course and Examination Regulations.

1. Requirements of the Degree

Every candidate for the Degree of Bachelor of Product Design shall follow a course of study as laid down in these Regulations consisting of not fewer than 360 points.

2. Structure of the Degree

To qualify for the Degree of Bachelor of Product Design a candidate must:

- pass courses having a minimum total value of 360 points from a list of specified courses approved for a major requirement from the Schedule to the Regulations for the Degree of Bachelor of Product Design, with
- at least 225 points from courses above 100-level, and
- at least 75 points from courses at 300-level.

3. Subject Majors of the Degree

The Degree of Bachelor of Product Design may be awarded in the following subjects:

- Industrial Product Design
- Applied Immersive Game Design

- Chemical, Natural and Healthcare Product Formulation.

Note: The course and programme requirements are given in the Schedule to the Regulations for the Bachelor of Product Design.

4. Workload

Candidates who wish to enrol for a course of study whose total points exceed 150 points for a full year or 75 points for a single semester must first obtain the approval of the Dean of Engineering and Forestry.

Note: Students should seek advice from the College office as to the recommended GPA for such a course of study.

5. Direct Entry into 200-level Courses

Subject to the approval of the Dean of Engineering and Forestry, a student who has achieved a sufficient standard in a subject or subjects in the National Certificate in Educational Achievement (NCEA) or another comparable examination may be enrolled in one or more courses listed in the Schedule from PROD 201-299 without having passed the appropriate prerequisite to that course, provided that:

- if the candidate is credited with the course he or she shall not thereafter be credited with any prerequisite in the subject of which that course forms a part, and

- (b) if the candidate fails the course but in the opinion of the examiners attains the standard of a pass in a course at 100 or 200-level he or she shall be credited with a pass in such course or courses as the Dean of Engineering and Forestry may decide.

Schedule to the Regulations for the Degree of Bachelor of Product Design

This degree will not be open for enrolments until 2018.

For full course information, go to www.canterbury.ac.nz/courses

Industrial Product Design

Year 1

- (1) MATH 101 Introduction to Mathematics or EMTH 118 Engineering Mathematics 1A
- (2) PHYS 111 Introductory Physics for Physical Sciences and Engineering or PHYS 101 Engineering Physics A
- (3) ENGR 101 Foundations of Engineering
- (4) PROD 111 Materials Science for Design
- (5) PROD 101 Product Design 1
- (6) MGMT 100 Fundamentals of Management
- (7) 15 points at 100-level or above from courses in the Engineering Intermediate Year or the Degrees of BE(Hons) or BSc, subject to approval by the Dean of Engineering and Forestry

Year 2

- (1) PROD 211 Materials Engineering and Selection
- (2) PROD 212 Thermofluids
- (3) ENME 201 Design Communication
- (4) ENME 221 Engineering Design and Manufacture
- (5) PROD 213 Industrial Product Design 1A
- (6) PROD 214 Industrial Product Design 1B
- (7) MKTG 100 Principles of Marketing or ECON 104 Introduction to Microeconomics or ACCT 102 Accounting and Financial Information

Year 3

- (1) PROD 311 Computer-Aided Design and Simulation
- (2) PROD 313 Industrial Product Design 2A
- (3) PROD 314 Industrial Product Design 2B
- (4) 15 points above 100-level from courses in the Degrees of BE(Hons) or BSc, subject to approval by the Dean of Engineering and Forestry
- (5) 15 points above 200-level from courses in the Degrees of BE(Hons) or BSc, subject to approval by the Dean of Engineering and Forestry

6. Transfer from other degrees

A candidate who discontinues an appropriate degree and enrolls in a BProdDesign may make an application to the Dean of Engineering and Forestry to transfer credit from the corresponding discontinued degree(s) to the BProdDesign.

- (6) 30 points above 100-level from MGMT, MKTG, ECON, FINC or ACCT, of which at least 15 points must be from MKTG if MKTG 100 Principles of Marketing has not been completed

Applied Immersive Game Design

Year 1

- (1) MATH 101 Introduction to Mathematics or EMTH 118 Engineering Mathematics 1A
- (2) COSC 121 Introduction to Computer Programming
- (3) COSC 122 Introduction to Computer Science
- (4) ENGR 101 Foundations of Engineering
- (5) PROD 101 Product Design 1
- (6) PROD 121 The Game Development Process
- (7) MGMT 100 Fundamentals of Management

Year 2

- (1) SENG 201 Software Engineering 1
- (2) COSC 262 Algorithms
- (3) PROD 221 Game Design in Context
- (4) PROD 222 Gaming Project Studio 1
- (5) PROD 223 Immersive Interface Design
- (6) PROD 224 Gaming Mathematics and Statistics
- (7) MKTG 100 Principles of Marketing or ECON 104 Introduction to Microeconomics or ACCT 102 Accounting and Financial Information

Year 3

- (1) SENG 301 Software Engineering II
- (2) PROD 321 Interactive Computer Graphics and Animation
- (3) PROD 322 Gaming Project Studio II
- (4) PROD 323 Game Engines and Artificial Intelligence
- (5) 15 points above 100-level from courses from any degree of the University
- (6) 30 points above 100-level from MGMT, MKTG,

ECON, FINC or ACCT, of which at least 15 points must be from MKTG if MKTG 100 Principles of Marketing has not been completed

Chemical, Natural and Healthcare Product Formulation

Year 1

- (1) MATH 101 Introduction to Mathematics or EMTH 118 Engineering Mathematics 1A
- (2) BIOL 111 Cellular Biology and Biochemistry
- (3) CHEM 111 Chemical Principles and Processes
- (4) ENGR 101 Foundations of Engineering
- (5) PROD 101 Product Design 1
- (6) MGMT 100 Fundamentals of Management
- (7) 15 points at 100-level or above from courses in the Engineering Intermediate Year or the degrees of BE(Hons) or BSc, subject to approval by the Dean of Engineering and Forestry

Year 2

- (1) ENCH 241 Engineering Chemistry
- (2) PROD 231 Product Formulation 1
- (3) ENCH 291 Chemical Process Technology
- (4) PROD 232 Natural Products Properties and

- Production
- (5) PROD 233 Chemical & Healthcare Product Design 1A
- (6) PROD 234 Chemical & Healthcare Product Design 1B
- (7) MKTG 100 Principles of Marketing or ECON 104 Introduction to Microeconomics or ACCT 102 Accounting and Financial Information

Year 3

- (1) PROD 331 Product Formulation 2
- (2) PROD 333 Chemical & Healthcare Product Design 2A
- (3) PROD 334 Chemical & Healthcare Product Design 2B
- (4) 15 points above 100-level from courses in the Degrees of BE(Hons) or BSc, subject to approval by the Dean of Engineering and Forestry
- (5) 15 points above 200-level from courses in the Degrees of BE(Hons) or BSc, subject to approval by the Dean of Engineering and Forestry
- (6) 30 points above 100-level from MGMT, MKTG, ECON, FINC or ACCT, of which at least 15 points must be from MKTG if MKTG 100 Principles of Marketing has not been completed

Diploma in Global Humanitarian Engineering (DipGlobalHumanEng)

See also *General Course and Examination Regulations*.

1. Requirements of the Diploma

Every candidate for the Diploma in Global Humanitarian Engineering shall follow a course of study as approved by the Dean of Engineering and Forestry as laid down in these Regulations, or those consistent with the regulations in the relevant Calendar at the time they began their candidacy. The Dean of Engineering and Forestry may modify specific aspects of these degree regulations for individual candidates under the following special circumstances:

- (a) if the candidate's course of study is affected by a change in any regulations;
- (b) prior learning and work experience; or
- (c) other exceptional circumstances.

2. Structure of the Diploma

To qualify for the Diploma in Global Humanitarian Engineering a candidate must complete:

- (a) a programme of study for the Diploma of not less than 120 points, according to the requirements set out in Regulation 6 of

these regulations.

- (b) Candidates may not enrol in either ENGR 315 or ENGR 316 until they have completed at least 15 points from Schedule C and 15 points from Schedule D.

3. Admission to the Diploma in Global Humanitarian Engineering

- (a) Admission to the DipGlobalHumanEng shall be by approval of the Dean of Engineering and Forestry.
- (b) All candidates must either;
 - i. have been approved into a BE(Hons) programme; or
 - ii. have successfully completed a BE (Hons) engineering programme in relevant subjects; or
 - iii. have successfully completed another approved engineering qualification such as the New Zealand Certificate of Engineering, the New Zealand Diploma of Engineering or a Bachelor of Engineering Technology, or equivalent.

4. Time Limitation

- Candidates enrolled, either full-time or part-time must complete the requirements in no more than six years of studies if the Candidate is concurrently enrolled in a BE(Hons).
- Candidates enrolled, either full-time or part-time, must complete the requirements in no more than three years of study if the Candidate is not concurrently in the BE(Hons).

5. Concurrent enrolment in the DipGlobalHumanEng and BE(Hons)

A candidate who enrolls concurrently for the Degree of Bachelor of Engineering with Honours and the Diploma in Global Humanitarian Engineering 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:

- meet all requirements as laid down in the current regulations for the Degree of Bachelor of Engineering with Honours;
- meet all requirements as laid down in the

current regulations for the Diploma in Global Humanitarian Engineering.

Candidates must have attained a Grade Point Average (GPA) of at least 5.0 in the previous semester of study to be allowed to take more than 60 points in Semesters 1 or 2. No candidate will be allowed to take more than 30 points during a summer semester.

6. Diploma in Global Humanitarian Engineering Course Requirements

- ENGR 101 Foundations of Engineering
- at least 15 points selected from Schedule A
- at least 15 points selected from Schedule B
- 15 points selected from Schedule C
- 30 points selected from Schedule D
- either ENGR 315 Humanitarian Engineering Practice, or ENGR 316 Humanitarian Engineering Professional Report.

Note: Students who are enrolled concurrently in the BE(Hons)/DipGlobalHumanEng will not be permitted to enrol in more than 15 points on top of the normal professional year workload each year, other than in the summer semester.

Schedules to the Regulations for the Diploma in Global Humanitarian Engineering

For full course information, go to www.canterbury.ac.nz/courses

Schedule A

Course Code	Course Title	Pts	2017	P/C/R/RP/EQ
ENCN 213	Design Studio 1	15	S2	P: Subject to approval of the Dean of Engineering and Forestry R: ENCI 211
ENEL 200	Electrical and Computer Engineering Design	15	W	P: Subject to the approval of the Dean of Engineering and Forestry R: ENEL 211
ENME 221	Engineering Design and Manufacture	15	S2	P: Subject to the approval of the Dean of Engineering and Forestry R: ENME 211, ENME 226
ENMT 201	Mechatronics Design	30	W	P: Subject to the approval of the Dean of Engineering and Forestry
SENG 202	Software Engineering Project Workshop	15	S2	P: SENG 201 AND Approval into the BE(Hons) Software Engineering programme.

Schedule B

Course Code	Course Title	Pts	2017	P/C/R/RP/EQ
ENCH 394	Process Engineering Design 2	15	S1	P: ENCH 291 R: ENCH 363
ENCI 313	Civil Engineering Design Studio 2	15	S2	P: ENCN 213, ENCN 261, ENCN 242, ENCN 371 R: ENCI 312, ENNR 313 EQ: ENNR 313

ENEL 300	Electrical and Computer Engineering Design 2	15	S2	P: ENEL 200, ENCE 260, ENEL 270. Subject to approval of the Head of Department R: ENEL 350
ENME 311	Engineering Design and Production Management	15	S2	P: ENME 301 R: ENME 341, ENME 336
ENMT 301	Mechatronics System Design	30	W	P: ENMT 201
ENNR 313	Natural Resources Engineering Design Studio 2	15	S2	P: ENCN 213, ENCN 242, ENCN 281 and ENCN 371 R: ENCI 312, ENCI 313 EQ: ENCI 313
FORE 316	Forest Management	30	S2	R: ENFO 316, FORE 316-prior to 2011, FORE 319, FORE 320, ENFO 491-prior to 2011.
SENG 302	Software Engineering Group Project	30	W	P: SENG 201. C: SENG 301 R: COSC 325, COSC 314 RP: COSC 110 OR COSC 101, ENCE 260, COSC 368, COSC 265.

Schedule C

Course Code	Course Title	Pts	2017	P/C/R/ RP/EQ
ANTH 102	Cultural Diversity and The Making of The Modern World	15	S1	
ANTH 104	Indigenous peoples, development and anthropology	15	NO	R: MAOR 170 EQ: MAOR 170
CHCH 101	Strengthening Communities through Social Innovation	15	NO	
EDUC 103	Education, Culture and Society	15	S2	R: EDUC 120 and TEDU 111 EQ: TEDU 111
GEOL 113	Environmental Geohazards	15	S2	
MAOR 107	Aotearoa: Introduction to Traditional Māori Society	15	S1	R: PACS 102 EQ: PACS 102
MAOR 108	Aotearoa: Introduction to New Zealand Treaty Society	15	SU2 S2	R: CULT 114, MAOR 113 (prior to 2006) EQ: CULT 114
MAOR 165	He Timatanga: Engaging with Māori	15	SU1 S1	
POLS 105	Comparing the Politics of Nations: A Global Introduction	15	S2	
SOCI 111	Exploring Society	15	S1	
SOCI 112	Global Society	15	S2	

And a special topic as approved by the Dean of Engineering and Forestry.

Schedule D

Any of these courses:

Course Code	Course Title	Pts	2017	P/C/R/ RP/EQ
ANTH 213	Environment, Development and Disaster	15	S1	P: 15 points of ANTH or SOCI or GEOG at 100 level; OR 45 points in related subjects with the approval of the Head of Department. R: ANTH 313 EQ: ANTH 313
ANTH 223	Ethnicity and History	15	S2	P: 15 points of ANTH or SOCI at 100 level; OR 45 points in related subjects with the approval of the Head of Department. R: HIST 283, MAOR 230, PACS 204, SOCI 223 EQ: HIST 283, MAOR 230, PACS 204, SOCI 223

EDUC 206	Education and Society: Ideals and Realities	15	S2	P: 30 points in EDUC or 45 points of SOCI, POLS, HIST, CULT, ANTH or permission of the Head of School R: EDUC 220
GEOG 202	Globalisation and New Geographies	15	S1	P: Any 30 points of 100 level geography, or entry with the approval of the Head of Department.
HIST 279	Social and Cultural History of India	15	S2	P: Either 15 points in HIST with a B grade or better, or 30 points in HIST or Ancient History (CLAS 111, CLAS 112) with a passing grade. Alternatively, a B average in 60 points of coursework. R: HIST 367, SAST 302, SAST 202 EQ: SAST 202
HIST 294	Recovering Christchurch 1850-2010	15	NO	P: Either 15 points in HIST at B grade or better or 30 points in HIST or Ancient History (CLAS 111, CLAS 112) with a passing grade. Alternatively, a B average in 60 points R: HIST 394
HSRV 208	Gender Sensitivity and the Human Services	15	S1	P: 30 points from HSRV 101, HSRV 102, HSRV 103, HSRV 104, SOWK 101, SOWK 102 and SOWK 104. Students without this prerequisite but with at least 60 points in appropriate courses may enter the course with the permission of the Programme Coordinator. R: HSRV 308
MAOR 219	Te Tiriti: The Treaty of Waitangi	15	S2	P: Any 15 points in 100 level course in MAOR or TREQ, or 30 points in 100 level courses in Arts, Education, Fine Arts, Music and Social Work, or by permission of the Head of School. R: POLS 218, POLS 258, HIST 268, SOCI 209, HSRV 207, CULT 219 EQ: POLS 218, POLS 258, HIST 268, SOCI 209, HSRV 207, CULT 219
MAOR 285	Oral Traditions and Modern Histories of Ngai Tahu	15	S1	P: Any 15 points in Māori and Indigenous Studies or their double-coded equivalents or any 15 points in HIST or Ancient History or POLS or RELS or SOCI. Students without these prerequisites but with 60 points in appropriate courses may enter the course with the approval of the Head of Department. R: HIST 292 EQ: HIST 292
POLS 201	Classic Works in Political Philosophy - Machiavelli to Marx	15	NO	P: 15 points in POLS at 100-level. Students not meeting the prerequisites but with at least a B average in 60 points in appropriate courses may be admitted to take Political Science and International Relations courses at the 200-level with the approval of the Department coordinator. R: PHIL 239, EURA 211 EQ: PHIL 239
POLS 206	Public Policy: An Introduction	15	S2	P: 15 points in POLS at 100-level; Or HLTH 101, or HLTH 106 or HSRV 101. Students not meeting the prerequisites but with at least a B average in 60 points in appropriate courses may be admitted to take Political Science and International Relations courses at the 200-level with the approval of the Programme Director.
SOCI 244	On Death and Dying: Current Controversies in Thanatology	15	NO	P: 15 points of SOCI or ANTH at 100 level; OR 45 points in related subjects with the approval of the Head of Department. R: SOCI 344, POLS 404

SOCI 255	Sociology of the City	15	S1	P: 15 points of SOCI or ANTH at 100 level; OR 45 points in related subjects with the approval of the Head of Department. R: SOCI 292, SOCI 392, SOCI 355, CULT 210, CULT 310 EQ: CULT 210
SOCI 263	Sociology of the Everyday World	15	S2	P: 15 points of SOCI or ANTH at 100 level; OR 45 points in related subjects with the approval of the Head of Department. R: SOCI 278

And a special topic as approved by the Dean of Engineering and Forestry.

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 300 and 400-level Forestry courses.

A candidate who has failed one or more courses is allowed to repeat those courses for credit, subject to the time limits in Regulation 6.

3. Award of Diploma with Distinction

The Graduate Diploma in Forestry may be awarded with Distinction.

4. Exemption from Prerequisites

Normal prerequisites for any courses may be exempted at the discretion of the Dean of Engineering and Forestry.

5. Part-time Enrolment

The Graduate Diploma may be studied part-time.

6. Time Limits

The Graduate Diploma will be completed in one year of full-time study (under exceptional circumstances the Dean may extend this to 18 months) or two years of part-time study. A part-time candidate is one who, because of employment, health, family or other reasons, is unable to devote his or her full-time to study; part-time enrolment requires the approval of the Academic Board.

7. Repeating of Courses

The Degree of Master of Engineering (ME)

See also *General Course and Examination Regulations*.

1. Requirements of the Degree

Every candidate for the Degree of Master of Engineering shall follow a course of study approved by the Dean of Engineering and Forestry and Director of Postgraduate Studies as laid down in these Regulations, or those consistent with the regulations in the relevant Calendar at the time they began their candidacy. In special circumstances the Dean of Engineering and Forestry may modify specific aspects of the degree regulations for individual candidates.

2. Qualifications Required to Enrol in the Degree

A candidate 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 5.0 or more; or
 - iii. qualified for the award of the Degree of Bachelor of Science with first or second class

- 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 status as entitled to proceed to the Degree of Master of Engineering; and
- (b) been approved as a candidate for the degree by the Dean of Engineering and Forestry.

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. Structure of the Degree

- (a) The degree must be completed by:
- i. a thesis of 120 points; and
 - ii. up to 45 points of coursework.
- (b) Each candidate must complete a programme of study listed in Schedule A.

4. Endorsements

The degree of Master of Engineering (ME) will be awarded endorsed in the following programmes: Bioengineering, Chemical and Process Engineering, Civil Engineering, Construction Management, Earthquake Engineering, Electrical and Electronic Engineering, Mechanical Engineering, Renewable Energy and Software Engineering.

5. Coursework Requirements

- (a) In consultation with a candidate's intended thesis supervisory team, and subject to the requirements of the programme of study listed in Schedule A, a candidate should select appropriate courses from Schedule B or Schedule C that will best support their research.
- (b) In some cases it may not be necessary for a candidate to offer 45 points in coursework.
- (c) A candidate may select courses not on Schedule B if they are deemed necessary to support their research plan.
- (d) The intended programme of study must be approved by the appropriate Director of Studies and the Dean of Engineering and Forestry

6. 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 and not more than three years.
 - ii. A full-time candidate will normally be expected to expend a minimum of 30 hours per week on their studies over a calendar year.

- iii. 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 more than four years.
- (c) Candidates must 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 to the Dean of Engineering and Forestry for a suspension.

7. ME with Distinction

Candidates who obtain a GPA of 8.0 or more in their programme of study within two years full-time or three years part-time will be eligible for the award of ME with Distinction.

8. 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.

9. Transfer from ME to MEngSt or PGCertEng

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 or Postgraduate Certificate of Engineering subject to satisfying the regulation requirements of the MEngSt or PGCertEng.

10. 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 Dean of Postgraduate Research.

11. 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 the course work component of the degree.

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 45 points 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 the relevant programme of study for an endorsement listed in Schedule A of the ME Regulations; and
 - iv. Suitable thesis supervision and research resources are available.
- (b) Where the transfer of a candidate from the PGCertEng to the ME has been approved, the Dean of Engineering and Forestry will transfer appropriate courses from the candidate's PGCertEng studies towards their ME degree.

Schedule A to the Regulations for the Degree of Master of Engineering (Endorsed)

Bioengineering

Required course: ENBI 601

Thesis: ENBI 690

Construction Management

Thesis: ENCM 690 and at least 30 points from the Construction Management course list listed in schedule B of the ME Regulations.

Chemical and Process Engineering

Thesis: ENCH 690

Civil Engineering

Thesis: ENCI 690 and at least 30 points from the Civil Engineering (ENCI), Construction Management (ENCM), Earthquake Engineering (ENEQ) and Transportation Engineering (ENTR) course lists listed in schedule B of the ME Regulations.

Earthquake Engineering

Thesis: ENEQ 690 and at least 45 points from the Earthquake Engineering course list listed in schedule B of the ME Regulations.

Note: Candidates with an insufficient academic background in Earthquake Engineering may be required to take a bridging course or courses prior to being approved into the programme.

Electrical and Electronic Engineering

Thesis: ENEL 690

Mechanical Engineering

Thesis: ENME 690

Software Engineering

Thesis: SENG 690

Schedule B to the Regulations for the Degree of Master of Engineering (Endorsed)

Bioengineering

- (1) ENBI 601 Medical Bioengineering
- (2) ENBI 605 Biomedical Engineering Simulations

Chemical and Process Engineering

- (1) ENCH 602 Computational Fluid Dynamics
- (2) ENCH 603 Physical, Chemical and Analytical Techniques
- (3) ENCH 606 Advanced Process Simulation
- (4) ENCH 607 Modelling and Numerical Methods

Civil Engineering

- (1) ENCI 601 Risk Management
- (2) ENCI 621 Concrete Materials and Practice
- (3) ENCI 629 Special Topic: Structural Bridge Engineering
- (4) ENCI 634 Water Chemistry
- (5) ENCI 637 Marine Pollution Modelling
- (6) ENCI 638 Environmental Fluid Dynamics
- (7) ENCI 639 Advanced Water Hammer Analysis and Design

- (8) ENCI 641 Environmental Systems Engineering 1

Construction Management

- (1) ENCI 601 Risk Management
 (2) ENCM 610 Construction Management
 (3) ENCM 620 Construction Procurement and Contract Administration
 (4) ENCM 630 Project Management, Planning and Control Techniques
 (5) ENCM 640 Strategic Management in Construction
 (6) ENCM 650 Cost Engineering
 (7) ENCM 682 Research Project
 (8) ENTR 604 Road Asset Management

Earthquake Engineering

- (1) ENCI 601 Risk Management
 (2) ENCI 621 Concrete Materials and Practice
 (3) ENEQ 610 Engineering Seismology
 (4) ENEQ 620 Advanced Geotechnical Earthquake Engineering
 (5) ENEQ 640 Displacement-based Seismic Design of Damage-Resisting Concrete Structures
 (6) ENEQ 641 Non-linear Concrete Mechanics and Modelling Techniques
 (7) ENEQ 642 Seismic Assessment and Retrofit Strategies for Existing Reinforced Concrete Buildings
 (8) ENEQ 650 Advanced Steel and Composite Structures
 (9) ENEQ 661 Special Topic: Structural Identification and Health Monitoring for Building and Bridges
 (10) ENEQ 670 Seismic Bridge Engineering
 (11) ENEQ 680 Seismic Performance and Loss Estimation

Electrical and Electronic Engineering

- (1) ENEL 614 Signals in Biomedicine
 (2) ENEL 619 Computational Image Recovery
 (3) ENEL 657 Applied Digital Signal Processing
 (4) ENEL 664 Special Topic: Renewable Energy System Design
 (5) ENEL 660 Special Topic: MicroElectroMechanical Systems (MEMS)
 (6) ENEL 685 Electrical Postgraduate Project

Engineering

- (1) ENGR 601 Advanced Computational Fluid Dynamics

Engineering Mathematics

Core courses for the endorsement for PGCertEng and MEngSt

- (1) EMTH 611 Advanced Mathematical Models

- (2) EMTH 612 Advanced Computational Techniques
 (3) EMTH 613 Advanced Statistical Methods
 (4) EMTH 614 Advanced Differential Equations
 (5) EMTH 620 High Performance Computing

Fire Engineering

- (1) ENCI 601 Risk Assessment
 (2) ENFE 601 Structural Fire Engineering
 (3) ENFE 604 Fire Design Case Study
 (4) ENFE 613 Special Topic: Human Behaviour in Fire
 (5) ENFE 681 Project
 (6) ENFE 682 Project
 (7) ENFE 683 Project

Mechanical Engineering

- (1) ENME 602 Advanced Vibrations and Acoustics
 (2) ENME 603 Advanced Linear Systems Control and System Identification
 (3) ENME 604 Advanced Aerodynamics and Ground Vehicle Dynamics
 (4) ENME 605 Advanced Energy Systems Engineering
 (5) ENME 606 Advanced Engineering Product Design and Analysis
 (6) ENME 607 Advanced Materials Science and Engineering
 (7) ENME 609 Advanced Physiological Modelling
 (8) ENME 611 Advanced Mechanical System Design
 (9) ENME 612 Mechanical Vibrations and Acoustics of Continuous Systems
 (10) ENME 613 Advanced Robotics
 (11) ENME 615 Advanced Heat and Mass Transfer
 (12) ENME 617 Advanced Composite, Polymeric and Ceramic Materials
 (13) ENME 618 Advanced Engineering Management and Professional Practice for Mechanical Engineers
 (14) ENME 619 Advanced Biological Fluid Dynamics
 (15) ENME 623 Advanced Instrumentation and Sensors
 (16) ENME 625 Special Topic: Analytical Heat Transfer

Renewable Energy

Required Courses:

- (1) ENGR 621 Energy, Technology & Society
 (2) ENEL 664 Renewable Electricity System Design
 (3) ENCN 623 Energy Systems - Modelling & Analysis
 (4) ENCI 601 Risk Management

Elective Courses

- (1) ENCN 625 Wind Resource Modelling
 (2) ENGR 683 Project
 (3) ENCM 620 Construction Procurement and Contract Administration (Block)

Transport Engineering

- (1) ENTR 602 Accident Reduction and Prevention
- (2) ENTR 603 Advanced Pavement Design
- (3) ENTR 604 Road Asset Management
- (4) ENTR 611 Planning and Managing for Transport
- (5) ENTR 612 Transport Policy and System Management
- (6) ENTR 613 Highway Geometric Design
- (7) ENTR 614 Planning and Design of Sustainable Transport
- (8) ENTR 615 Transport Network Modelling
- (9) ENTR 616 Transport Planning and Modelling
- (10) ENTR 617 Traffic Engineering and Design
- (11) ENTR 618 Transport and Freight Logistics

Notes:

1. *Not all courses will be offered in any one year. Students are advised to contact the College of Engineering for an up to date list of courses offered.*
2. *Special topics are available in Chemical and Process Engineering, Civil Engineering, Earthquake Engineering, Electrical and Electronic Engineering, Engineering Mathematics, Mechanical Engineering, Software Engineering, and Transport Engineering. Students are advised to contact the departments for more information on special topics.*
3. *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.*

Schedule C to the Regulations for the Degree of Master of Engineering (Endorsed)

Any approved 400-level or higher courses offered within the University.

Computer Science*

* *Subject to Universities New Zealand CUAP approval, due December 2016.*

- (1) COSC 401 Machine Learning
- (2) COSC 411 Advanced Topics in HCI
- (3) COSC 415 Information and Software Visualisation
- (4) COSC 418 Wireless Ad-hoc and Sensor Networks
- (5) COSC 420 Intelligent Tutoring Systems
- (6) COSC 421 Advanced Topics in Security
- (7) COSC 422 Advanced Computer Graphics
- (8) COSC 424 Secure Software
- (9) COSC 426 Augmented Reality
- (10) COSC 428 Computer Vision
- (11) COSC 432 Relational Methods
- (12) COSC 469 Research Methods in Computer Science

Electrical and Electronic Engineering

- (1) ENEL 675 Special Topic: Advanced Embedded Systems

Fire Engineering

- (1) ENGR 403 Fire Engineering
- (2) ENFE 602 Fire Dynamics
- (3) ENFE 603 Fire Safety Systems
- (4) ENFE 610 Advanced Fire Dynamics

Forestry Science

- (1) FORE 616 Restoration Ecology
- (2) FORE 641 Plantation Forest Management
- (3) FORE 642 Advanced IT Applications in Forestry

Human Interface Technology

- (1) HITD 602 Human Interface Technology Design and Evaluation
- (2) HITD 603 Human Interface Technology Prototyping and Projects

Renewable Energy

- (1) ENNR 423 Sustainable Energy Systems
- (2) ENGR 404 Renewable Energy Technology & Management
- (3) ENME 405 Energy Systems Engineering
- (4) HAZM 408 Special Topic in GIS
- (5) ENCH 486 Special Topic Advanced Energy Processing Technologies and Systems

Software Engineering

- (1) SENG 401 Software Engineering III
- (2) SENG 404 Software Requirements and Architecture
- (3) SENG 440 Topics in Mobile Computing

Transport Engineering

- (1) ENTR 401 Fundamentals of Transport Engineering

Notes:

1. *Not all courses will be offered in any one year. Students are advised to contact the College of Engineering for an up to date list of courses offered.*
2. *Special topics are available in Chemical and Process Engineering, Civil Engineering, Computer Science and Software Engineering, Earthquake Engineering, Electrical and Electronic Engineering, Engineering Mathematics, Mechanical Engineering, and Transport Engineering. Students are advised to contact the departments for more information on special topics.*

The Degree of Master of Engineering in Fire Engineering (MEFE)

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 Fire Engineering 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 status as entitled to proceed to the Degree of Master of Engineering in Fire Engineering; 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.*
3. *Candidates who do not have an appropriate background in fire engineering, may be required to take ENGR 403 Introduction to Fire Engineering prior to being approved into the programme.*

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

Should a candidate fail 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

Should a candidate fail 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 45 points 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 45 points 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

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 in Fire Engineering
- (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 status 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 places and for such period or periods of time as may be approved

- by the Director of the Master of Engineering in Management programme;
- (b) the candidate shall submit for examination two hard bound copies of the project report to the Director of the Master of Engineering in Management programme;
- (c) the project report shall be submitted within one calendar year from the date upon which study for the Master of Engineering in Management commenced;
- (d) the project report shall be examined by one or more examiners appointed by the Director of the Master of Engineering in Management programme.

Schedule to the Regulations for the Degree of Master of Engineering in Management

For full course information, go to www.canterbury.ac.nz/courses

Courses

- | | |
|--|---|
| (1) ENMG 601 Engineering Accounting | (5) ENMG 605 Marketing, Selling and Service |
| (2) ENMG 602 Engineering Economics and Finance | (6) ENMG 606 Strategic Management |
| (3) ENMG 603 Legal and Human Resource | (7) ENMG 607 Special Topic |
| (4) ENMG 604 Technology, Innovation and Engineering Management | (8) ENMG 608 Special Topic |
| | (9) ENMG 609 Special Topic |

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 601–609 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. Requirements of the Degree

Every candidate for the Degree of Master of Engineering in Transportation shall follow a course of study approved by the Dean of Engineering and Forestry and the Director of Transportation Engineering as laid down in these Regulations, or those consistent with the regulations in the relevant Calendar at the time they began their candidacy. Where specific regulations require approval then these shall be by the Dean of Engineering and Forestry unless otherwise stated. In special circumstances the Dean of Engineering and Forestry may modify specific aspects of the degree regulations for individual candidates.

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. 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 a postgraduate qualification from a New Zealand University in appropriate subjects; or
 - iv. qualified for a bachelor's degree from a New Zealand University in appropriate subjects; or
 - v. been admitted ad eundem statum as entitled to proceed to the Degree of Master of Engineering in Transportation;
- (b) and having completed a qualifying programme where clauses (a) iv. to (a) v. apply; and
- (c) 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.*

3. Structure of the Degree

- (a) The degree must be completed by either:
- i. 120 to a maximum of 180 points of coursework including project report selected from the Schedule to these regulations; or
 - ii. 120 points of thesis, ENTR 690, and coursework to a maximum of 60 points (excluding ENTR 680) from the Schedule to these regulations.
- (b) Candidates approved into a programme of study without a postgraduate qualification, or significant relevant professional experience must complete the maximum 180 points requirements. Candidates permitted to opt for less than the maximum 180 points must determine the appropriate coursework in consultation with the supervisory team.

4. Award of Distinction

The degree may be awarded with Distinction for outstanding achievement measured by a GPA for the degree in the range 8.0-9.0 and completion without an extension in time.

5. Qualifying Programmes

If a candidate is required in Regulation 2(b), or has not demonstrated to the satisfaction of the Dean of Engineering and Forestry a suitable standard in previous work, they must satisfactorily complete a qualifying programme of study before enrolling in the degree of Master of Engineering in Transportation. Courses taken as part of the qualifying programme may be credited towards the degree of Master in Engineering in Transportation. The course of study and conditions must be

approved by the Dean of Engineering and Forestry and the Director of Transportation Engineering.

6. Time Limitation for Degree Completion and Suspension of Study

- (a) Candidates enrol for full-time study unless they have applied in writing and been approved by the Dean of Engineering and Forestry for part-time study.
- (b) Candidates must 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 to the Dean of Engineering and Forestry for a suspension. Where approved, this will extend the time limitation for the completion of the degree.
- (c) Candidates enrolled for coursework only must complete either:
 - i. Within two years if in full-time study; or
 - ii. Within four years if in part-time study.
- (d) Candidates enrolled for thesis and coursework must complete either:
 - i. Within three years if in full-time study; or
 - ii. Within four years if in part-time study.
- (e) Candidates who have an approved suspension in study may be required to undertake an approved preparatory programme prior to the resumption of their studies. Any preparatory programme of study must be completed while on suspension, and immediately prior to the end of their suspension.

Notes: Preparatory programmes of study will not normally be required where the suspension is for a calendar year or less.

7. Thesis Requirements

Candidates must follow the requirements of the General Course and Examination Regulations Part L, and the Guidelines for Master's Thesis Work, and to the Library Guide for the Presentation of Theses.

8. 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 Transportation Engineering 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 places and for such period or periods of time as may be approved by the Director of the Transportation Engineering

Programme.

- (b) The candidate shall submit for examination two hard bound copies and one electronic copy of the project report to the Director of the Transportation Engineering Programme.
- (c) The project candidate shall be submitted by a full-time candidate within two years from the date upon which study for the Master of Engineering in Transportation by examination and project commenced or within four years by a part-time candidate.
- (d) The project report shall be examined by one or more examiners appointed by the Director of the Transportation Engineering Programme.

9. Transfer from MET to PhD

Where a candidate has demonstrated high research potential and has the support of the Director of Transportation Engineering, the candidate may apply to transfer to a PhD degree, with such backdating of

research thesis enrolment as may be approved by the Dean of Postgraduate Research. If approved the MET degree will be abandoned.

10. Transfer from PGCertEng to MET

Where a candidate has demonstrated high research potential and has the support of the Director of Transportation Engineering, the candidate may apply to transfer from the PGCertEng to the Master of Engineering in Transportation degree, with such backdating of research enrolment as may be approved by the Dean of Engineering and Forestry. If approved the candidate must still meet the requirements of the MET.

11. Transfer from MET to PGCertEng

Subject to approval of the Dean of Engineering and Forestry, a candidate may transfer from the Master of Engineering in Transportation to the Postgraduate Certificate in Engineering subject to satisfying the regulation requirements of the PGCertEng.

Schedule to the Regulations for the Degree of Master of Engineering in Transportation

For full course information, go to www.canterbury.ac.nz/courses

Courses

- (a) ENTR 401 Fundamentals of Transport Engineering;
 - (b) ENTR 611 Planning and Managing for Transport;
 - (c) 600-level Transportation Engineering courses listed in Schedule B of the ME Regulations;
 - (d) ENTR 680 Project;
 - (e) Up to 45 points of relevant courses at 400-level or greater from within the institution or from the Transportation Engineering programme at the University of Auckland.
- 3. ENTR 680 Project cannot be offered by candidates also offering ENTR 690 MET Thesis.
 - 4. Intending candidates must consult the Director of the Transportation Engineering programme to determine which courses will be offered in any one year and which courses they will be required to complete. For new candidates from 2008 without an appropriate Bachelor of Engineering degree or equivalent experience/qualifications, ENTR 401 must normally be completed prior to undertaking other ENTR courses.

Notes:

- 1. All candidates without an appropriate transport background must offer ENTR 401 Fundamentals of Transport Engineering prior to undertaking other ENTR courses.
- 2. All candidates must offer ENTR 611 Planning and Managing for Transport as part of their course-work.

The Degree of Master of Engineering Studies (MEngSt)

See also *General Course and Examination Regulations*.

1. Requirements of the Degree

Every candidate for the Degree of Master of Engineering Studies shall follow a course of study approved by the Dean of Engineering and Forestry

and Director of Postgraduate Studies as laid down in these Regulations, or those consistent with the regulations in the relevant Calendar at the time they began their candidacy. In special circumstances the Dean of Engineering and Forestry may modify specific aspects of the degree regulations for

individual candidates.

- (a) The degree of Master of Engineering Studies (MEngSt) is offered by the Departments of Chemical and Process Engineering, Civil and Natural Resources Engineering, Electrical and Computer Engineering, Mathematics and Statistics, and Mechanical Engineering.
- (b) It may be awarded endorsed in the following subjects:
 - i. Civil Engineering
 - ii. Construction Management
 - iii. Earthquake Engineering
 - iv. Fire Engineering
 - v. Mechanical Engineering
 - vi. Renewable Energy

2. Qualifications Required to Enrol in the Degree

A candidate 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 Studies; and
- (b) been approved as a candidate for the degree by the Dean of Engineering and Forestry.

Note: Relevance and standard of previous study is the main criteria for approval.

3. Structure of the Degree

Each candidate must complete a programme of study that consists of courses with a total course weighting of not less than 120 points. The courses must be selected as follows:

- (a) courses with a total course weighting of not less than 75 points must be selected from the courses listed in Schedule B of the Master of Engineering regulations; and
- (b) any remaining courses from Schedule C of the Regulations for the Master of Engineering, that ensures that the total course weight is not less than 120 points.

4. Full-time and Part-time Enrolment

A candidate may be enrolled for the Master of Engineering Studies as a full-time or part-time candidate. A full-time candidate will enrol for not less than one year and not more than two years. A part-time candidate will enrol for not less than two years and not more than five years. Part-time enrolment requires the approval of the Dean of Engineering and Forestry.

Notes:

1. *With the approval of the 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.*
2. *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.*

5. MEngSt with Distinction

Candidates who obtain a GPA of 8.0 or more in their programme of study will be eligible to be considered for the award of MEngSt 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:
 - i. The candidate has completed a minimum of 45 points of the course requirements for the MEngSt; and
 - ii. The candidate has achieved an average GPA of 5.0 or more in the completed courses; and
 - iii. The courses completed by the candidate fulfil the coursework requirements of the relevant programme of study 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 MET; and
 - iv. Suitable thesis supervision and research resources are available.
- (b) Where the transfer of a candidate from the MEngSt to the ME has been approved, the Dean of Engineering and Forestry will transfer appropriate courses from the candidate's MEngSt 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.

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

For full course information, go to www.canterbury.ac.nz/courses

Civil Engineering

Courses with a total course weighting of not less than 75 points shall be selected from the ENCI, ENCM, ENEQ, and ENTR courses listed in Schedule B or Schedule C of the Master of Engineering regulations and subject to approval of the Programme Director.

A maximum of 30 points may come from outside Engineering.

Construction Management

Courses with a total course weighting of not less than 75 points shall be selected from the Construction Management courses listed in Schedule B or Schedule C 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 30 points offered in the Construction Management Programme at the University of Auckland or other approved university.

Earthquake Engineering

Courses with a total course weighting of not less than 75 points shall be selected from the Earthquake

Engineering courses listed in Schedule B or Schedule C of the Master of Engineering regulations.

Fire Engineering

Required courses:

- (a) ENFE 601 Structural Fire Engineering
- (b) ENFE 602 Fire Dynamics
- (c) ENFE 603 Fire Safety Systems
- (d) ENFE 604 Fire Design Case Study
- (e) ENFE 610 Advanced Fire Dynamics

Mechanical Engineering

Courses with a total course weighting of not less than 75 points shall be selected from ENME courses listed in Schedule B or Schedule C of the Master of Engineering Regulations.

Renewable Energy

Courses with a total course weighting of not less than 60 points shall be selected from the required courses and 15 points from the elective courses from the Renewable Energy courses listed from the Schedule B of the Master of Engineering regulations. Up to 15 points may be selected from courses outside of Engineering. The remaining courses may be selected from Schedule B or C of the courses listed in Renewable Energy.

The Degree of Master of Forestry Science (MForSc)

See also *General Course and Examination Regulations*.

1. Requirements of the Degree

Every candidate for the Degree of Master of Forestry Science shall follow a course of study approved by the Dean of Engineering and Forestry and the Postgraduate Director of Studies (Forestry) as laid down in these Regulations, or those consistent with

the regulations in the relevant Calendar at the time they began their candidacy. In special circumstances the Dean of Engineering and Forestry may modify aspects of the degree regulations for individual candidates.

2. Qualifications Required to Enrol in the Degree

- (a) 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; and
- (b) been approved as a candidate for the degree by the Dean of Engineering and Forestry.

Notes:

- Relevance and standard of previous study are the main criteria for approval.*
- Candidates will be approved only if appropriate research supervision and resources are available.*

3. Structure of the Degree

- (a) The degree must be completed by either:
- 240 points of coursework including the MForSc report selected from the Schedule to these regulations; or
 - 120 points of coursework selected from the Schedule to these regulations and 120 points of thesis; or
 - by 120 points of thesis alone.
- (b) Candidates approved for the thesis alone must have completed a minimum of 120 points of postgraduate level studies, or equivalent, in an appropriate field of study to Forestry Science.

4. Award of Distinction and Merit

The degree may be awarded with Distinction or with Merit based on outstanding or meritorious achievement measured by GPA and completion in a timely manner as stipulated:

- Distinction shall be awarded for a GPA in the range 8.0-9.0;
- Merit shall be awarded for a GPA in the range 5.5-7.9; and
- No candidate will be eligible for Distinction or Merit where an extension in time, as set out in Regulation 5, has been required.

5. Time Limitation for Degree Completion and Suspension of Study

- (a) Candidates enrol for full-time study unless they have applied in writing and been approved by the Dean of Engineering and Forestry for

part-time study.

- (b) Candidates must 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 to the Dean of Engineering and Forestry for a suspension. Where approved, this will extend the time limitation for the completion of the degree.
- (c) Candidates enrolled for coursework and report or coursework and thesis must complete either:
- Within three years if in full-time study; or
 - Within four years if in part-time study.
- (d) Candidates enrolled for thesis only must complete either:
- Within two years if in full-time study; or
 - Within three years if in part-time study.
- (e) Candidates who have an approved suspension in study may be required to undertake a preparatory programme prior to the resumption of their studies. Any preparatory programme of study must be completed while on suspension, and immediately prior to the end of their suspension.

Note: Preparatory programmes of study will not normally be required where the suspension is for a calendar year or less.

6. Subjects in Other Degrees

- (a) A candidate may offer up to 30 points of coursework not on Schedule A of the degree for Master of Forestry Science.
- (b) A candidate enrolled in any subject that is also a subject of examination for another degree shall comply with the regulations for that degree relating to prerequisites, combinations of subjects, and practical work, as are applicable to that subject.

7. Thesis Requirements

Candidates must follow the requirements of the General Course and Examination Regulations Part L, and the Guidelines for Master's Thesis Work, and to the Library Guide for the Presentation of Theses.

8. Award of PGDipFor instead of MForSc

Subject to approval of the Dean of Engineering and Forestry, a candidate may transfer from the Master of Forestry Science to the Postgraduate Diploma in Forestry.

9. Award of MForSc instead of PhD

Where a thesis has been presented for the Degree of Doctor of Philosophy in the School of 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 Forestry Science. In this case the Dean of Engineering and Forestry may, if required for the award of the degree, exempt the coursework component of the degree.

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.

Schedule to the Regulations for the Degree of Master of Forestry Science

For full course information, go to www.canterbury.ac.nz/courses

Course Code	Course Title	Pts	2017	P/C/R/RP/EQ
FORE 422	Forest Harvest Planning	15	S1	P: FORE 205 (01 Jan 2010 - present) or FORE 305 (01 Jan 2009 - present) or FORE 305 (01 Jan 2009 - present) R: ENFO 422
FORE 423	Forest Transportation and Road Design	15	S2	P: FORE 205 or FORE 305 R: ENFO 423
FORE 426	Forest Products Marketing and International Trade	15	S2	
FORE 435	Forest Economics 2	15	S1	P: FORE 215 or subject to approval of the Head of Department. R: FORE 211, FORE 425
FORE 436	Forest Tree Breeding	15	S1	P: FORE 219, FORE 222 and FORE 224 R: FORE 408 (2006-2007)
FORE 443	Biosecurity Risk Management	15	S2	R: BIOS 201
FORE 447	Environmental Forestry	30	S2	P: Subject to approval to the Chair, Forestry Board of Studies R: FORE 444, FORE 445, BIOL 379
FORE 610	Research Methods	15	S1 S2	P: Subject to approval by the Head of School
FORE 616	Restoration Ecology	30	S1	P: Subject to approval of the Head of Department.
FORE 618	Wood Quality	15	S2	P: Subject to approval by the Head of School.
FORE 619	Wood Processing	15	S2	P: Subject to approval by the Head of School R: FORE 327 , ENFO 327
FORE 624	Plantation Silviculture	30	S1	P: Subject to approval of the Head of Department. R: FORE 631
FORE 641	Plantation Forest Management	30	S2	P: Subject to approval by the Head of School. R: FORE 632, FORE 633
FORE 642	Advanced IT Applications in Forestry and Natural Resource Management	15	S1	P: Subject to approval of Head of School R: FORE 342
FORE 643	Modelling for Forest Management	15	S1 S2	P: Subject to approval by the Head of School
FORE 679	M.For.Sc. Report	60	A S1 S2	P: Subject to approval of the Head of Department.

The Degree of Master of Human Interface Technology (MHIT)

See also *General Course and Examination Regulations*.

1. Qualifications Required to Enrol in the Degree

Every candidate for the Degree of Master of Human Interface Technology shall follow a course of study approved by the Dean of Engineering and Forestry and the Director of the Postgraduate Studies as laid down in these Regulations or those consistent with the regulations in the relevant Calendar at the time they began their candidacy. Where specific regulations require approval then these shall be by the Dean of Engineering and Forestry unless otherwise stated. In special circumstances the Dean of Engineering and Forestry may modify specific aspects of the degree regulations for individual candidates.

2. Qualifications Required to Enrol in the Degree

A candidate shall have:

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

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.*

3. Structure of the Degree

The degree must be completed by:

- (a) 30 points of coursework selected from the Schedule; and
- (b) A 90 point thesis, HITD 690.

4. Time Limitation for Degree Completion and Suspension of Study

- (a) Candidates must enrol for full-time study only and cannot undertake part-time study.
- (b) Candidates must be enrolled 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. Where approved, this will extend the time limitation for the completion of the degree.
- (c) Candidates must complete within 18 months of study, unless an extension in time has been approved.
- (d) Candidates who have an approved suspension in study may be required to undertake a preparatory programme prior to the resumption of their studies. Any preparatory programme of study must be completed while on suspension, and immediately prior to the end of their suspension.

Note: Preparatory programmes of study will not normally be required where the suspension is for a calendar year or less.

5. Master of Human Interface Technology with Distinction

Candidates who obtain a GPA of 8.0 or more in their programme of study and complete within 12 months will be eligible for the award of MHIT with Distinction.

6. Theses

Candidates must follow the requirements of the General Course and Examination Regulations Part L, and the Guidelines for Master's Thesis Work, and to the Library Guide for the Presentation of Theses.

7. Transfer from MHIT to PhD

Where a candidate has demonstrated high research potential and has the support of the Postgraduate Director of Studies, the candidate may apply to transfer to a PhD in Human Interface Technology, with such backdating of research thesis enrolment as may be approved by the Dean of Postgraduate Research. If approved the Masters degree will be abandoned.

8. Award of a MHIT instead of a PhD

Where a thesis has been presented for the degree of PhD 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.

Schedule to the Regulations for the Degree of Master of Human Interface Technology

Course Code	Course Title	Pts	2017	P/C/R/RP/EQ
HITD 602	Human Interface Technology - Design and Evaluation	15	S1 S2	P: Subject to Approval of the Dean of Engineering and Forestry R: HITD 601
HITD 603	Human Interface Technology - Prototyping and Projects	15	S1 S2	P: Subject to Approval of the Dean of Engineering and Forestry R: HITD 601

Postgraduate Certificate in Engineering (PGCertEng)

See also General Course and Examination Regulations.

1. Certificate Programmes

Every candidate for the Degree of Postgraduate Certificate in Engineering shall follow a course of study approved by the Dean of Engineering and Forestry and Director of Postgraduate Studies as laid down in these Regulations, or those consistent with the regulations in the relevant Calendar at the time

they began their candidacy. In special circumstances the Dean of Engineering and Forestry may modify specific aspects of the degree regulations for individual candidates.

- (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, Mathematics and Statistics, and Mechanical Engineering.
- (b) It may be awarded endorsed in the following programmes:
 - i. Civil Engineering
 - ii. Construction Management
 - iii. Earthquake Engineering
 - iv. Fire Engineering;
 - v. Mechanical Engineering
 - vi. Transportation Engineering.

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. The courses must be selected as follows:
 - i. courses with a total course weighting of not less than 30 points must be selected from the courses listed in Schedule B of the Master of Engineering regulations; and
 - ii. any remaining courses may be from Schedule C of the Master of Engineering Regulations.
- (b) Each programme of study must be approved by the Head of Department or Director of Studies and the Dean of Engineering and Forestry.

Note: Please refer to the Transportation Engineering endorsement for transition regulations for 2013.

4. Full-time and Part-time Enrolment

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

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

See Regulation 3 above.

Schedule to the Regulations for the Postgraduate Certificate in Engineering (Endorsed)

For full course information, go to www.canterbury.ac.nz/courses

Civil Engineering

Courses with a total course weighting of not less than 45 points must be selected from the ENCI, ENCM, ENEQ or ENTR courses.

Construction Management

Courses with a total course weighting of not less than 45 points must be selected from the Construction Management courses.

Earthquake Engineering

Courses with a total course weighting of not less than 45 points must be selected from the Earthquake Engineering courses.

Fire Engineering

- (a) ENFE 601 Structural Fire Engineering
- (b) ENFE 602 Fire Dynamics
- (c) ENFE 603 Fire Safety systems

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

Should 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.

Mechanical Engineering

Courses with a total course weighting of not less than 45 points must be selected from the ENME courses.

Transportation Engineering

Courses with a total course weighting of not less than 45 points must be selected from the Transportation Engineering (ENTR) courses. Subject to approval of the Dean of Engineering and Forestry a candidate may offer postgraduate course(s) offered in the Transportation Engineering Programme at the University of Auckland or other approved university in lieu of no more than 15 points of the required course work.

Notes:

1. *Candidates without a suitable background in Transportation Engineering will be required to include ENTR 401 as one of the required courses.*
2. *Not all courses will be offered in any one year.*

Postgraduate Diploma in Forestry (PGDipFor)

See also General Course and Examination Regulations

1. Requirements of the Degree

Every candidate for the Postgraduate Diploma in Forestry shall follow a course of study approved by the Dean of Engineering and Forestry and the Postgraduate Director of Studies (Forestry) as laid

down in these Regulations, or those consistent with the regulations in the relevant Calendar at the time they began their candidacy. In special circumstances the Dean of Engineering and Forestry may modify aspects of the degree regulations for individual candidates.

2. Qualifications Required to Enrol in the Degree

Every candidate shall have:

- (a) either
 - i. have qualified for the award of a bachelor's degree in Forestry or a related area of study in New Zealand; or
 - ii. have qualified for the award of a bachelor's or higher degree in other areas and have gained relevant experience in a Forestry related area; or
 - iii. have been admitted ad eundem statum as entitled to proceed to the Postgraduate Diploma; and
- (b) have been approved as a candidate by the Dean of Engineering and Forestry.

Note: The standard of achievement in undergraduate studies and relevance of background are the main criteria for approval.

3. Structure of the Degree

The degree must be completed by 120 points of coursework selected from the Schedule to the Master of Forestry Science regulations with the exception of the MForSc Report.

4. Award of Distinction

The degree may be awarded with Distinction based on outstanding or meritorious achievement measured by GPA and completion in a timely manner as stipulated:

- (a) Distinction shall be awarded for a GPA in the range 8.0-9.0.
- (b) No candidate will be eligible for Distinction where an extension in time, as set out in Regulation 5, has been required.

5. Time Limitation for Degree Completion and Suspension of Study

- (a) Candidates enrol for full-time study unless they have applied in writing and been approved by the Dean of Engineering and Forestry for part-time study.
- (b) Candidates must 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 to the Dean of Engineering and Forestry for a suspension. Where approved, this will extend the time limitation for the completion of the degree.
- (c) Candidates enrolled must complete either:
 - i. Within one year if in full-time study; or
 - ii. Within two years if in part-time study.

- i. Within one year if in full-time study; or
- ii. Within two years if in part-time study.

Note: In exceptional circumstances full-time enrolment may be extended to 18 months.

6. Subjects in Other Degrees

- (a) A candidate may offer up to 15 points of coursework not on the Schedule to the degree for Master of Forestry Science.
- (b) A candidate enrolled in any subject that is also a subject of examination for another degree shall comply with the regulations for that degree relating to prerequisites, combinations of subjects, and practical work, as are applicable to that subject.

7. Award of PGDipFor instead of MForSc

- (a) Where a candidate has followed a course of study to qualify for the degree of Master of Forestry Science by Examination and Report or Examination and Thesis and the examiners are of the opinion that the award of that degree is not justified, they may recommend the award of the Postgraduate Diploma in Forestry.
- (b) Subject to approval of the Dean of Engineering and Forestry, a candidate may transfer from the Master of Forestry Science to the Postgraduate Diploma in Forestry.

8. Award of PGDipFor instead of MIntFor

Subject to the approval of the Dean of Engineering and Forestry, a candidate may transfer from the Master of International Forestry to the Postgraduate Diploma in Forestry.

9. Transfer to MForSc

A candidate who completes the Postgraduate Diploma in Forestry is eligible for enrolment in the second year of a two-year MForSc programme, subject to the availability of staff and resources.