BE BACHELOR OF ENGINEERING

Faculty of Engineering

BE Specialisations

Electronic and Computer Systems Engineering focuses on the development of electronic based systems to solve real-world problems. These systems are not only based on their physical components, but often also on the signals flowing in the system and the embedded software that provides the system's intelligence.

Network Engineering centres on the design of distributed and networked solutions. Graduates will understand modern communication technologies, network protocols, middleware and software development. They will be able to design, build and configure modern networks and networked systems. The programme emphasises the interaction between networked applications and their environment.

Software Engineering focuses on the design, implementation and maintenance of software systems that behave reliably and efficiently, and are affordable to develop and maintain. The programme draws on technologies for both small and large-scale development, emphasises both flexible and agile development, includes a range of methodologies and considers human factors.

First-year example:

BE specialising in Networking Engineering

1/3	2/3
COMP 102 15 pts	COMP 103 15 pts
ENGR 101 15 pts	MATH 161 15 pts
MATH 151 15 pts	PHYS 122 15 pts
PHYS 132 15 pts	STAT 193 15 pts
120 points	

Core course | Specialisation | Elective

Degree Requirements

- At least 120 points must be at 400 level or above from the BE schedule
- Three approved courses from any degree schedule must be included, including at least one course above 100 level
- Work experience of 800 hours beginning after the second year of study
- Entry into second year is based on grades in the first-year courses.

Specialisation

- You are required to select one specialisation from the column on the left.

The BE core courses are separated into three parts:

Part 1 – First-year core courses
Part 2 – Compulsory Engineering courses (start in the second year)
Part 3 – Three approved courses from any Bachelor's degree, including at least one course above 100-level (first year) and forming a coherent unit of study (e.g. three Design courses or three Management courses)

There are additional core courses for each specialisation (see overleaf).

Electives

- If you have space left over in your first year after taking your required courses you can include electives.

Tips

- For the Electronic and Computer Systems Engineering specialisation, it is advisable to have achieved 18 credits in Mathematics with Calculus and 14 credits in Physics at NCEA Level 3.
- For the Network Engineering and Software Engineering specialisations, it is advisable to have achieved 16 credits in Mathematics at NCEA Level 3 and taken Physics to NCEA Level 3.
- If you do not meet the requirements above, there are introductory courses which you can take to provide you entry into these core courses – please refer to pages 3-4.

For more information on the BE, please visit **www.victoria.ac.nz/engineering** or refer to the *Guide to Enrolment*. For course details, prescriptions and timetables, visit **www.victoria.ac.nz/coursecatalogue.**

TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI VICTORIA UNIVERSITY OF WELLINGTON

Compulsory first-year courses for all BE students

Part 1 – First Year Course Courses	
COMP 102 (1/3) (2/3) Introduction to Computer Program Design 15 pts **ENGR 101 (1/3)** Engineering Technology 15 pts	**COMP 103 (1/3) (2/3)** Introduction to Data Structures and Algorithms 15 pts

Additional first-year core courses for each specialisation

Electronic and Computer Systems Engineering	
MATH 151 (1/3) Algebra 15 pts **PHYS 114 (1/3) (2/3)** Physics 1A 15 pts	**MATH 142 (2/3)** Calculus 1B 15 pts **PHYS 115 (2/3)** Physics 1B 15 pts

Network Engineering	
MATH 151 (1/3) Algebra 15 pts	**MATH 161 (2/3)** Discrete Mathematics and Logic 15 pts
One of:	
STAT 193 (1/3) (2/3) Statistics for Natural and Social Sciences 15 pts	**MATH 177 (2/3)** Probability and Decision Modelling 15 pts
And one of:	
PHYS 114 (1/3) (2/3) Physics 1A 15 pts	**PHYS 115 (2/3)** Physics 1B 15 pts **PHYS 122 (2/3)** Introduction to Physics and Applied Physics 15 pts

Software Engineering	
	MATH 161 (2/3) Discrete Mathematics and Logic 15 pts
	SWEN 102 (2/3) Software Engineering 15 pts
One of:	
STAT 193 (1/3) (2/3) Statistics for Natural and Social Sciences 15 pts	**MATH 177 (2/3)** Probability and Decision Modelling 15 pts
And one of:	
PHYS 114 (1/3) (2/3) Physics 1A 15 pts	**PHYS 115 (2/3)** Physics 1B 15 pts **PHYS 122 (2/3)** Introduction to Physics and Applied Physics 15 pts

100-Level Prerequisites for Majors and Courses

COMPUTER SCIENCE AND ENGINEERING

COMP 102 – Introduction to Computer Program Design: assumes good computer skills but does not assume any background in computer programming.
COMP 103 – Introduction to Data Structures and Algorithms: you need to pass COMP 102 before enrolling in COMP 103
ENGR 101 – Engineering Technology: is open to all students enrolling in the BE in 2012.

MATHEMATICS

MATH 132 – Introduction to Mathematical Thinking: For students with little or no Maths background; will be offered in Trimester 3 of 2010 and Trimester 1 of 2012 and will provide entry to MATH 141, 151 and 161. It is advisable to take MATH 132 in Trimester 3 of 2011 if required.
MATH 141 – Calculus 1A: MATH 132 or at least 16 NCEA Level 3 Maths credits.
MATH 142 – Calculus 1B: MATH 141 or at least 18 NCEA Level 3 Maths credits with Calculus.
MATH 151 – Algebra: MATH 132 or 16 NCEA Level 3 Maths credits.
MATH 161 – Discrete Mathematics and Logic: MATH 132 or 16 NCEA Level 3 Maths credits.
MATH 177 – Probability and Decision Modelling: Successful completion of MATH 132 or 16 NCEA level 3 Calculus or Statistics credits, including 12 from Calculus.

PHYSICS

PHYS 114 – Physics 1A: At least 14 credits in achievement standards in NCEA Level 3 Physics or PHYS 122 or 131, **AND** at least 14 credits of NCEA level 3 Mathematics (Calculus) or MATH 141, or equivalent backgrounds in Physics and Calculus.
PHYS 115 – Physics 1B: PHYS 114 or a B+ pass in PHYS 131 or 122 **AND** at least 14 credits of NCEA level 3 Mathematics (Calculus) or MATH 141, or equivalent backgrounds in Physics and Calculus.
PHYS 122 – Introduction to Physics and Applied Physics: This is an open entry course which will meet the Physics prerequisite for PHYS 114.

STATISTICS

STAT 193 – Statistics for Natural and Social Sciences: this assumes no previous knowledge of Statistics, but it will be beneficial to have taken NCEA Level 2 Maths.

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