Faculty of ENGINEERING Stream Details

In Semester 1, students in the Engineering stream undertake the core Academic Skills course (REGZ9075), the Mathematics Skills 1 course (REGZ9070) and Introduction to the world wide web (COMP1000). In Semester 2, students undertake Communicating in Engineering (ENGG0360), Mathematics Skills 2 (REGZ9072) and Fundamentals of Physics (PHYS1111). On successful completion of the first two Semesters, in Semester Three (ie Semester 1 2014) Engineering stream students enrol in Fundamentals of Mathematics B (MATH 1011). The program must be completed within the 18-month period.

Students will gain credit toward the degree of Bachelor of Engineering for ENGG0360.

An overall WAM of 65 with 65 for each of MATH1011 and PHYS1111 is required for entry into the Bachelor of Engineering at UNSW.

Semester 1

Academic Skills 1 (REGZ9075)
Academic Skills 1 (REGZ9075) is compulsory for ALL UNSW Preparation Program students. No prior knowledge is required, except for English Proficiency. Topics covered in the course include:

• orientation to the academic system
• time management and critical analysis skills
• preparing seminar presentations
• essay writing
• note taking from lectures and written material
• examination techniques
• introduction to online learning

Mathematics Skills 1 (REGZ9070)
This course is a compulsory component of the Engineering stream. This course is designed to provide a level of competency in mathematics for students who have not studied HSC Mathematics (or equivalent) at high school.

Introduction to the world wide web, spreadsheets and databases (COMP1000)

Spreadsheets and databases are two of the most commonly used and powerful computer tools yet they are often poorly utilised and the reasons for using one rather than the other are poorly understood.

This course aims to explain in straightforward terms the concepts underlying both of these powerful pieces of software so that students can exploit them effectively for both their studies and future careers. The course investigates how to design and implement effective spreadsheet

and database applications. Students should also be able to transfer these skills to other similar spreadsheet and database packages. Lab access will be provided, however students will be expected to have personal copies of Microsoft Excel and Microsoft Access on their own computers.

Semester 2

Mathematics Skills 2 (REGZ9072)*
This course is designed to provide a level of competency in mathematics for students who have not studied HSC Mathematics (or equivalent) at high school and who wish to apply to UNSW programs with assumed knowledge in Mathematics.

* A student who attains a distinction level pass or higher in REGZ9070 Maths Skills in Semester One and successfully completes REGZ9075 and COMP1000 may be permitted to take MATH1011 in Semester 2.

Communicating in Engineering (ENGG0360)
The course examines the expectations and conventions applying to spoken and written communications within engineering and science including different textual genres, aspects of rhetoric, the ethical use of material, formal language structure; grammar and syntax.

Students will improve their ability to collect and build ideas into coherent arguments, learn how to construct texts that demonstrate critical thinking, and develop their communication skills (speaking, listening, writing and reading), in preparation for subsequent study in a professional context.
Fundamentals of Physics (PHYS1111)
This is an introductory level course in physics for students from all disciplines. The course covers the methods of Physics, including the following topics:

- the description of motion;
- forces and momentum;
- the dynamics of particles;
- kinetic and potential energy;
- the conservation of energy;
- temperature and thermal equilibrium;
- specific and latent heat;
- thermal energy;
- fluids and fluid flow;
- oscillations and simple harmonic motion;
- waves, wave reflection, refraction and interference;
- the wave nature of light;
- electric fields and charge;
- electric potential and energy;
- electric currents;
- magnetism;
- electromagnetic induction and Faraday’s law;
- early quantum theory and models of the atom;
- nuclear physics and radioactivity;
- nuclear energy.

Semester 3

Fundamentals of Mathematics B (MATH 1011)
- Functions (and their inverses), limits, asymptotes, continuity;
- differentiation and applications;
- integration, the definite integral and applications;
- inverse trigonometric functions;
- the logarithmic and exponential functions and applications;
- sequences and series;
- mathematical induction;
- the binomial theorem and applications;
- introduction to probability theory;
- introduction to 3-dimensional geometry;
- introduction to linear algebra

Assumed knowledge: A level of knowledge equivalent to achieving a mark of at least 60 in HSC Mathematics. Students who have taken General Mathematics will not have achieved the level of knowledge which is assumed in this course.