Bachelor of Engineering (EN40)

Year offered: 2011
Admissions: Yes
CRICOS code: 056529D
Course duration (full-time): 4 years
Domestic Fees (indicative): 2011: CSP $3,878 (indicative) per semester
International Fees (indicative): Refer to majors
Domestic Entry: February and July
International Entry: February and July
QTAC code: 412502
Past rank cut-off: 81
Past OP cut-off: 10
OP Guarantee: Refer to majors
Assumed knowledge: English (4, SA) and Maths B (4, SA)
Preparatory studies: For information on acquiring assumed knowledge visit http://www.qut.edu.au/assumed-knowledge
Total credit points: 384
Standard credit points per full-time semester: 48
Course coordinator: Dr R.Mahalinga-Iyer
Campus: Gardens Point

Majors
- Bachelor of Engineering (Aerospace Avionics)
- Bachelor of Engineering (Mechatronics)
- Bachelor of Engineering (Medical)
- Bachelor of Engineering (Civil)
- Bachelor of Engineering (Civil and Construction)
- Bachelor of Engineering (Mechanical)
- Bachelor of Engineering (Software Engineering)
- Bachelor of Engineering (Civil and Environmental)
- Bachelor of Engineering (Electrical)

Why choose this course?
Engineering at QUT has a well-established and highly regarded reputation for teaching and produces graduates who are highly sought after by industry.

Career outcomes
When you graduate from this degree you will have the opportunity to work in a number of fields. Depending on your choice of primary major, these may include process engineering, consulting engineer or a project engineer with an average starting salary of around $42,500.

Practical teaching
You will be exposed to ideas and experience of guest lecturers from the real world, industry professionals and academic staff with relevant industry experience.

Industry links
The course has close links with relevant local and overseas industries. Many of the teaching staff are involved in research with government and industry sectors, ensuring the program is relevant to industry and giving you the opportunity to work on real projects during your studies.

Course structure
You will receive a thorough grounding in the engineering sciences and hands-on practical experience in real-world problem solving and application of theory in a program that is strongly orientated towards industry.

Facilities / technology
Our programs are responsive and relevant to the changing needs of the industry and the society we live in. Experiential and practical learning opportunities are provided through specially designed learning environments and traditional laboratory areas. Facilities that integrate virtual and web based material with physical equipment ensure that students get the opportunity to learn by doing which is an important part of engineering education.

Convenience
You will study at QUT's Gardens Point campus in the centre of Brisbane, within easy walking distance to public transport, including buses, trains and ferries.

Who should do this course?
If you are interested in any of the following, you may enjoy a career in Engineering:
- technical and engineering activities.
- mathematics, science and technology.
- working with your hands.

Recommended Study
Chemistry, Maths C and Physics.

Professional Recognition
Full professional accreditation from Engineers Australia has been given for all primary majors in this course. In addition, Software Engineering also has full professional accreditation with the Australian Computer Society.

Second Majors
Depending on your choice of primary major, you may have the opportunity to undertake a second major or two minors. A second major is an established set of eight units (96 credit points) in the same discipline. A minor is an established set of four units (48 credit points) in the same discipline or from anywhere in the University. You will select your primary
major, second major and/or minors after the completion of your first year.

**Special Course Requirements**
A candidate for the degree of Bachelor of Engineering must obtain at least 60 days of industrial experience/practice in an engineering environment as approved by the course coordinator.

**International Student Entry**
International students must maintain an enrolment program that will allow them to complete their course within the specified timeframe of their eCoE (electronic Confirmation of Enrolment).

**Further Information**
Faculty of Built Environment and Engineering - Phone +61 7 3138 1433, Fax +61 7 3138 5280, email: bee.enquiries@qut.com

**Deferment**
Domestic students can defer their offer in this course for one year. In exceptional circumstances up to 12 months of additional deferment may be granted.

Find out more on deferment.

Year 1 - February entry 2011 onwards (common for all Engineering majors)

<table>
<thead>
<tr>
<th>Year 1 - Semester 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENB100  Engineering and Sustainability</td>
</tr>
<tr>
<td>ENB110  Engineering Statics and Materials</td>
</tr>
<tr>
<td>ENB130  Mechanical and Thermal Energy</td>
</tr>
<tr>
<td>MAB125  Foundations of Engineering Mathematics OR</td>
</tr>
<tr>
<td>MAB126  Mathematics for Engineering 1</td>
</tr>
</tbody>
</table>

Year 1 - Mid-year entry 2011 onwards (common for all Engineering majors)

<table>
<thead>
<tr>
<th>Year 1 - Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENB120  Electrical Energy and Measurements</td>
</tr>
<tr>
<td>ENB150  Introducing Engineering Design</td>
</tr>
<tr>
<td>ENB200  Introducing Engineering Systems</td>
</tr>
<tr>
<td>MAB126  Mathematics for Engineering 1 OR</td>
</tr>
<tr>
<td>MAB127  Mathematics for Engineering 2</td>
</tr>
</tbody>
</table>

**Potential Careers:**
Biomechanical Engineer, Biomedical Engineer, Civil Engineer, Computer Systems Engineer, Electrical and Computer Engineer, Electrical Engineer, Engineer, Mechanical Engineer, Medical Engineer.

**UNIT SYNOPSES**

**ENB100 ENGINEERING AND SUSTAINABILITY**
This unit introduces you to the essential professional skills and practices of engineers in the context of sustainable development.

**Antirequisites:** DEB100 and UDB100  **Credit points:** 12  **Contact hours:** 3 per week  **Campus:** Gardens Point  **Teaching period:** 2011 SEM-1 and 2011 SEM-2

**ENB110 ENGINEERING STATICS AND MATERIALS**
Credit points: 12  Contact hours: 4 per week  Campus: Gardens Point  Teaching period: 2011 SEM-1 and 2011 SEM-2

**ENB120 ELECTRICAL ENERGY AND MEASUREMENTS**
This unit introduces you to basic electrical circuit concepts. It requires you to perform circuit analysis, circuit synthesis, and the measurement and testing of relevant quantities within circuits.

**Credit points:** 12  **Contact hours:** 3 per week  **Campus:** Gardens Point  **Teaching period:** 2011 SEM-2 and 2011 SUM

**ENB130 MECHANICAL AND THERMAL ENERGY**
Engineers work with numerous kinds of systems where consideration must be given to the motion within, and associated energy of, the system. This unit introduces the student to the concepts of mechanical and thermal energy in the context of real engineering systems. The inter-relationships of between forces, motion and energy is
described as related to the flow of energy within these engineering systems. After an introduction to engineering units, concepts and data, Newton’s first and second laws are used in the description of system motion and the concepts of force and energy, conservation of momentum and conservation of energy are introduced and described. Thermodynamic processes, certain thermo-physical parameters and the first and second law of thermodynamics are introduced and used to describe simple engineering systems. This is then expanded to include the generation and transport of energy through these systems in terms of convection, conduction and radiation heat transfer.

**Equivalents:** PCB150  **Credit points:** 12  **Contact hours:** 4 per week  **Campus:** Gardens Point  **Teaching period:** 2011 SEM-1

**ENB150 INTRODUCING ENGINEERING DESIGN**

This unit introduces you to engineering design. A multi-disciplinary approach is taken with an emphasis in engineering systems, technical design and project management.

**Assumed knowledge:** ENB110 is assumed knowledge.  
**Credit points:** 12  **Contact hours:** 4 per week  **Campus:** Gardens Point  **Teaching period:** 2011 SEM-2

**ENB200 INTRODUCING ENGINEERING SYSTEMS**

This unit will enable you as a graduating Built Environment and Engineering professional to take active and positive steps to transform professional practice in ways that promote the sustainability of our planet, our economy and our society. As future professionals in the fields of Design, Urban Development and Engineering Systems, you will need to understand and apply the concepts of sustainability in your professional practice if we are to achieve sustainable development in the 21st Century.

**Credit points:** 12  **Campus:** Gardens Point  **Teaching period:** 2011 SEM-2

**MAB125 FOUNDATIONS OF ENGINEERING MATHEMATICS**

A sound understanding of the language and techniques of mathematics is essential for any quantitative discipline. This unit provides an introduction to the aspects of mathematics especially applicable to engineering and is directed at those students whose mathematics preparation does not include Maths C or an equivalent. For this purpose, it’s located in first semester of the first year of your course. This unit introduces you to the fundamental mathematical ideas of function, calculus, vectors and matrices, through the use of contextualised engineering related problems. In solving these problems you will develop both an understanding of the mathematical concepts and competency in appropriate solution methods.

**Antirequisites:** MAN120  **Assumed knowledge:** Grade of at least Sound Achievement in Senior Mathematics B (or equivalent) or MAB105 is assumed knowledge  
**Equivalents:** MAB100, MAB120, MAB180  
**Credit points:** 12  **Contact hours:** 4 per week  **Campus:** Gardens Point  **Teaching period:** 2011 SEM-1, 2011 SEM-2 and 2011 SUM

**MAB126 MATHEMATICS FOR ENGINEERING 1**

Building upon the foundations established in MAB125 or Senior Maths C, this unit addresses the significant role of mathematical modelling using differential equations for the description and resolution of simple and complex problems relevant to the discipline of engineering. The formulation and solution of such problems is supported by appropriate advanced mathematical concepts used for function approximation, differentiation and integration. The unit is located in first year for application in core engineering units throughout the rest of the course. Undertaking this unit will allow you to develop your problem solving skills, especially in the context of mathematical techniques applied to ordinary differential equations used to model engineering relevant problems.

**Antirequisites:** MAN121  **Assumed knowledge:** Grade of at least Sound Achievement in Senior Mathematics C (or equivalent) or MAB125 or MAB180 or MAB120 is assumed knowledge  
**Equivalents:** MAB111, MAB121, MAB131, MAB182  
**Credit points:** 12  **Contact hours:** 4 per week  **Campus:** Gardens Point  **Teaching period:** 2011 SEM-1, 2011 SEM-2 and 2011 SUM

**MAB127 MATHEMATICS FOR ENGINEERING 2**

Building upon the foundations established in MAB125 or Senior Maths C, this unit addresses the significant role of mathematical modelling using vectors, matrices and multivariable calculus for the description and resolution of simple and complex problems relevant to the discipline of engineering. The formulation and solution of such problems is supported by appropriate advanced mathematical concepts used for function approximation, differentiation and integration. You will complete this unit in first year or first semester of second year depending on your initial maths background. Undertaking this unit will allow you to develop your problem solving skills, especially in the context of advanced mathematical techniques applied to vectors and matrices used to model engineering relevant problems.

**Assumed knowledge:** Grade of at least Sound Achievement in Senior Mathematics C (or equivalent) or MAB125 or MAB120 or MAB131 or MAB182 is assumed knowledge  
**Equivalents:** MAB112, MAB122, MAB132  
**Credit points:** 12  **Contact hours:** 4 per week  **Campus:** Gardens Point  **Teaching period:** 2011 SEM-1, 2011 SEM-2 and 2011 SUM