Master of Engineering (Systems) (EN50)

Year offered: 2010
Admissions: Yes
CRICOS code: 060811A
Course duration (full-time): 1 year
Course duration (part-time): 2 years
Domestic fees (indicative): 2010: Full fee tuition $8,500 (indicative) per semester
International Fees (indicative): 2010: $11,000 (indicative) per semester
Domestic Entry: February and July
International Entry: February and July
Total credit points: 96
Standard credit points per full-time semester: 48
Course coordinator: Associate Professor Mark Ho (replacing Prof Jay Yang from September 2010)
Discipline coordinator: Dr Michael Mason (Course Leader) - Please refer course specific enquiries to Course Leader.
Campus: Gardens Point

Overview
This course provides a developmental path for professional engineers to master skills in selected engineering disciplines and the interaction of those disciplines. It aims to enhance your skills in dealing with more complex engineering problems and interactions between engineering technical domains and the broader context in which they exist. Systems engineering is concerned with the design, operation and maintenance of electrical and mechanical systems that are employed in medical, aerospace, industrial settings, and in communications technology. This course advances your capabilities in information literacy, problem solving, application of theory, engineering design, communication, and interaction with other professionals. Early exit with a Graduate Diploma is available upon completion of two core units and two specialisation units in the course.

Entry Requirements
A four-year full-time bachelor degree in a relevant engineering discipline area and a grade point average of 5.0 or more (on a 7-point scale) in that study, or an equivalent qualification determined by the Faculty. English language requirements for the course are an English Language Proficiency level in accordance with QUT requirements (IELTS score of 6.0 with no sub-band below 6.0) if English is not your first language. Applicants from a non-relevant background may gain entry through successful completion of BN85, the Graduate Certificate in Built Environment and Engineering.

If requested, supply documentation of professional work experience as detailed in Completing the PG Form.

Career Outcomes
Graduates may choose to become a specialist systems engineering practitioner within their chosen professional field, or use the skills and knowledge gained to diversify their capabilities across a broader spectrum of systems-related disciplines. In particular, this course provides graduates with the skills and knowledge to become a leader, manager and innovator in the chosen discipline. Graduates may typically work in government, semi-government or private organisations as electrical, mechanical, biomedical or avionics engineers.

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).

Advanced Standing
Students completing two Masters courses in the Faculty of Built Environment and Engineering will be eligible to apply for a maximum of 24 credit points advanced standing in the second course on the basis of common units already completed. Such students will be required to complete a minimum of 72cp to be determined in consultation with the nominated Course Leader, to achieve the second Masters.

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

Full-time Course structure - February Entry

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<thead>
<tr>
<th>Year 1, Semester 1</th>
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<tbody>
<tr>
<td>BEN610 Project Management Principles</td>
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<tr>
<td>ENN520 Advanced Signal Processing and Systems</td>
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<tr>
<td>ENN540 Engineering Optimisation</td>
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<tr>
<td>AMN435 Communication, Negotiation and Leadership</td>
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<td>OR</td>
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<tr>
<td>GSN235 Communication, Negotiation and Leadership</td>
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<tr>
<th>Year 1, Semester 2</th>
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<tr>
<td>BEN710 Sustainable Practice in Built Environment and Engineering</td>
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<tr>
<td>BEN910 Integrated Project</td>
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<tr>
<td>ENN560 System Design</td>
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ENN580 Control Systems

**Full-time Course structure - Mid Year Entry**

**Year 1, Semester 2**
- BEN710 Sustainable Practice in Built Environment and Engineering
- ENN560 System Design
- ENN580 Control Systems
- AMN435 Communication, Negotiation and Leadership
- GSN235 Communication, Negotiation and Leadership

**Year 2, Semester 1**
- BEN610 Project Management Principles
- BEN910 Integrated Project
- ENN520 Advanced Signal Processing and Systems
- ENN540 Engineering Optimisation

**Part-time Course structure - February Entry**

**Year 1, Semester 1**
- BEN610 Project Management Principles
- ENN520 Advanced Signal Processing and Systems

**Year 1, Semester 2**
- ENN560 System Design
- ENN580 Control Systems

**Year 2, Semester 1**
- ENN540 Engineering Optimisation
- AMN435 Communication, Negotiation and Leadership
- GSN235 Communication, Negotiation and Leadership

**Year 2, Semester 2**
- BEN710 Sustainable Practice in Built Environment and Engineering
- AMN435 Communication, Negotiation and Leadership
- OR
- GSN235 Communication, Negotiation and Leadership

**Year 3, Semester 1**
- BEN910 Integrated Project
- ENN540 Engineering Optimisation

**Potential Careers:**
Civil Engineer, Electrical and Computer Engineer, Electrical Engineer, Engineering Technologist, Mechanical Engineer, Medical Engineer.

**UNIT SYNOPSES**

**AMN435 COMMUNICATION, NEGOTIATION AND LEADERSHIP**
The unit serves as an introduction to effective leadership, communication, and negotiation processes as fundamental skills in today’s organisations. In particular, it focuses on the increasing importance of such skills for Engineering, Built Environment, Project management and other professionals to bridge cultural boundaries and enhance organisational performance in an increasingly globalised world.

**Credit points:** 12  
**Contact hours:** 3  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-1 and 2010 SEM-2

**BEN610 PROJECT MANAGEMENT PRINCIPLES**
This unit serves as an introduction to project management as a fundamental skill for all postgraduate coursework students in built environment and engineering. It offers an overview of the framework, processes and key knowledge areas of project management.

**Credit points:** 12  
**Contact hours:** 3 per week  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-1

**BEN710 SUSTAINABLE PRACTICE IN BUILT ENVIRONMENT AND ENGINEERING**
Sustainability has become a global agenda that impacts upon our work and everyday life. The unit will introduce principles, challenges and skills for dealing with a diversity of trans-disciplinary issues in sustainable development. By introducing critical sustainability theory and challenging best practices, this unit will prepare you for the impending
changes that are necessary in all built environment and engineering disciplines.

**Credit points:** 12  **Contact hours:** 4 per week  **Campus:** Gardens Point  **Teaching period:** 2010 SEM-2

**BEN910 INTEGRATED PROJECT**
Problems that confront professionals are ill-defined and complex. The ability to define a problem, and collect and analyse relevant information using appropriate research methods is essential to professional practice. From a learning perspective, one of the most effective ways of achieving this is to consolidate and extend previously gained skills through an activity that is relevant to industry and, where possible, is associated with a specific workplace.

**Credit points:** 12  **Campus:** Gardens Point  **Teaching period:** 2010 SEM-1 and 2010 SEM-2

**ENN520 ADVANCED SIGNAL PROCESSING AND SYSTEMS**
The concepts of signals, images and systems arise in a wide variety of fields, and the ideas and techniques associated with these concepts play an important role in such diverse areas of science and technology as communications, aeronautics and astronautics, circuit design, acoustics, seismology, biomedical engineering, process control, and speech and image processing. The field of signal and image processing has grown rapidly in the last few decades and it continues to grow in importance as technologies such as very large scale integration, programmable logic devices and high performance computing make it possible to implement digital signal and image processing systems for many practical applications.

**Credit points:** 12  **Contact hours:** 3 per week  **Campus:** Gardens Point  **Teaching period:** 2010 SEM-1

**ENN540 ENGINEERING OPTIMISATION**
In a society that recognises the impact of resource depletion and industrial activity on the environment, it is critical that professional engineers are equipped with the skills necessary to develop effective engineering conceptual solutions, optimise them, and then deliver them. This highly practical unit will introduce you to a range of advanced tools used in engineering concept development and optimisation, using mathematical and numerical methods.

**Credit points:** 12  **Contact hours:** 3 per week  **Campus:** Gardens Point  **Teaching period:** 2010 SEM-1

**ENN560 SYSTEM DESIGN**
A system comprises a number of elements which interact in order to perform a function that the individual elements could not. The systems engineering methodology considers whole of life cycle development, interactions between system elements, and interactions with other systems. The professional engineer requires the technical skills to implement the system engineering methodology, the ability to interact with other professionals, and to communicate in an appropriate and industry recognised manner.

**Credit points:** 12  **Contact hours:** 3 per week  **Campus:** Gardens Point  **Teaching period:** 2010 SEM-2

**ENN580 CONTROL SYSTEMS**
Feedback control systems form the basis of a large number of systems engineering applications in a diverse range of disciplines, including aerospace, robotics, power systems, and manufacturing. An advanced knowledge of real world control system issues, such as dealing with non-linearities and non-stationary phenomena, is essential for the advanced systems engineering practitioner.

**Credit points:** 12  **Contact hours:** 3 per week  **Campus:** Gardens Point  **Teaching period:** 2010 SEM-2

**GSN235 COMMUNICATION, NEGOTIATION AND LEADERSHIP**

**Prerequisite(s):** Nil  
**Corequisite(s):** Nil  
**Credit points:** 12  
**Contact hours:** 3  
**Campus:** Gardens Point  
**Teaching period:** 2009 SEM-1  
**Incompatible with:** Nil