Program Code

BEDM6

Program Minimum Units

120

Standard Duration

5 Years

Program Faculty

Faculty of Engineering, Computer and Math Sciences

AQF Level

08

Academic Year

2016

These Program Rules should be read in conjunction with the University's policies (http://www.adelaide.edu.au/policies).

Overview

Through this double degree program students can combine the concepts of mechanical engineering with mathematical and computer sciences. The mechanical engineering program has a strong focus on design with a design and build project in second year followed by a more advanced project in third year and a large design / research project in the final year. This program provides a core understanding of mechanical disciplines and problem solving skills. The mathematical and computer sciences program includes a range of mathematics, statistics and computer science courses. In addition to the academic program of study, students must complete a total of 12 weeks of full-time practical experience. Graduates of the program qualify for professional membership of Engineers Australia.

The Bachelor of Engineering (Honours) (Mechanical) / Bachelor of Mathematical and Computer Sciences is an AQF Level 8 qualification with a standard full-time duration of 5 years.

Academic Program Rules for Bachelor of Engineering (Honours) (Mechanical) / Bachelor of Mathematical and Computer Sciences (BE(Hons)(Mech) BMaCompSc)

There shall be a Bachelor of Engineering (Honours) (Mechanical) / Bachelor of Mathematical and Computer Sciences (BE(Hons)(Mech) BMaCompSc).

Qualification Requirements

Academic Program

To qualify for the double degree of Bachelor of Engineering (Honours) (Mechanical) / Bachelor of Mathematical and Computer Sciences, the student must complete satisfactorily a program of study consisting of the following requirements with a combined total of not less than 120 units, comprising:

1. Courses to the value of 96 units from the Bachelor of Engineering (Honours) (Mechanical), including Core courses up to the value of 84 units and Elective courses to the value of 12
Bachelor of Engineering (Honours) (Mechanical) / Bachelor of Mathematical and Computer Sciences

Units
2. Courses to the value of 24 units from the Bachelor of Mathematics and Computer Sciences, including a Computer Science or Mathematics major
3. A total of 12 weeks practical experience approved by the Faculty and of which a minimum 6 weeks should be under the supervision of a professional engineer
4. Unless exempted, international students are required to take ENG 3003 Communication EAL in lieu of either a core or elective course as advised by the Faculty
5. Students who have not undertaken SACE Stage 2 Specialist Mathematics (or equivalent) will be required to enrol in Mathematics IM, followed by Mathematics IA with Mathematics IB taken in Summer Semester to complete the Mathematics requirements at Level I. The satisfactory completion of Mathematics IM is in addition to the normal requirements of the Bachelor of Engineering (Honours)

Bachelor of Engineering (Honours) (Mechanical) / Bachelor of Mathematical and Computer Sciences (Computer Science Major)

To satisfy the requirements for Bachelor of Engineering (Honours) (Mechanical) / Bachelor of Mathematical and Computer Sciences (Computer Science Major) students must complete courses to the value of 120 units.

Mechanical Core

All of the following courses must be completed:
C&ENVENG 1010 Engineering Mechanics - Statics (3 units)
CHEM ENG 1009 Materials I (3 units)
MATHS 1011 Mathematics IA (3 units)
MATHS 1012 Mathematics IB (3 units)
MATHS 2201 Engineering Mathematics IIA (3 units)
MATHS 2202 Engineering Mathematics IIB (3 units)
MATHS 2104 Numerical Methods II (3 units)
MECH ENG 1006 Design Graphics & Communication (3 units)
MECH ENG 1007 Engineering Mechanics - Dynamics (3 units)
MECH ENG 1100 Introduction to Mechanical Engineering (3 units)
MECH ENG 2002 Stress Analysis & Design (3 units)
MECH ENG 2019 Dynamics and Control I (3 units)
MECH ENG 2020 Materials & Manufacturing (3 units)
MECH ENG 2021 Thermo-Fluids I (3 units)
MECH ENG 2100 Design Practice (3 units)
MECH ENG 2101 Mechatronics IM (3 units)
MECH ENG 3027 Engineering Systems Design & Communication (3 units)
MECH ENG 3028 Dynamics & Control II (3 units)
MECH ENG 3030 Structural Design & Solid Mechanics (3 units)
MECH ENG 3101 Applied Aerodynamics (3 units)
MECH ENG 3102 Heat Transfer & Thermodynamics (3 units)
MECH ENG 3103 Manufacturing Engineering & Quality Systems (3 units)
MECH ENG 3105 Sustainability & the Environment (3 units)
MECH ENG 4143A Honours Project Part A (0 units)
MECH ENG 4143B Honours Project Part B (9 units)
COMP SCI 1102 Object Oriented Programming (3 units)

Mechanical Electives

Courses to the value of 12 units from the following:
MECH ENG 4101 Biomechanical Engineering (3 units)
MECH ENG 4102 Advanced PID Control (3 units)
MECH ENG 4104 Advanced Topics in Fluid Mechanics (3 units)
MECH ENG 4105 Advanced Vibrations (3 units)
MECH ENG 4107 Airconditioning (3 units)
MECH ENG 4111 CFD for Engineering Applications (3 units)
MECH ENG 4112 Combustion Technology & Emission Control (3 units)
MECH ENG 4114 Corrosion: Principles & Prevention (3 units)
MECH ENG 4115 Engineering Acoustics (3 units)
MECH ENG 4118 Finite Element Analysis of Structures (3 units)
MECH ENG 4120 Fracture Mechanics (3 units)
MECH ENG 4121 Materials Selection & Failure Analysis (3 units)
MECH ENG 4124 Robotics M (3 units)
MECH ENG 4125 Stresses in Plates & Shells (3 units)
MECH ENG 4126 Topics in Welded Structures (3 units)
MECH ENG 4144 Renewable Fluid Power Technology (3 units)

**Computer Science Major**

All of the following courses must be completed:

COMP SCI 2000 Computer Systems (3 units)
COMP SCI 2103 Algorithm Design & Data Structures for Engineers (3 units)
COMP SCI 2201 Algorithm & Data Structure Analysis (3 units)
COMP SCI 3006 Software Engineering & Project (3 units)

Courses to the value of 12 units from the following:

Level II or III Computer Science Electives (3 units)
Level III Computer Science Electives (9 units)

Computer Science Electives may be chosen from those listed in the Program Rules for the degree of Bachelor of Mathematical and Computer Sciences

**Bachelor of Engineering (Honours) (Mechanical) / Bachelor of Mathematical and Computer Sciences (Mathematics Major)**

To satisfy the requirements for Bachelor of Engineering (Honours) (Mechanical) / Bachelor of Mathematical and Computer Sciences (Mathematics Major) students must complete courses to the value of 120 units.

**Mechanical Core**

All of the following courses must be completed:

C&ENVENG 1010 Engineering Mechanics - Statics (3 units)
CHEM ENG 1009 Materials I (3 units)
MATHS 2201 Engineering Mathematics IIA (3 units)
MATHS 2202 Engineering Mathematics IIB (3 units)
MATHS 1011 Mathematics IA (3 units)
MATHS 1012 Mathematics IB (3 units)
MATHS 2104 Numerical Methods II (3 units)
MECH ENG 1006 Design Graphics & Communication (3 units)
MECH ENG 1007 Engineering Mechanics - Dynamics (3 units)
MECH ENG 1100 Introduction to Mechanical Engineering (3 units)
MECH ENG 2020 Materials & Manufacturing (3 units)
MECH ENG 2002 Stress Analysis & Design (3 units)
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MECH ENG 3027 Engineering Systems Design & Communication (3 units)
MECH ENG 3028 Dynamics & Control II (3 units)
MECH ENG 3030 Structural Design & Solid Mechanics (3 units)
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<td>MECH ENG 3101</td>
<td>Applied Aerodynamics</td>
<td>3</td>
</tr>
<tr>
<td>MECH ENG 3102</td>
<td>Heat Transfer &amp; Thermodynamics</td>
<td>3</td>
</tr>
<tr>
<td>MECH ENG 3103</td>
<td>Manufacturing Engineering &amp; Quality Systems</td>
<td>3</td>
</tr>
<tr>
<td>MECH ENG 3105</td>
<td>Sustainability &amp; the Environment</td>
<td>3</td>
</tr>
<tr>
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<td>Honours Project Part A</td>
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<td>MECH ENG 4143B</td>
<td>Honours Project Part B</td>
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**Mechanical Electives**

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<td>Renewable Fluid Power Technology</td>
<td>3</td>
</tr>
</tbody>
</table>

**Mathematics Courses**

Complete courses to the value of 24 units including:

- Level II or III Mathematics Electives (12 units)
- Level III Mathematics Electives (12 units)

Mathematics Electives may be chosen from those listed in the program rules for the Bachelor of Mathematical and Computer Sciences. Students must complete a major or double major in accordance with the Bachelor of Mathematical and Computer Science program rules.

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