Specialisation

Materials Science and Engineering (Functional Materials)

MATSF1  |  36 Units of Credit

Overview

This entry lists professional electives for a major in Functional Materials within a Bachelor of Engineering (Honours) in Materials Science and Engineering.

Functional materials are those which possess highly specific native properties and functions, such as ferroelectricity, piezoelectricity, magnetism and energy storage.

This stream is intended to offer a strong undergraduate training in the field of functional materials. They are found in all classes of materials: metals, ceramics, polymers, and organic molecules. Functional materials show great promise for many strategic technological advances that will change the way in which materials are used. Typical applications include devices for electromagnetic applications, energy generation, electro- and magneto- caloric materials for energy storage, solar harvesting functions, and semiconductor logic and memory technology.

Functional Materials are introduced comprehensively in Stages 3 and 4 by a number of professional electives. Students also undertake a materials design project and a substantial thesis project. Students may complete the first one or two years of their degree at their local university engineering school and then transfer with advanced standing to UNSW.
<table>
<thead>
<tr>
<th><strong>Faculty</strong></th>
<th>Faculty of Science</th>
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<tr>
<td><strong>School</strong></td>
<td>School of Materials Science &amp; Engineering</td>
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<tr>
<td><strong>Study Level</strong></td>
<td>Undergraduate</td>
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<td><strong>Minimum Units of Credit</strong></td>
<td>36</td>
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<tr>
<td><strong>Specialisation Type</strong></td>
<td>Major</td>
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Available in Program(s)

Program(s) in which this major is available

Bachelor of Engineering (Honours) - BE(Hons)
3131 Materials Science and Engineering (Honours)
Faculty: Faculty of Science
Campus: Kensington
Units of Credit: 192
Typical Duration: 4 Years

Bachelor of Engineering (Honours) - BE (Hons)
Master of Biomedical Engineering - MBiomedE
3133 Materials Science and Engineering (Honours) / Biomedical Engineering
Faculty: Faculty of Science
Campus: Kensington
Units of Credit: 240
Typical Duration: 5 Years
**Specialisation Structure**

Students must complete 36 UOC.

**Compulsory Professional Courses**

Students must take 12 UOC of the following courses.

- **MATS3005 | 6 UOC**
  Phase Transformations

- **MATS4005 | 6 UOC**
  Composites and Functional Materials

**Level 4 Project**

Students must take 6 UOC per term of MATS4100 Materials Engineering Project. Students must repeat enrol in MATS4100 Materials Engineering Project for Term 2 and Term 3 for a total of 18 UOC.

- **MATS4100 | 6 UOC**
  Materials Engineering Project

**Professional Electives**

Students can take up to a maximum of 6 UOC of the following courses.

- **MATS3003 | 6 UOC**
  Engineering in Process Metallurgy

- **MATS4001 | 6 UOC**
  Secondary Processing of Metals

- **MATS4002 | 6 UOC**
  Design and Advanced Ceramics

- **MATS4003 | 6 UOC**
  Process Metallurgy Advanced
MATS4004  |  6 UOC  
Fracture Mechanics and Failure Analysis

MATS4006  |  6 UOC  
Polymer Science and Engineering 2

MATS4007  |  6 UOC  
Engineered Surfaces to Resist Corrosion and Wear

**Enrolment Disclaimer**

Unless advised otherwise by your program authority, you should follow the rules for the handbook for the year you commenced your program. You are also responsible for ensuring you enrol in courses according to your program requirements. myUNSW enrolment checks that you have met enrolment requirements such as pre-requisites for individual courses but not that a course will count towards your program requirements.
Pre-2019 Handbook Editions

Access past handbook editions (2018 and prior)

Pre-2019 Handbook Editions
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Authorised by Deputy Vice-Chancellor (Academic)
CRICOS Provider Code 00098G
ABN: 57 195 873 179