<table>
<thead>
<tr>
<th>Module Code</th>
<th>MEU44BM4</th>
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<tbody>
<tr>
<td>Module Name</td>
<td>EXPERIMENTAL AND RESEARCH METHODS IN BIOMEDICAL ENGINEERING</td>
</tr>
<tr>
<td>ECTS Weighting¹</td>
<td>5 ECTS</td>
</tr>
<tr>
<td>Semester taught</td>
<td>Semester 1</td>
</tr>
<tr>
<td>Module Coordinator/s</td>
<td>Assoc. Prof. David Hoey</td>
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**Module Learning Outcomes with reference to the Graduate Attributes and how they are developed in discipline**

On successful completion of this module, students should be able to:

- LO1. Critically analyse current scientific/engineering topics and clearly and concisely present their findings in a literature review
- LO2. Write high quality scientific reports and research proposals
- LO3. Understand some of the more useful tools for data analysis
- LO4. Understand the ethical issues involved in biomedical engineering
- LO5. Be able to work on an engineering team to achieve
- LO6. Utilise the scientific search engines to uncover relevant literature/patents/reports
- LO7. Understand good practice in scientific/engineering experiments

**Graduate Attributes: levels of attainment**

- To act responsibly - Enhanced
- To think independently - Enhanced
- To develop continuously - Enhanced
- To communicate effectively - Enhanced

**Module Content**

This module’s goal is to educate students in the field of: biomechanical experimental practice, data analysis, scientific literature scrutiny and report writing. The course introduces students to a number of experimental data analysis tools, experimental methods, report writing skills, statistical tools, and good practice investigational methods when analysing engineering/scientific literature. There are 18 lectures on topics that will aid students to perform robust scientific experiments and write high-quality engineering/scientific reports.

- Lectures on report/literature review drafting skills
- Endnote, Pubmed and GraphPad workshops
- Experimental sessions on the material properties of biological tissues
- Ethical issues in biomedical engineering
Teaching and Learning Methods

The module is taught using a combination of lectures, laboratories and workshops. Due to COVID-19 restrictions aspects of this course may be delivered on-line.
### Assessment Details

Please include the following:
- Assessment Component
- Assessment description
- Learning Outcome(s) addressed
- % of total
- Assessment due date

<table>
<thead>
<tr>
<th>Assessment Component</th>
<th>Assessment Description</th>
<th>LO Addressed</th>
<th>% of total</th>
<th>Week due</th>
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<tbody>
<tr>
<td>Assignment</td>
<td>Group literature review</td>
<td>LO1-7</td>
<td>30</td>
<td>8</td>
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<tr>
<td>Assignment</td>
<td>Individual research proposal</td>
<td>LO1-7</td>
<td>40</td>
<td>12</td>
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<tr>
<td>Lab report</td>
<td>Group lab report associated with a virtual bone testing lab</td>
<td>LO1-7</td>
<td>30</td>
<td>13</td>
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### Reassessment Requirements

The course is reassessed via an assignment and an interview. The result of the interview will determine a weighting factor to be applied to a student’s examination grade.

### Contact Hours and Indicative Student Workload

- **Contact hours**: 44
- **Independent Study (preparation for course and review of materials)**: 18
- **Independent Study (preparation for assessment, incl. completion of assessment)**: 54

### Recommended Reading List

- Mind the Stop: A Brief Guide to Punctuation with a Note on Proof-correction by Gordon Vero Carey

### Module Pre-requisite

- MEU44BM5/ME5M19 Biomechanics

### Module Co-requisite

No

### Module Website

- MEU44BM5/ME5M19 Biomechanics

### Are other Schools/Departments involved in the delivery of this module? If yes, please provide details.

No
<table>
<thead>
<tr>
<th>Module Approval Date</th>
<th>26/06/2020</th>
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<tbody>
<tr>
<td>Approved by</td>
<td>David Hoey</td>
</tr>
<tr>
<td>Academic Start Year</td>
<td>2021</td>
</tr>
<tr>
<td>Academic Year of Date</td>
<td>2021</td>
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