### Module Template for New and Revised Modules

<table>
<thead>
<tr>
<th>Module Code</th>
<th>ME7B24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module Name</td>
<td>Experimental and Research Methods in Biomedical Engineering</td>
</tr>
<tr>
<td>ECTS Weighting</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>
</tr>
</tbody>
</table>

### 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
- Practical 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. |
## 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>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment</td>
<td>Group literature review</td>
<td>LO1-7</td>
<td>25</td>
<td>8</td>
</tr>
<tr>
<td>Assignment</td>
<td>Individual research proposal</td>
<td>LO1-7</td>
<td>40</td>
<td>12</td>
</tr>
<tr>
<td>Lab report</td>
<td>Group lab report associated with a bone testing lab</td>
<td>LO1-7</td>
<td>25</td>
<td>13</td>
</tr>
<tr>
<td>Presentation</td>
<td>Video Presentation detailing their research project</td>
<td>LO1-7</td>
<td>10</td>
<td>14</td>
</tr>
</tbody>
</table>

### Reassessment Requirements

Reassessment will consist of a written assignment and interview.

### 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):** 58

### Recommended Reading List

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

### Module Pre-requisite

Module Co-requisite: MEU44BM5/ME5M19 Biomechanics

### Module Website

Are other Schools/Departments involved in the delivery of this module? **No**

**Module Approval Date:** 09/04/2020
<table>
<thead>
<tr>
<th><strong>Approved by</strong></th>
<th>Assoc. Prof. David Hoey</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Academic Start Year</strong></td>
<td>2019</td>
</tr>
<tr>
<td><strong>Academic Year of Date</strong></td>
<td>2022</td>
</tr>
</tbody>
</table>