

Module Code	MEU44BM4
Module Name	EXPERIMENTAL AND RESEARCH METHODS IN BIOMEDICAL ENGINEERING
ECTS Weighting¹	5 ECTS
Semester taught	Semester 1
Module Coordinator/s	Prof. David Hoey
Module Learning Outcomes with reference to the Graduate Attributes and how they are developed in discipline	<p>On successful completion of this module, students should be able to:</p> <p>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</p> <p>Graduate Attributes: levels of attainment</p> <p>To act responsibly - Enhanced To think independently - Enhanced To develop continuously - Enhanced To communicate effectively - Enhanced</p>
Module Content	<p>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.</p> <ul style="list-style-type: none"> • 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.

Assessment Details² Please include the following: <ul style="list-style-type: none"> • Assessment Component • Assessment description • Learning Outcome(s) addressed • % of total • Assessment due date 	Assessment Component	Assessment Description	LO Addressed	% of total	Teaching Week due			
	Assignment	Group literature review and debate	LO1-7	25	6			
	Report	Data Analysis	LO1-7	15	8			
	Assignment	Group research proposal	LO1-7	35	11			
	Lab report	Group lab report associated with a bone testing lab	LO1-7	25	12			
Reassessment Requirements	Reassessment will consist of a written assignment and interview.							
Contact Hours and Indicative Student Workload²	<table border="1"> <tr> <td>Contact hours: 44</td> </tr> <tr> <td>Independent Study (preparation for course and review of materials): 18</td> </tr> <tr> <td>Independent Study (preparation for assessment, incl. completion of assessment): 54</td> </tr> </table>					Contact hours: 44	Independent Study (preparation for course and review of materials): 18	Independent Study (preparation for assessment, incl. completion of assessment): 54
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Recommended Reading List	<ul style="list-style-type: none"> • Mind the Stop: A Brief Guide to Punctuation with a Note on Proof-correction by Gordon Vero Carey • Alley, M. (1996). The Craft of Scientific Writing. 							
Module Pre-requisite								
Module Co-requisite	MEU44BM5/ME5M19 Biomechanics							
Module Website								
Are other Schools/Departments involved in the delivery of this module? If yes, please provide details.	No							
Module Approval Date	26/06/2020							

Approved by	David Hoey
Academic Start Year	2019
Academic Year of Date	2026