Module Code	**MEU44BM4**
Module Name	**EXPERIMENTAL AND RESEARCH METHODS IN BIOMEDICAL ENGINEERING**
ECTS Weighting[1]	5 ECTS
Semester taught	Semester 1
Module Coordinator/s	Assoc. Prof. David Hoey
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[2]
Please include the following:

- **Assessment Component**
- **Assessment description**
- **Learning Outcome(s) addressed**
- **% of total**
- **Assessment due date**

Assessment Component	Assessment Description	LO Addressed	% of total	Week due
Assignment	Group literature review	LO1-7	30	8
Assignment	Individual research proposal	LO1-7	40	12
Lab report	Group lab report associated with a virtual bone testing lab	LO1-7	30	13

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[2]

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
- 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	2021
Academic Year of Date	2021