

# ES2C1-15 Introduction to Biomedical Engineering

**26/27**

**Department**

School of Engineering

**Level**

Undergraduate Level 2

**Module leader**

Mathias Foo

**Credit value**

15

**Module duration**

10 weeks

**Assessment**

100% coursework

**Study location**

University of Warwick main campus, Coventry

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## Description

### Introductory description

ES2C1-15 Introduction to Biomedical Engineering

[Module web page](#)

### Module aims

Provide an introduction to the multi-disciplinary applications of Engineering in medicine and healthcare and to clinical engineering as a profession. This module will give an overview of different areas of Biomedical Engineering and highlight how previously taught topics can be used.

### Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

Principles of Biomedical Engineering and Medical Devices

- Introduction to relevant anatomy and physiology
- Introduction to biomedical instrumentation:

#### Biomedical Engineering Research (example topics only)

- Biomechanics
- Use and applications of Biomedical Signals
- Biofeedback and regulation
- Biomedical systems modelling
- Medical imaging technology

#### Biomedical Engineering Engineering profession

- Biomedical Engineering as a profession: various roles of the biomedical engineer, career paths, the role of ethics in BME.
- Principles of medical devices and system safety and regulation Instrumentation: physiological effects of electricity; macro- and microshock hazards; electrical safety principles and standards; safe equipment design.
- Medical software as medical device: implications

## Learning outcomes

By the end of the module, students should be able to:

- Identify and describe the large array of biomedical engineering fields [C4, M4]
- Explain the basic tenets of fundamental technologies in biomedical engineering [C2, M2]
- Understand Biomedical Engineering as a profession and ethical considerations [C8, M8]
- Apply fundamental engineering techniques to analyse and solve Biomedical problems [C2, M2, C3, M3, C6, M6]
- Demonstrate Professionals communication skills required in Biomedical Engineering [C17, M17]
- Demonstrate Professionals teamwork skills required in Biomedical Engineering [C16, M16]

## Indicative reading list

[Reading lists can be found in Talis](#)

## Subject specific skills

TBC

## Transferable skills

TBC

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# Study

## Study time

Type	Required
Lectures	9 sessions of 2 hours (12%)
Online learning (independent)	9 sessions of 1 hour (6%)
Private study	123 hours (82%)
Total	150 hours

## Private study description

123 hours guided independent learning

## Costs

No further costs have been identified for this module.

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## Assessment

You must pass all assessment components to pass the module.

### Assessment group A3

Assessment component	Weighting	Study time	Eligible for self-certification
Individual coursework	40%		Yes (extension)
A report of literature review on advancement of biomedical devices and technologies (maximum 4 pages).			
A business case proposal (using either 5min video presentation or A1 poster or 3min audio pitch).			
A self-reflection report in response to the feedback of the business case proposal.			

Reassessment component is the same

Assessment component

	<b>Weighting</b>	<b>Study time</b>	<b>Eligible for self-certification</b>
Biomedical Engineering Projects (Group)	60%		No
Mini biomedical modelling and simulation projects to be assessed via group report (max 16 pages) + peer assessment			

#### Reassessment component

Biomedical Project (Individual)			No
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### Feedback on assessment

- Support through advice and feedback hours.
- Written feedback on marked coursework.

## Availability

### Courses

This module is Core for:

- Year 2 of UESA-H161 BEng Biomedical Systems Engineering
- Year 2 of UESA-H163 MEng Biomedical Systems Engineering

This module is Optional for:

- Year 2 of UESA-H113 BEng Engineering
- UESA-H112 BSc Engineering
  - Year 2 of H112 Engineering
  - Year 2 of H112 Engineering
- Year 2 of UESA-H114 MEng Engineering
- UCSA-G406 Undergraduate Computer Systems Engineering
  - Year 2 of G406 Computer Systems Engineering
  - Year 2 of G406 Computer Systems Engineering
- Year 2 of UCSA-G408 Undergraduate Computer Systems Engineering