

Cell and Tissue Biology

Module Code:	MHT5007-B
Academic Year:	2018-19
Credit Rating:	20
School:	Department of Biomedical and Electronics Engineering
Subject Area:	Medical and Healthcare Technology
FHEQ Level:	FHEQ Level 5
Module Leader:	Dr Farshid Sefat

Additional Tutors:

Pre-requisites:

Co-requisites:

Contact Hours

Type	Hours
Lectures	48
Tutorials	4
Directed Study	144
Examinations DO NOT USE	4

Availability Periods

Occurrence	Location/Period
BDA	University of Bradford / Academic Year (Sept - May)

Module Aims

Medical and clinical engineers are required to have a good understanding of human physiology and the ways in which cells and tissue interact with invasive medical devices and implants. Because invasive medical devices are often associated with infection, it is also important that medical engineers have an understanding of both cells and bacteria but also of tissue biology/structure.

Outline Syllabus

This module adopts a multidisciplinary approach and aims to assist the students in developing their knowledge and understanding of:

Basic biochemistry, Proteins, Molecular Biophysics, Macromolecules/Extra cellular matrix (DNA, rNA), The structure and behaviour of prokaryotic/eukaryotic cells, The structure and behaviour of viruses, the immune system, mathematical Biology, Microscopy, Structure of tissue (Collagenous, Cellular, Nervous), Tissue mechanics, Tissue Engineering.

Module Learning Outcomes

On successful completion of this module, students will be able to...

- 1 Understand: the structure and function of prokaryotic cells; the structure and function of viral particles; the structure and function human cells; the key biological processes associated with cell physiology; the physiology associated with nerve impulses; the role of the immune system in combating infection; how cellular and infectious systems can be modelled using coupled differential equations; basic microscopy; structure of tissues throughout the human body; the nature and behaviour of tissue under load; principals of tissue engineering.
- 2 Use a microscope to view and analyse cells.
Construct differential equations to describe the behaviour of biological systems.
- 3 Describe complex systems.
Critically appraise.
Multi-disciplinary knowledge.

Learning, Teaching and Assessment Strategy

The relevant concepts, principles and theories will be explored in formal lectures.

Because the module will be delivered to engineering students, a systems approach will be taken when teaching the subject. This will involve showing the students how differential equations can be used in biology.

The first part of the module (Semester 1) will concentrate on the fundamentals of cell and micro-biology. This will be assessed through a formal examination. The second part of the module (Semester 2) will focus on tissue structure and properties. This will build on the fundamental knowledge acquired in Semester 1 and will be assessed through a formal written examination.

Mode of Assessment

Type	Method	Description	Length	Weighting	Final Assess'
Summative	Examination - MCQ	Examination - closed book - Semester 1	2 hours	50%	No

Summative	Examination - MCQ	Examination - MCQ - Semester 2	2 hours	50%	Yes
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Legacy Code (if applicable)

ENG2309L

Reading List

To view Reading List, please go to [rebus:list](#).