UNIVERSITY of BRADFORD

Module Descriptor

Module Details	
Module Title	Cell and Tissue Biology
Module Code	MHT5007-B
Academic Year	2020/1
Credits	20
School	Department of Biomedical and Electronics Engineering
Subject Area	Medical and Healthcare Technology
FHEQ Level	FHEQ Level 5
Pre-requisites	N/A
Co-requisites	N/A

Contact Hours	
Type	Hours
Lectures	24 (Blended Learning: Face to face and online teaching)
Directed Study	176

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Academic Year

Module Aims

The aim of this module is to make student familiar with basic cell and tissue biology which directly related to engineers. Students will learn both biology and engineering aspects of cells and the main aim is to make students understand the link between cell biology and other applications in medical engineering. On the other hand, because invasive medical devices are often associated with infection, it is also important that medical engineering and clinical technology students have a good understanding of other microorganisms such as bacteria, viruses, parasites and etc. Infection control is the discipline concerned with preventing HAI, a practical sub-discipline of epidemiology. It is an essential, though often under recognized and under supported, part of the infrastructure of health care. Infection control and hospital epidemiology are akin to public health practice, practiced within the confines of a particular health-care delivery system rather than directed at society as a whole. Infection control addresses factors related to the spread of infections within the healthcare setting (whether patient-to-patient, from patients to staff and from staff to patients, or among-staff), including prevention (via hand hygiene/hand washing, cleaning/disinfection/sterilization, vaccination, surveillance), monitoring/investigation of demonstrated or suspected spread of infection within a particular health-care setting (surveillance and outbreak investigation), and management (interruption of outbreaks).

Outline Syllabus

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

Cell Biology including:
Eukaryotic Cells Structure (Organelles)
Cell Cycle
Extracellular Matrix & Cell Adhesion
Cytoskeleton
Cell Types
Tissue Level of Organisation
Cancer and Abnormal Cell Growth

Microbiology:
Lymphatic System
Bacteria, Viruses
Infection Control:
Infection control ? Introduction
Epidemiology
Hand Hygiene
Cleaning, Disinfection, and Sterilisation
Infection control in Special Population
Health Care Waste Management
Water Hygiene
Infection control in Women

Learning Outcomes

Outcome Number	Description
01	Understand basic principles of biochemistry and cell/tissue biology.
02	Understand different cell types (including stem cells), cancer, apoptosis and mainly the relation between cell biology with medical implants such as cell/surface interactions, cytotoxicity, cell viability once they introduced to biomaterials.
03	Understand the role of the immune system in combating infection as well as basic principles of infection control such as hand hygiene, health care waste management and how to control infection via medical devices (both invasive and non-invasive).
04	Understand the structure and function of virus, bacteria, parasite, etc. as well as infection control in women.

Learning, Teaching and Assessment Strategy

In this online module students will learn basic cell and tissue biology which directly related to medical engineering, implants and etc. using interactive sessions.The first part of the module will mainly concentrate on the fundamentals of cell and micro-biology (LO1,2). The second part of the module will focus on tissue structure and properties as well as infection control (LO3,4). Key lectures will deliver core content, providing students with the opportunity to acquire the information to enhance their knowledge and understanding of subject LO 1,2,3,4. This will be done by interactive teaching sessions with many hands out and questions/answers (LO1,2,3,4). This will be complemented by few problem-based learning (PBL) sessions and various examples in cell, tissue (LO1,2) and infection control (3,4) to allow students to apply this learning principles. Directed study provides students with the opportunity to undertake guided reading and to develop their own portfolio of learning to enhance transferable skills and knowledge LO 1,2,3,4. The relevant concepts, principles and theories will be explored by formal lectures. Concepts, principles and theories explored in formal lectures and practised in tutorials. Cognitive and personal skills developed in problem solving exercises, tackled by working in small groups supported by members of academic staff.
There will be two set of summative assessments:
1) Summative coursework (1) with maximum 2500 words limit (50%) (LO1,2,3, 4).
2) Summative coursework (2) with maximum 2500 words limit (50%) (LO1,2,3,4).

Mode of Assessment

Type	Method	Description	Length	Weighting
Summative	Coursework	Report (2500 words)	N/A	50%
Summative	Coursework	Report (2500 words)	N/A	50%

Reading List

To access the reading list for this module, please visit https://bradford.rl.talis.com/index.html

Please note:
This module descriptor has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but minor changes may occur given the interval between publishing and commencement of teaching. Upon commencement of the module, students will receive a handbook with further detail about the module and any changes will be discussed and/or communicated at this point.
