Module Specification

Practical Cell Biology and Biochemistry

Version: 2023-24, v2.0, 19 Jun 2023

Contents

Part 1: Information

Module title: Practical Cell Biology and Biochemistry

Module code: USSKNG-30-1

Level: Level 4

For implementation from: 2023-24

UWE credit rating: 30

ECTS credit rating: 15

Faculty: Faculty of Health & Applied Sciences

Department: HAS Dept of Applied Sciences

Partner institutions: None

Field: Applied Sciences

Module type: Module

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: Not applicable

Features: Not applicable

Educational aims: See Learning Outcomes

Outline syllabus: This module will cover the following topics:

Biological chemistry: structure and function of biological macromolecules.

Cell Biology: structure and function of prokaryotic and eukaryotic cells and their organelles. Membrane structure and transport across membranes via diffusion, carrier proteins, channels, active transport.

Key techniques in cell biology, biochemistry and genetics: microscopy, PCR, analysis of DNA and protein by gel electrophoresis, enzyme kinetics.

Introduction to metabolism: an overview of catabolic and anabolic pathways. Enzymes as biological catalysts and factors influencing rates of enzymatic reactions. The major pathways of carbohydrate and lipid metabolism and their significance in health and disease.

Studying genes: genes and gene expression: transcription, RNA processing and translation. DNA replication. Role of mutations. PCR and gene cloning.

Inheriting genes. Mendelian genetics. Gene inheritance patterns in humans and molecular approaches to diagnosing and treatments of genetic disorders.

Part 3: Teaching and learning methods

Teaching and learning methods: This module aims to deliver specialist knowledge through taught lectures, seminars and practical sessions to promote application of knowledge acquired, analytical and problem-solving skills.

Independent learning includes hours engaged with essential reading, case study preparation, assignment preparation and completion etc.

Module Learning outcomes: On successful completion of this module students will achieve the following learning outcomes.

MO1 Describe the ultrastructure and function of prokaryotic and eukaryotic cells, organelles and biological membranes

MO2 Describe the key features and properties of nucleic acids, proteins, lipids and carbohydrates

MO3 Describe key pathways in carbohydrate and lipid metabolism and explain how energy from metabolism is channelled into ATP synthesis

MO4 Describe the modes of inheritance and explain how genetic material can be altered

MO5 Demonstrate key practical skills and skills of data analysis in cell biology, genetics and biochemistry

MO6 Discuss current applications and impact of cell biology, genetics and biochemistry

Hours to be allocated: 300

Contact hours:

Independent study/self-guided study = 210 hours

Face-to-face learning = 90 hours

Total = 300

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link https://uwe.rl.talis.com/modules/usskng-30-1.html

Part 4: Assessment

Assessment strategy: Assessment 1 is a 1500 word essay, which will provide experience of independent research of published literature and develop the students' academic writing style.

Assessment 2 is a viva voce (20 minute) and short written submission. This assessment will provide students with an opportunity to demonstrate depth and breadth of their knowledge on a broad range of topics through a series of questions and discussions. This assessment will test a range of the learning outcomes and will provide a valuable learning experience of a viva.

Assessment 3 is a laboratory report arising from primary and/or secondary data. This assessment will provide a valuable practical learning experience and develop students' analytical skills.

Opportunities for formative assessment and feedback are built into teaching and practical sessions, through discussion and evaluation of current research and review of past exam papers. Students are provided with formative feed-forward for their viva through revision and preparation sessions.

Assessment tasks:

Written Assignment (First Sit)
Description: Essay (1500 words)
Weighting: 18 %
Final assessment: No
Group work: No
Learning outcomes tested: MO4, MO6

Presentation (First Sit)
Description: Oral exam, including written submission (20 mins)
Weighting: 40 %
Final assessment: No
Group work: No
Learning outcomes tested: MO1, MO2, MO3

Report (First Sit)
Description: Laboratory Reports
Weighting: 42 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO5, MO6

Written Assignment (Resit)

Description: Essay (1500 words)
Weighting: 18 %
Final assessment: No
Group work: No
Learning outcomes tested: MO4, MO6

Presentation (Resit)
Description: Oral exam, including written submission (20 mins)
Weighting: 40 %
Final assessment: No
Group work: No
Learning outcomes tested: MO1, MO2, MO3

Report (Resit)
Description: Laboratory Reports
Weighting: 42 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO5, MO6

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Biological Laboratory Sciences [UCW] FdSc 2023-24