



## **Module Specification**

### **Molecular Cell Biology**

Version: 2023-24, v3.0, 19 Jun 2023

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## Part 1: Information

**Module title:** Molecular Cell Biology

**Module code:** USSJXR-15-2

**Level:** Level 5

**For implementation from:** 2023-24

**UWE credit rating:** 15

**ECTS credit rating:** 7.5

**Faculty:** Faculty of Health & Applied Sciences

**Department:** HAS Dept of Applied Sciences

**Partner institutions:** None

**Field:**

**Module type:** Module

**Pre-requisites:** Cells, Biochemistry and Genetics 2022-23

**Excluded combinations:** None

**Co-requisites:** None

**Continuing professional development:** No

**Professional, statutory or regulatory body requirements:** None

## Part 2: Description

**Overview:** This module complements the optional level two modules and provides adequate foundation knowledge of key concepts, which will be vital for level three studies.

**Features:** Not applicable

**Educational aims:** The module will also equip students with essential laboratory techniques such as cell culture, key molecular techniques such as DNA isolation

from mammalian cells, endpoint PCR, and DNA sequencing, followed by cutting-edge genomic analysis and their application to the study and diagnosis of disease. Also, genomic, transcriptomic and proteomic methods used to analyse and study human chromosomes and DNA, thereby, enhancing the repertoire of practical skills of UWE graduates.

**Outline syllabus:** Molecular Cell Biology examines the molecular basis of genetic disease; from altered genotype to diseased phenotype.

Molecular and Cell Biology will uncover:

The nature of DNA mutations and their effects on protein structure and function

How altered protein structure and function affects cellular biology including cell signalling, metabolism and tissue homeostasis

The subsequent pathological consequences of altered cellular biology

Bioinformatics and systems biology: the computation of high volumes of biological data and the properties of a network of interacting components in a system, as well as the components themselves, including an appreciation of the algorithms to decipher biological relationships.

### **Part 3: Teaching and learning methods**

**Teaching and learning methods:** The module will be delivered as a series of online lectures and three in lab. practical classes with hands on experience of laboratory techniques and computational data analysis.

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

**MO1** Understand how genetic mutations change protein structure and function

**MO2** Explain how altered protein structure and function affects cellular physiology and tissue homeostasis

**MO3** Identify the effect of altered physiology in the pathology of disease

**MO4** Develop their skills in data analysis and interpretation

**MO5** Explain how molecular techniques are applied to study and diagnose pathological conditions

**Hours to be allocated:** 150

**Contact hours:**

Independent study/self-guided study = 117 hours

E-learning/online learning = 33 hours

Total = 150

**Reading list:** The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://uwe.rl.talis.com/modules/ussjxr-15-2.html) via the following link <https://uwe.rl.talis.com/modules/ussjxr-15-2.html>

## **Part 4: Assessment**

**Assessment strategy:** Assessment 1 - An online quiz, after each practical session, which reviews the content of each practical session and examines the students ability to recognise and perform molecular techniques and interpret the data generated. There will be a series of six online quizzes to be completed after each practical session, and they will last approximately 10 minutes each.

Formative assessment opportunities will be presented following each practical. Assessment 1 will also be used as a feed-forward, formative assessment to aid preparation for assessment 2.

Assessment 2 – A two hour online examination. This exam will allow students to demonstrate their understanding of the subject matter by applying course content to a different context.

**Assessment tasks:**

**Set Exercise (First Sit)**

Description: Interpretation of laboratory techniques and data (online).

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested: MO4, MO5

**Examination (Online) (First Sit)**

Description: Online examination (2 hours)

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4

**Set Exercise (Resit)**

Description: Interpretation of laboratory techniques and data (online).

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested: MO4, MO5

**Examination (Online) (Resit)**

Description: Online examination (2 hours)

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4

**Part 5: Contributes towards**

This module contributes towards the following programmes of study:

Biomedical Science [Frenchay] MSci 2022-23

Applied Biomedical Science [Frenchay] BSc (Hons) 2022-23

Biomedical Science [Frenchay] BSc (Hons) 2022-23

Biomedical Science [Sep][PT][Frenchay][6yrs] BSc (Hons) 2021-22

Biomedical Science {Foundation} [Sep][SW][Frenchay][5yrs] BSc (Hons) 2021-22

Biomedical Science {Foundation} [Sep][FT][Frenchay][4yrs] BSc (Hons) 2021-22

Biomedical Science [Sep][PT][Frenchay][8yrs] MSci 2021-22

Biomedical Science {Foundation} [Sep][SW][Frenchay][6yrs] MSci 2021-22

Biomedical Science {Foundation} [Sep][FT][Frenchay][5yrs] MSci 2021-22

Biomedical Science [Sep][PT][Frenchay][6yrs] BSc (Hons) 2020-21

Biomedical Science [Sep][PT][Frenchay][8yrs] MSci 2020-21