Module Specification

Research and Diagnostic Methodologies

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

Contents

Part 1: Information

Module title: Research and Diagnostic Methodologies

Module code: USSJYT-30-M

Level: Level 7

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: Core technology relevant to all students reading for MSc in Biomedical Sciences:

Molecular biology

Electrophoresis

Microscopy

Students also learn methods that are relevant for their specialism. These are delivered as specialist methods such as:

Immunohistochemistry, immunocytochemistry, in-situ hybridisation

Immunoassays

Flow cytometry

Spectroscopy

Chromatography

Point of care testing

Principles of good experimental design.

Methods for the assessment of data quality and method validation.

Descriptive statistics.

Inferential statistics and hypothesis testing.

Statistical significance, variance, regression, covariance.

Selecting the appropriate statistical method.

Effective literature searching strategies.

Critical reading skills.

Scientific writing skills.

The peer review process as applied to research papers and grant applications.

Evidence based medicine.

Introduction to bioethics.

An understanding of how Ethics Committees work.

Part 3: Teaching and learning methods

Teaching and learning methods: The module will have a mixture of traditional lectures to cover the core scientific principles, supported by talks from researchers on the use of the core methods in the research sector. Coverage of the use of the

scientific methods in the diagnostic sector will be supported by video presentations by diagnostic sector staff, and supported by visits to diagnostic laboratories where possible.

The statistics teaching will be by computer-based workshops delivered by expert staff.

Module is delivered in the first semester to provide theoretical underpinning to the Research Project module

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

MO1 Show an in-depth understanding of the theory that underpins a range of scientific methods

MO2 Demonstrate an awareness of the use of a range of scientific methods in both research and diagnostic settings including the evaluation of their role and limitations

MO3 Review critically the scientific literature (including national standard methods and standard operating procedures) in relation to biomedical science methodological choices

MO4 Demonstrate a critical awareness of the principles of good experimental design in biomedical research

MO5 Select and perform appropriate statistical techniques for the analysis of experimental data

Hours to be allocated: 300

Contact hours:

Independent study/self-guided study = 228 hours

Face-to-face learning = 72 hours

Total = 300

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link https://rl.talis.com/3/uwe/lists/25315E4F-6ABD-9B54-FF3B-3549F8B7CC5D.html?lang=en-GB&login=1

Part 4: Assessment

Assessment strategy: Assessment 1 is a statistical analysis activity reflecting the importance of developing statistical skills ahead of the project.

Assessment 2 is a time constrained critical appraisal of a research paper, provided in advance.

During this module students undertake a formative activity in the form of a project proposal - this underpins the project module and will required for completion of research governance process before a student starts in the laboratory. The feedback from this formative activity will directly support project module assessment.

Assessment tasks:

Set Exercise (First Sit)
Description: Data interpretation exercise
Weighting: 50 %
Final assessment: No
Group work: No
Learning outcomes tested: MO1, MO4, MO5

Examination (Online) (First Sit)
Description: Online exam with a 24 hour window and a 3000 word limit - paper being reviewed to be pre-released to the students 48 hours before the examination time.
Weighting: 50 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO3

Set Exercise (Resit)

Description: Data interpretation exercise

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO4, MO5

Examination (Online) (Resit)

Description: Online exam with a 24 hour window and a 3000 word limit - paper being reviewed to be pre-released to the students 48 hours before the examination time.

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO3

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Biomedical Science (Cellular Pathology) [Frenchay] MSc 2023-24

Biomedical Science (Cellular Pathology) [Frenchay] MSc 2023-24

Biomedical Science (Clinical Biochemistry) [Frenchay] MSc 2023-24

Biomedical Science (Clinical Biochemistry) [Frenchay] MSc 2023-24

Biomedical Science (Haematology) [Frenchay] MSc 2023-24

Biomedical Science (Haematology) [Frenchay] MSc 2023-24

Biomedical Science (Immunology) [Frenchay] MSc 2023-24

Biomedical Science (Immunology) [Frenchay] MSc 2023-24

Biomedical Science (Medical Genetics) [Frenchay] MSc 2023-24

Biomedical Science (Medical Genetics) [Frenchay] MSc 2023-24

Biomedical Science (Medical Microbiology) [Frenchay] MSc 2023-24

Biomedical Science (Medical Microbiology) [Frenchay] MSc 2023-24

Biomedical Science [Frenchay] MSc 2023-24

Biomedical Science [Frenchay] MSc 2023-24