



## MODULE SPECIFICATION

Part 1: Information			
Module Title	Applied Scientific Practice		
Module Code	USSJXS-15-2	Level	Level 5
For implementation from	2020-21		
UWE Credit Rating	15	ECTS Credit Rating	7.5
Faculty	Faculty of Health & Applied Sciences	Field	
Department	HAS Dept of Applied Sciences		
Module type:	Standard		
Pre-requisites	Biomedical Skills 2019-20		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description
<p><b>Overview:</b> The module will build on key skills obtained at level 1 while preparing and providing the student with essential knowledge for their project module at level 3. The use of both real life and published data sources allows students to explore valid methods of both qualitative and quantitative data analysis. This will include elements of both experimental numerical analysis, systematic review, meta-analysis and meta-ethnographies. These studies will provide students with the crucial critical analyses skills necessary to undertake either a final year experimental or dissertation project.</p> <p><b>Educational Aims:</b> This module will provide essential knowledge about the scientific method. It will cover how experiments are preformed and designed. It will also cover how we analyse data and how we communicate this. It will cover many of the basic skills that are needed to become a good scientist.</p> <p><b>Outline Syllabus:</b> An Indicative syllabus outline is detailed below: This will be designed to ensure that appropriate and current issues in biomedical science are covered.</p> <p>Lectures and workshops will explore aspects of the following:</p> <p>The scientific method and experimental design: e.g framing and testing hypotheses; planning and executing experiments; generating appropriate data.</p>

## STUDENT AND ACADEMIC SERVICES

Recording and collating data for analysis using suitable statistical packages.

Sources of measurement-error and variation, covering an understanding of key concepts in measurement.

Quantitative data analysis, highlighting methods to explore relationships between variables and to compare populations and frequencies

Key qualitative methods will be covered and compared to quantitative methodologies.

These key concepts will be embedded within practical sessions and workshops where both real life and published data sets will be used. Students will apply their knowledge to designing and analysing experiments to form a mini project on contemporary aspects of biomedical science. This will include an introduction to the use and applications of statistical and other software packages for the analysis of data and its presentation. Different modes of scientific communication and data presentation will also be explored.

**Teaching and Learning Methods:** Learning approaches will be based on a structured programme of key-note lectures, tutorial sessions, and laboratory practical classes and workshops. Thus, some important concepts will be introduced in lectures then discussed in tutorials and workshops. These concepts will also be applied within laboratory sessions, where the results will be analysed, evaluated and communicated in formats appropriate to different audiences. Teamwork will be encouraged, where appropriate.

### Part 3: Assessment

The in-class test will enable students to demonstrate their knowledge, understanding and competency in experimental design and the analysis of a range of different data types. There will be supporting/practice computer workshop sessions prior to test where students can monitor their progress. In addition to this the workshops and lectures will relate to elements of the research proposal during which students will undertake formative activities. The in-class test will be based on data that students have previously generated in practical sessions.

The coursework is a research proposal (1500 words) The research proposal includes experimental design, literature searching, data analysis, and writing elements such as justifications, ethical considerations and public impact statements. In order to prepare students for conducting independent research in higher levels of study as well as in related scientific career routes, this assessment aims to provide students with the opportunity to address key aspects of the research/grant funding process through building on a framework of learning the skills necessary to undertake a research funding application and using that learning to demonstrate skills in scientific writing, lay communication, experimental design (and other related areas).

First Sit Components	Final Assessment	Element weighting	Description
In-class test - Component A		50 %	Online test
Written Assignment - Component B	✓	50 %	Research Proposal (1500 words)
Resit Components	Final Assessment	Element weighting	Description
Examination (Online) - Component A		50 %	Online test
Written Assignment - Component B	✓	50 %	Research Proposal (1500 words)

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<b>Part 4: Teaching and Learning Methods</b>																	
Learning Outcomes	<p>On successful completion of this module students will achieve the following learning outcomes:</p> <table border="1"> <thead> <tr> <th style="text-align: left;"><b>Module Learning Outcomes</b></th> <th style="text-align: left;"><b>Reference</b></th> </tr> </thead> <tbody> <tr> <td>Demonstrate an understanding of the development and application of the scientific method and experimental design.</td> <td>MO1</td> </tr> <tr> <td>Demonstrate an ability to develop experimental strategies to test experimental hypotheses and implement these strategies for the collection of experimental data.</td> <td>MO2</td> </tr> <tr> <td>Identify and demonstrate competence in the use of appropriate data handling software and statistical analyses to data collected from a variety of experimental approaches.</td> <td>MO3</td> </tr> <tr> <td>Report scientific investigations; includes presentation and communication .</td> <td>MO4</td> </tr> </tbody> </table>	<b>Module Learning Outcomes</b>	<b>Reference</b>	Demonstrate an understanding of the development and application of the scientific method and experimental design.	MO1	Demonstrate an ability to develop experimental strategies to test experimental hypotheses and implement these strategies for the collection of experimental data.	MO2	Identify and demonstrate competence in the use of appropriate data handling software and statistical analyses to data collected from a variety of experimental approaches.	MO3	Report scientific investigations; includes presentation and communication .	MO4						
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Reading List	<p><i>The reading list for this module can be accessed via the following link:</i></p> <p><a href="https://rl.talis.com/3/uwe/lists/81BB5A5E-97AA-E949-59FF-F47CDE997384.html?lang=en-GB&amp;login=1">https://rl.talis.com/3/uwe/lists/81BB5A5E-97AA-E949-59FF-F47CDE997384.html?lang=en-GB&amp;login=1</a></p>																

<b>Part 5: Contributes Towards</b>
This module contributes towards the following programmes of study: