

## Module specification

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Module Code	SCI455
Module Title	Investigative Skills for Science
Level	4
Credit value	20
Faculty	FAST
HECoS Code	100392
Cost Code	GAFS

### Programmes in which module to be offered

Programme title	Is the module core or option for this programme
WUCCE Science for Higher Education, Aligned to BSc (Hons) for Forensic Science for QA and assessment purposes	Core

### Pre-requisites

None.

### Breakdown of module hours

Learning and teaching hours	16 hrs
Placement tutor support	0 hrs
Supervised learning e.g. practical classes, workshops	20 hrs
Project supervision (level 6 projects and dissertation modules only)	0 hrs
<b>Total active learning and teaching hours</b>	<b>36 hrs</b>
Placement / work-based learning	0 hrs
Guided independent study	164 hrs
<b>Module duration (total hours)</b>	<b>200 hrs</b>

For office use only	
Initial approval date	10 <sup>th</sup> May 2023
With effect from date	September 2023
Date and details of revision	
Version number	1

## Module aims

The aim of this module is to introduce students to investigative skills for science. Students will be introduced to experimental design, data interpretation and presentation skills. Students will plan and execute a simple laboratory or field experiment and feedback their findings orally.

**Module Learning Outcomes** - at the end of this module, students will be able to:

1	Execute a small-scale laboratory or field experiment.
2	Discuss the risks, remedial actions and ethical considerations associated with the chosen project.
3	Use graphs and charts to interpret scientific data.
4	Present experimental findings orally to an audience.

## Assessment

### Indicative Assessment Tasks:

This section outlines the type of assessment task the student will be expected to complete as part of the module. More details will be made available in the relevant academic year module handbook.

### Assessment 1– Poster Presentation (~15 mins)

Students will give a 10-minute presentation (to include up to 5 minutes of questions) based on a small-scale research project they will have planned and undertaken during their scheduled learning and teaching.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)
1	1-4	Presentation	100%

## Derogations

None.

## Learning and Teaching Strategies

Students will be immersed in numerous practical sessions in the laboratory where they will be able to gain practical experience of using different laboratory equipment and techniques. Students will be given the opportunity to execute a laboratory or field experiment in an applied science topic. Students will also gain theoretical knowledge from a series of seminars.

## Indicative Syllabus Outline

- Experimental design
- Developing a hypothesis
- Dependent and independent variables
- Aims and objectives
- Types of data
- Methods of data collection
- Scientific field skills
- Scientific laboratory skills
- Assessing risks

- Ethical considerations
- Visualisation of data
- Interpretation of data

## **Indicative Bibliography:**

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Please note the essential reads and other indicative reading are subject to annual review and update.

### **Essential Reads**

Thomas, G. (2022), *How to do your Research Project: A Guide for Students*. London: Sage Publishing.

### **Other indicative reading**

Reed, R.H., Holmes, D., Weyers, J. & Jones, A. (2016), *Practical Skills in Biomolecular Sciences*, New York: Pearson.

Dean, J., Holmes, D.A., Jones, A.M., Jones, A., Weyers, J. & Reed, R. (2017), *Practical Skills in Chemistry*, New York: Pearson.

Langford, A., Dean, J., Reed, R., Weyers, J. & Jones, A. (2019), *Practical Skills in Forensic Science*, New York: Pearson.

## **Employability skills – the Glyndŵr Graduate**

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Each module and programme is designed to cover core Glyndŵr Graduate Attributes with the aim that each Graduate will leave Glyndŵr having achieved key employability skills as part of their study. The following attributes will be covered within this module either through the content or as part of the assessment. The programme is designed to cover all attributes and each module may cover different areas.

### **Core Attributes**

Engaged  
Creative  
Ethical

### **Key Attitudes**

Commitment  
Curiosity  
Resilience  
Confidence  
Adaptability

### **Practical Skillsets**

Digital Fluency  
Organisation  
Critical Thinking  
Communication