

Module specification

When printed this becomes an uncontrolled document. Please access the **Module Directory** for the most up to date version by clicking on the following link: [Module directory](#)

Module code	SCI450
Module title	Cell Biology, Biochemistry and Genetics
Level	4
Credit value	20
Faculty	FAST
HECoS Code	100345
Cost Code	GAFS

Programmes in which module to be offered

Programme title	Is the module core or option for this programme
BSc (Hons) Biochemistry	Core
BSc (Hons) Biomedical Science	Core
BSc (Hons) Forensic Science	Core
BSc (Hons) Forensic Science with Placement Year	Core

Pre-requisites

None

Breakdown of module hours

Learning and teaching hours	18 hrs
Placement tutor support	0 hrs
Supervised learning e.g. practical classes, workshops	18 hrs
Project supervision (level 6 projects and dissertation modules only)	0 hrs
Total active learning and teaching hours	36 hrs
Placement / work based learning	0 hrs
Guided independent study	164 hrs
Module duration (total hours)	200 hrs

Module aims

For office use only	
Initial approval date	14/10/2020
With effect from date	01/09/2021
Date and details of revision	21/04/21 addition of BSc Biomedical Science 10/05/2023 update of indicative syllabus outline revalidation of BSc (Hons) Forensic Science
Version number	3

To make students familiar with cell structural components, biochemistry and how cells

function, with particular emphasis on genetics and DNA structure. To introduce laboratory techniques for the study of cell biology, biochemistry and genetics, including microscopy, protein assays, DNA extraction, PCR and gel electrophoresis.

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

1	Explain the differences between prokaryotic and eukaryotic cells and describe the main structural elements of these cell categories.
2	Explain the process of gene expression and key biochemical reactions in prokaryotic and eukaryotic cells.
3	Describe the structure of DNA and explain some of the important DNA technologies relevant to cell biology, biochemistry and genetics.
4	Perform relevant laboratory techniques such as setting up a microscope, extracting DNA, PCR and gel electrophoresis and analyse the data produced in laboratory sessions.

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: Exam (1.5 hours)

A set of approximately 30 multiple-choice questions based on the content of the lectures.

Assessment 2: Coursework (~1,500 words)

Example: a laboratory report on the DNA practical sessions, which will include short question and answers, data analysis and use of relevant literature.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)
1	1 & 2	Examination	50%
2	3 & 4	Coursework	50%

Derogations

N/A

Learning and Teaching Strategies

- Teaching will involve lectures, seminars and practical sessions.
- Online and flipped learning will also be utilised.
- Group activities during taught sessions and laboratory sessions will be employed.
- There will be formative feedback opportunities through staged quizzes and activities.

Indicative Syllabus Outline

- Cell structure – cell membrane and organelles
- Microscopy
- Prokaryotic and eukaryotic cell function
- Biochemistry of cellular biomolecules
- Biochemical reactions of the cell
- Genetics, DNA structure and gene expression
- DNA technology - gel electrophoresis, restriction enzymes, DNA profiling, polymorphic markers, PCR and gene frequencies
- Contamination avoidance procedures and quality assurance
- Record observations and experimental methodology in the form of structured notes
- Health & Safety

Indicative Bibliography:

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

Essential Reads

Alberts, B., Heald, R., Johnson, A., Morgan, D., Raff, M., Roberts, K., Walter, P., Wilson, J. & Hunt, T. (2022), *Molecular Biology of the Cell*, 7th Edition, New York, USA: W Norton & Co.

Other indicative reading

Berg, J., Gatto Jr, G., Hines, J., Tymoczko, J. & Stryer, L., (2023), *Biochemistry*, 10th Edition, New York, USA: Macmillan.

Reed, R., Holmes, D., Weyers, J. & Jones, A. (2021), *Practical Skills in Biomolecular Science*, 6th Edition, London, UK: Pearson.

Alberts, B., Hopkin, K., Johnson, A., Morgan, D., Roberts, K., Walter, P. & Heald, R. (2023), *Essential Cell Biology*, 6th Edition, New York, USA: WW Norton & Co.

Krebs, J., Goldstein, E. & Kilpatrick, S. (2018), *Lewin's Genes XII*, 12th Edition, Sudbury, USA: Jones & Bartlett.

A number of online resources provide high-quality material, for example the National Center for Biotechnology Information or the DNA learning Center at the Cold Spring Harbor Laboratory. For example, [Molecular Biology of the Cell, 4th Edition](#), is available free online.

Employability skills – the Glyndŵr Graduate

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. [Click here to read more about the Glyndwr Graduate attributes](#)

Core Attributes

Engaged
Enterprising
Creative
Ethical

Key Attitudes

Commitment
Curiosity
Resilience
Confidence
Adaptability

Practical Skillsets

Digital Fluency
Organisation
Leadership and Team working
Critical Thinking
Emotional Intelligence
Communication