

University of the West of Scotland

Session: 2024/25

Module Descriptor

Title of Module: Molecules of Life			
Code: CHEM07013	SCQF Level: 7 (Scottish Credit and Qualifications Framework)	Credit Points: 20	ECTS: 10 (European Credit Transfer Scheme)
School:	School of Computing, Engineering and Physical Sciences		
Module Co-ordinator:	Mohammed Yaseen		
Summary of Module			
<p>This module is an introduction to the main areas of biological and molecular science related to the life sciences. It would be useful to anyone interested in the further study of forensic, chemical or biological sciences.</p> <p>This module will work to develop a number of the key 'I am UWS' Graduate Attributes. Those who complete this module will have developed professional competencies in critical thinking require of a modern graduate. It will also develop problem solving and inquiry skills related to high-level academic study in science.</p> <ul style="list-style-type: none"> Serving as an introduction to cell and molecular biology, the module will focus on the central role of the cell in the maintenance and continuity of life. An introduction to the nature and scope of biology, and to the scientific method, will be presented. Cell structure and function will be investigated by considering the components of cells, including the role of macromolecules (carbohydrates, lipids, proteins and nucleic acids) in the cell. Chemical concepts that are important in the study of the cell will be covered including the periodic table, chemical bonding, properties of water and pH. Energy acquisition and use will be considered in photosynthesis and respiration, and the role of enzymes and metabolic pathways will be illustrated. The role of information in the cell will be illustrated by considering the processes of DNA replication, transcription and translation at an introductory level. Cell division processes will be investigated by describing the importance of the cell cycle, and the processes of mitosis and meiosis. An introduction to the range of cells, both prokaryotic and eukaryotic, will serve to introduce students to the concept of diversity at the cellular level, and the role of cells as components of multicellular organisms will be outlined. Introduction to basic human anatomy and physiology. An introduction to the Laboratory techniques in life science The role of cell and molecular biology in scientific research, and in medical, forensic and biotechnological applications will also be illustrated. 			

Module Delivery Method					
Face-To-Face	Blended	Fully Online	HybridC	HybridO	Work-based Learning

✓					
<p>Face-To-Face Term used to describe the traditional classroom environment where the students and the lecturer meet synchronously in the same room for the whole provision.</p> <p>Blended A mode of delivery of a module or a programme that involves online and face-to-face delivery of learning, teaching and assessment activities, student support and feedback. A programme may be considered "blended" if it includes a combination of face-to-face, online and blended modules. If an online programme has any compulsory face-to-face and campus elements it must be described as blended with clearly articulated delivery information to manage student expectations</p> <p>Fully Online Instruction that is solely delivered by web-based or internet-based technologies. This term is used to describe the previously used terms distance learning and e learning.</p> <p>HybridC Online with mandatory face-to-face learning on Campus</p> <p>HybridO Online with optional face-to-face learning on Campus</p> <p>Work-based Learning Learning activities where the main location for the learning experience is in the workplace.</p>					

Campus(es) for Module Delivery						
The module will normally be offered on the following campuses / or by Distance/Online Learning: (Provided viable student numbers permit)						
Paisley:	Ayr:	Dumfries:	Lanarkshire:	London:	Distance/Online Learning:	Other:
✓						

Term(s) for Module Delivery					
(Provided viable student numbers permit).					
Term 1		Term 2	✓	Term 3	

Learning Outcomes: (maximum of 5 statements)	
<p>On successful completion of this module the student will be able to:</p> <p>L1. Outline the features of biological systems at the biochemical and cellular levels</p> <p>L2. Demonstrate competence in selected basic life science laboratory skills</p> <p>L3. Describe a selection of the important features of human anatomy and physiology</p> <p>L4. Describe the properties and structure of selected bio-molecules</p>	
Employability Skills and Personal Development Planning (PDP) Skills	
SCQF Headings	During completion of this module, there will be an opportunity to achieve core skills in:
Knowledge and Understanding (K and U)	SCQF Level 7. Demonstrate knowledge of the cell and bio-molecules and their importance in understanding the processes of life and biochemistry.
Practice: Applied Knowledge and Understanding	SCQF Level 7. Develop an appreciation of the role of the biosciences in society, and the importance of cell and molecular biology in the context of basic science, and in medical, forensic and biotechnological applications.

Generic Cognitive skills	SCQF Level 7. Use a range of approaches to develop analytical skills in theoretical and practical aspects of cell and molecular biology.	
Communication, ICT and Numeracy Skills	SCQF Level 7. Develop skills in gathering and analysing information in the biosciences, from a range of sources, using IT skills as appropriate.	
Autonomy, Accountability and Working with others	SCQF Level 7. Work with others in the investigation of a range of topics in cellular and molecular aspects of the biosciences.	
Pre-requisites:	Before undertaking this module the student should have undertaken the following:	
	Module Code:	Module Title:
	Other:	
Co-requisites	Module Code:	Module Title:

* Indicates that module descriptor is not published.

Learning and Teaching	
Learning Activities During completion of this module, the learning activities undertaken to achieve the module learning outcomes are stated below:	Student Learning Hours (Normally totalling 200 hours): (Note: Learning hours include both contact hours and hours spent on other learning activities)
Lecture/Core Content Delivery	24
Laboratory/Practical Demonstration/Workshop	12
Tutorial/Synchronous Support Activity	12
Independent Study	152
	200 Hours Total
**Indicative Resources: (eg. Core text, journals, internet access)	
<p>The following materials form essential underpinning for the module content and ultimately for the learning outcomes: Biology (2nd Edition), OpenStax (Publ)</p> <p>Raven, Johnson, Mason, Losos and Stinger. (2018) Biology (11th edition). McGraw-Hill education (ISBN 978-1-259-25476-5).</p> <p>Chemistry (2nd Edition), OpenStax (Publ)</p> <p>Proteins: Structure and Function 2005 Wiley; 1st edition, ISBN-10 ? : ? 0471498947</p>	

(**N.B. Although reading lists should include current publications, students are advised (particularly for material marked with an asterisk*) to wait until the start of session for confirmation of the most up-to-date material)

Engagement Requirements

In line with the Academic Engagement Procedure, Students are defined as academically engaged if they are regularly engaged with timetabled teaching sessions, course-related learning resources including those in the Library and on the relevant learning platform, and complete assessments and submit these on time. Please refer to the Academic Engagement Procedure at the following link: [Academic engagement procedure](#)

Supplemental Information

Programme Board	Physical Sciences
Assessment Results (Pass/Fail)	No
Subject Panel	Physical Sciences
Moderator	Dr Ciaran Ewins
External Examiner	I Turner
Accreditation Details	
Changes/Version Number	1.09 update of Module Delivery (Section 9), to include some compulsory face-to-face sessions. Hybrid Online with mandatory face-to-face learning on Campus

Assessment: (also refer to Assessment Outcomes Grids below)

class tests (online) 60%

Laboratory and group work 40%

(N.B. (i) **Assessment Outcomes Grids** for the module (one for each component) can be found below which clearly demonstrate how the learning outcomes of the module will be assessed.
(ii) An **indicative schedule** listing approximate times within the academic calendar when assessment is likely to feature will be provided within the Student Handbook.)

Assessment Outcome Grids (Footnote A.)

Component 1						
Assessment Type (Footnote B.)	Learning Outcome (1)	Learning Outcome (2)	Learning Outcome (3)	Learning Outcome (4)	Weighting (%) of Assessment Element	Timetabled Contact Hours
Class test (written)	✓	✓	✓	✓	60	0
Component 2						

Assessment Type (Footnote B.)	Learning Outcome (1)	Learning Outcome (2)	Learning Outcome (3)	Learning Outcome (4)	Weighting (%) of Assessment Element	Timetabled Contact Hours
Laboratory/ Clinical/ Field notebook	✓	✓	✓	✓	40	0
Combined Total For All Components					100%	0 hours

Footnotes

- A. Referred to within Assessment Section above
 B. Identified in the Learning Outcome Section above

Note(s):

1. More than one assessment method can be used to assess individual learning outcomes.
2. Schools are responsible for determining student contact hours. Please refer to University Policy on contact hours (extract contained within section 10 of the Module Descriptor guidance note).
 This will normally be variable across Schools, dependent on Programmes &/or Professional requirements.

Equality and Diversity

This module is appropriate for all students. In cases where laboratory work raises safety issues for particular students, alternative delivery and assessment methods will be arranged where appropriate.

UWS Equality and Diversity Policy
[UWS Equality and Diversity Policy](#)

(N.B. Every effort will be made by the University to accommodate any equality and diversity issues brought to the attention of the School)