Module Descriptor

Title	Genetics		
Session	2026/27	**Status**	Published
Code	BIOL08012	**SCQF Level**	8
Credit Points	20	**ECTS (European Credit Transfer Scheme)**	10
School	**Health and Life Sciences**		
Module Co-ordinator	Farah Jaber		

Summary of Module

Genetics is one of the most exciting and rapidly developing areas of science. This module introduces you to both classical genetics and molecular biology. Molecular biology is the study of biology at a molecular level. You will discover the interactions between DNA, RNA and protein biosynthesis and learn how these interactions are regulated. This is the basis of developments such as cloning, gene editing, vaccine development and the creation of transgenic animals. This is combined with classical genetics which studies why and how offspring resemble their parents. An understanding of mechanisms and patterns of inheritance leads to a greater understanding of genetic disorders such as cystic fibrosis and muscular dystrophy. If scientists can understand the disorder they can develop new tests for these diseases and potential cures. In addition to gaining theoretical knowledge you will perform laboratory experiments to test the theories.

Undertaking this module will develop a range of graduate attributes. Valuable experience in practical work, recording, analysing and interpreting results will develop critical thinking skills. Basic knowledge of Genetics will be extended and ambition developed by consideration of current cutting edge developments such as gene editing. Working as a group to produce a poster on current technologies will enhance communication, collaboration and creativity.

Module Delivery Method	**On-Campus[1]**	**Hybrid[2]**	**Online[3]**	**Work -Based Learning[4]**
	☒	☐	☐	☐

[1] Where contact hours are synchronous/ live and take place fully on campus. Campus-based learning is focused on providing an interactive learning experience supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus contact hours will be clearly articulated to students.

[2] The module includes a combination of synchronous/ live on-campus and online learning events. These will be supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus and online contact hours will be clearly articulated to students.

[3] Where all learning is solely delivered by web-based or internet-based technologies and the participants can engage in all learning activities through these means. All required contact hours will be clearly articulated to students.

[4] Learning activities where the main location for the learning experience is in the workplace. All required contact hours, whether online or on campus, will be clearly articulated to students

Campuses for Module Delivery	☐ Ayr ☐ Dumfries		☒ Lanarkshire ☐ London ☐ Paisley		☐ Online / Distance Learning ☐ Other (specify)	
Terms for Module Delivery	Term 1	☐	Term 2	☒	Term 3	☐
Long-thin Delivery over more than one Term	Term 1 – Term 2	☐	Term 2 – Term 3	☐	Term 3 – Term 1	☐

Learning Outcomes	
L1	Describe the structure and properties of nucleic acids.
L2	Outline the processes of biosynthesis of nucleic acids and gene expression.
L3	Analyse the mechanisms and patterns of inheritance in higher organisms.
L4	Demonstrate practical skills in performing molecular techniques relevant to genetics and recording, analysing and interpreting results.
L5	

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 8** Demonstrate a broad knowledge of core molecular genetics (central dogma). Understand the core theories of inheritance with limited application.
Practice: Applied Knowledge and Understanding	**SCQF 8** Use the theoretical knowledge gained to perform experiments and interpret the results.
Generic Cognitive skills	**SCQF 8** Use a range of approaches to formulate appropriate responses to problems in mendelian and molecular genetics.
Communication, ICT and Numeracy Skills	**SCQF 8** Communicate effectively orally and in writing. Analyse and interpret data where appropriate.
Autonomy, Accountability and Working with Others	**SCQF 8** Working in teams to perform practical work will require time management, organisational skills and awareness of professional practice.

Prerequisites	**Module Code** BIOL07023 BIOL07022	**Module Title** Fundamentals of Life Chemistry for Biosciences
	Other	

Co-requisites	Module Code	Module Title

Learning and Teaching

In line with current learning and teaching principles, a 20-credit module includes 200 learning hours, normally including a minimum of 36 contact hours and maximum of 48 contact hours.

This module will be delivered using a face-to-face approach to learning and teaching, unless otherwise stated. Delivery will be supported by a range of material on the VLE. Methods will include lectures, videos, tutorials focused on problem solving and application of theoretical knowledge and practical laboratory work. The material in this module will develop concepts introduced in level 7. The laws and concepts of inheritance will be introduced and applied in problem solving. This will reinforce basic concepts and encourage a deeper learning approach. Concepts in molecular genetics will be further developed from level 7 by looking at replication, transcription, translation and their control in more detail. Relevance to DNA technology applications will be highlighted appropriately to maintain relevance to current developments. Practicals skills in molecular techniques will be developed in the laboratory and data from practical experiments will be analysed and presented appropriately.

Learning Activities During completion of this module, the learning activities undertaken to achieve the module learning outcomes are stated below:	**Student Learning Hours** (Note: Learning hours include both contact hours and hours spent on other learning activities)
Lecture / Core Content Delivery	20
Tutorial / Synchronous Support Activity	8
Laboratory / Practical Demonstration / Workshop	12
Asynchronous Class Activity	8
Independent Study	152
n/a	
TOTAL	200

Indicative Resources

The following materials form essential underpinning for the module content and ultimately for the learning outcomes:

Some useful websites:

https://www.yourgenome.org/

https://learn.genetics.utah.edu/content/basics/

https://dnalc.cshl.edu/resources/

Hartl, D.L. (2020) Essential Genetics and Genomics (7th ed; Jones and Bartlett)

Hartl, D.L. & Cochrane, B. (2019) Genetics Analysis of Genes and Genomes (9th ed; Jones & Bartlett)

Snustad, D.P. & Simmons, M.J. (2019) Principles of Genetics (7th ed.Wiley)

(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)

Attendance and Engagement Requirements
In line with the Student Attendance and Engagement Procedure, Students are academically engaged if they are attending and participating in all timetabled programme activities including on-campus and online teaching sessions, asynchronous online learning activities, placement, work-based elements, course-related learning resources, and complete assessments and submit these on time. **For the purposes of this module, academic engagement equates to the following:** Attendance on-campus for all sessions unless otherwise stated.

Equality and Diversity
The University's Equality, Diversity and Human Rights Procedure can be accessed at the following link: UWS Equality, Diversity and Human Rights Code. In line with current legislation (Equality Act, 2010) and the UWS Equality, Diversity, and Human Rights Code, our modules are accessible and inclusive, with reasonable adjustment for different needs where appropriate. Module materials comply with University guidance on inclusive learning and teaching, and specialist assistive equipment, support provision and adjustment to assessment practice will be made in accordance with UWS policy and regulations. Where modules require practical and/or laboratory based learning or assessment required to meet accrediting body requirements the University will make reasonable adjustment such as adjustable height benches or assistance of a 'buddy' or helper.
(N.B. Every effort will be made by the University to accommodate any equality and diversity issues brought to the attention of the School)

Supplemental Information

Divisional Programme Board	**Biological Sciences Health**
Overall Assessment Results	☐ **Pass / Fail** ☒ **Graded**
Module Eligible for Compensation	☒ **Yes** ☐ **No** **If this module is eligible for compensation, there may be cases where compensation is not permitted due to programme accreditation requirements. Please check the associated programme specification for details.**
School Assessment Board	Biology
Moderator	Robin Freeburn
External Examiner	J Butcher
Accreditation Details	IBMS/ HCPC/ RSB
Module Appears in CPD catalogue	☐ **Yes** ☒ **No**
Changes / Version Number	1

Assessment (also refer to Assessment Outcomes Grids below)
Assessment 1
Two class tests, worth 50% of the final mark.
Assessment 2
Lab Reports and group poster based on the practical work worth 50% of the final mark.

Assessment 3
Observation of practical skills in molecular techniques. This is a Pass/Fail component which must be passed.
(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 Module Handbook.)

Component 1							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Class test (written)	☒	☒	☒	☐	☐	50	2

Component 2							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Report of practical/ field/ clinical work	☐	☐	☐	☒	☐	50	0

Component 3							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Clinical/ Fieldwork/ Practical skills assessment/ Debate/ Interview/ Viva voce/ Oral	☐	☐	☐	☒	☐	0	0
Combined total for all components						100%	2 hours

Change Control

What	**When**	**Who**
Change of module moderator from G. McGarvie to R. Freeburn.	Feb 2025	F Jaber
Indicative Resources	July 2025	F Menzies