Module Descriptor

Title	Clinical Genetics		
Session	2025/26	**Status**	Published
Code	BIOL10018	**SCQF Level**	10
Credit Points	20	**ECTS (European Credit Transfer Scheme)**	10
School	**Health and Life Sciences**		
Module Co-ordinator	Amelie Juin		

Summary of Module

This module will take an in depth look at the molecular basis, screening, investigation and treatment of genetic diseases. The course will cover broad aspects of genetics which relate to medical technologies and diagnostics but will also cover relevant areas of basic human genetics to ensure students gain a comprehensive overview of the role of genetics in human disease.

It will give the students an excellent grounding in human genomics and the new technology developments in clinical genetics, highlighting the pivotal role these innovations play in modern medical treatments, screening programmes, and associated quality assurance procedures. Where relevant, examples of point-of-care testing (PoCT) will be examined. The module aims to explore the effects of mutation and variation in the current techniques used in NHS genetics laboratory diagnostics and recent technological developments in diagnostics such as microarray analysis and next-generation sequencing.

This module will work to develop a number of the key "I am UWS" Graduate Attributes to make those who complete the module, have Universal skills, that will make them Work Ready and Successful.

Module Delivery Method	**On-Campus[1]**	**Hybrid[2]**	**Online[3]**	**Work -Based Learning[4]**
	☒	☐	☐	☐
Campuses for Module Delivery	☐ Ayr	☒ Lanarkshire	☐ Online / Distance Learning	

[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

	☐ Dumfries		☐ London ☐ Paisley		☐ 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	Detailed knowledge and understanding of the genetic basis of selected human genetic diseases.
L2	Critically analyse the investigative and diagnostic techniques used in clinical genetics.
L3	Demonstrate knowledge and understanding of emerging genetic therapies for selected human disease.
L4	To critically discuss the consequences and ethical issues associated with genetic screening and testing at both an individual and population level.
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 10** Demonstrate a broad knowledge in the effects of mutations and genetic variation in human disease. Demonstrate a critical understanding of the principal concepts underpinning current techniques used in NHS genetics laboratory diagnostics.
Practice: Applied Knowledge and Understanding	**SCQF 10** Use the theoretical knowledge gained to perform appropriate techniques relevant to genetics and molecular biology. Analyse results in the context of the theoretical underpinning of applying genomic techniques to clinical diagnosis.
Generic Cognitive skills	**SCQF 10** Critically analyse the techniques, applications and implications, including ethical issues, of an application of genetic technology in a medical context.
Communication, ICT and Numeracy Skills	**SCQF 10** Communicate effectively orally and in writing. Analyse and interpret data where appropriate. Use IT to retrieve information.
Autonomy, Accountability and Working with Others	**SCQF 10** Working in teams and individually to perform laboratory work. Research and present information that will require time management, organisational skills and an understanding of professional practice.

Prerequisites	**Module Code** BIOL08012	**Module Title** Genetics
	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. Core theory and concepts will be delivered using formal lectures and tutorials where student participation will be expected. Students will acquire key practical skills by performing techniques use in DNA technology such as PCR and gene cloning in the laboratory sessions. The concepts of these techniques will be reinforced by analysing and presenting the data including answering focused questions on the concept of the techniques. Students will develop skills of computer based information retrieval as they are required to search through relevant databases to retrieve data and generate integrated information about a genetic disorder, as an introduction to the subject of Bioinformatics. Enquiry based learning will be used to explore topical issues in DNA technology from a medical perspective. This will enhance skills of gathering information, critically analysing including ethical issues and presenting it. Working in groups will develop organisational and time management skills.	
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	24
Laboratory / Practical Demonstration / Workshop	6
Tutorial / Synchronous Support Activity	6
Independent Study	164
n/a	
n/a	
TOTAL	200

Indicative Resources
The following materials form essential underpinning for the module content and ultimately for the learning outcomes: Medical genetics - An integrated approach. G. Bradley Schaefer, James N. Thompson, Jr. McGraw Hill Education, 2014. ISBN-13: 978-0071664387, ISBN-10: 9780071664387 Genetics: A Conceptual Approach (7th Edition). Pierce, A. Benjamin, MacMillan learning, 2020. ISBN: 9781319308315 New Clinical Genetics: a guide to genomic medicine (4th edition). A. Read and D. Donnai. Scion Publishing, 2021. ISBN: 9781911510741 Medical Genetics and Genomics (Fundamentals of Biomedical Science). E. Volpi and L Tinworth, Oxford University Press, 2025. IBMS: 9780198834724

The module will also make extensive use of up-to-date journal articles in the area of Clinical and Medical genetics, including journal titles such as Nature Review Genetics, Genome Research, PLoS Genetics, American Journal of Human Genetics. Resources provided on module VLE.
(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 regularly attending and participating in timetabled on-campus and online teaching sessions, asynchronous online learning activities, course-related learning resources, and complete assessments and submit these on time. **For the purposes of this module, academic engagement equates to the following:** Where a module has Professional, Statutory or Regulatory Body requirements these will be listed here: In line with the Academic Engagement and Attendance 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 VL, and complete assessments and submit these on time. Please refer to the Academic Engagement and Attendance Procedure at the following link: Academic engagement and attendance procedure Attendance at synchronous sessions (lectures, workshops and tutorials) completion of asynchronous activities, and submission of assessments to meet the learning outcomes of the module.

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	Gary Boyd
External Examiner	S Haliti
Accreditation Details	IBMS/ HCPC
Module Appears in CPD catalogue	☐ **Yes** ☒ **No**
Changes / Version Number	4.08

Assessment (also refer to Assessment Outcomes Grids below)
Assessment 1
Two class tests (written) worth 50% of the module mark.
Assessment 2
Coursework worth 50% of the module mark (Case study - 25% and Workbook/ Laboratory notebook/ Diary/ Training log/ Learning log - 25%).
Assessment 3
(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**
Workbook/ Laboratory notebook/ Diary/ Training log/ Learning log	☐	☐	☒	☒	☐	50	0

Component 3							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
	☐	☐	☐	☐	☐		
Combined total for all components						100%	2 hours

Change Control

What	When	Who
New External Examiner	November 2024	Amelie Juin
Prerequisites updated	July 2025	F Menzies
Indicative Resource list updated	July 2025	F Menzies