

University of the West of Scotland

Module Descriptor

Session: 2022/23

Last modified: 04/03/2022 15:10:30

Status: Published

Title of Module: Clinical Genetics

Code: BIOL10018	SCQF Level: 10 (Scottish Credit and Qualifications Framework)	Credit Points: 20	ECTS: 10 (European Credit Transfer Scheme)
School:	School of Health and Life Sciences		
Module Co-ordinator:	Robin Freeburn		

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 which underpin medical treatments and screening programmes. It 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.

Module Delivery Method

Face-To-Face	Blended	Fully Online	HybridC	HybridO	Work-based Learning
	✓				

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.

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

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.

HybridC

Online with mandatory face-to-face learning on Campus

HybridO

Online with optional face-to-face learning on Campus

Work-based Learning

Learning activities where the main location for the learning experience is in the workplace.

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	Other:
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Learning:

**Term(s) for Module Delivery**

(Provided viable student numbers permit).

Term 1

Term 2



Term 3

Learning Outcomes: (maximum of 5 statements)

On successful completion of this module the student will be able to:

- 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.

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 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 Level 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 Level 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 Level 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 Level 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.

Pre-requisites:

Before undertaking this module the student should have undertaken the following:

Module Code:
BIOL08012
BIOL09033
BIOL08019

Module Title:
Genetics
Molecular & Cellular Pathology
Core Biomedical Science

	Other:	or equivalent
Co-requisites	Module Code:	Module Title:

* Indicates that module descriptor is not published.

Learning and Teaching

Delivery of this module will use a blended learning approach. 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

(Normally totalling 200 hours):

(Note: Learning hours include both contact hours and hours spent on other learning activities)

Lecture/Core Content Delivery	18
Laboratory/Practical Demonstration/Workshop	6
Tutorial/Synchronous Support Activity	6
Asynchronous Class Activity	6
Independent Study	164
	200 Hours Total

**Indicative Resources: (eg. Core text, journals, internet access)

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. ISBN-13: 978-0071664387, ISBN-10: 9780071664387

Genetics: A Conceptual Approach (5th Edition). Pierce B. Freeman. ISBN: 9781464109461

New Clinical Genetics (3rd edition). A. Read and D. Donnai. Scion Publishing. ISBN 9781907904677

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.

(**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](#)

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

For the purposes of this module, academic engagement equates to the following:

Attendance at synchronous sessions (lectures, workshops and tutorials) completion of asynchronous activities, and submission of assessments to meet the learning outcomes of the module.

Supplemental Information

Programme Board	Biological Sciences and Health
Assessment Results (Pass/Fail)	No
Subject Panel	Biology L7-11
Moderator	Gary Boyd
External Examiner	D Stobo
Accreditation Details	This module is part of the BSc (Hons) Biomedical Science programme; accredited by Institute of Biomedical Science (IBMS) and approved by Health & Care Professions Council (HCPC) as
Changes/Version Number	4.03 Annual update

Assessment: (also refer to Assessment Outcomes Grids below)
Two class tests worth 50% of the module mark.
Coursework worth 50% of the module mark.
(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)	✓	✓	✓		50	2

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
Case study				✓	25	0
Workbook/ Laboratory notebook/ Diary/ Training log/ Learning log			✓	✓	25	0

Combined Total For All Components	100%	2 hours
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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

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. Please refer to the UWS Equality and Diversity Policy at the following link: [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)