

University of the West of Scotland

Module Descriptor

Session: 2023/24

Last modified: 08/02/24

Status: Published

Title of Module: Research & Commercialisation in Biotechnology

Code: BIOL11019	SCQF Level: 11 (Scottish Credit and Qualifications Framework)	Credit Points: 20	ECTS: 10 (European Credit Transfer Scheme)
School:	School of Health and Life Sciences		
Module Co-ordinator:	Gail McGarvie		

Summary of Module

Biotechnology is a rapidly developing area which applies current scientific research and technologies to improving healthcare, agriculture and the environment. In this module students will gain a critical understanding of current research in biological systems, living organisms and their products applied to treatment, prevention and diagnosis of disease. Research and application to improvement in agriculture will also be considered. Students will gain an understanding of the process by which basic research is developed, through preclinical and clinical studies, into novel products in the biotechnology sector.

This will lead on to an extensive, detailed and critical knowledge of how biotechnology companies operate, the regulations and standards they work within and the factors that are considered when developing and maintaining a successful business. Topics covered will include regulatory affairs, quality assurance, clinical trials, health economics, commercialisation and lifecycle management. Other graduate attributes that will be developed are critical thinking, problem solving and cultural awareness by exploring the global industry. You will be expected to contribute to discussion providing innovative and enterprising solutions. The module will take you from current research through to product.

The module will be delivered by presentations, tutorials, interactive workshops and student-led research. Guest speakers from industry will be a key component of the teaching strategy.

This module will develop the following graduate attributes: Critical thinker, enquiring, knowledgeable, autonomous, culturally aware, effective communicator, driven, enterprising.

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 DeliveryThe 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)

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

L1. Demonstrate detailed and critical knowledge of how biotechnology can be applied to developing products and processes to improve healthcare, agriculture and the environment.

L2. Demonstrate a critical understanding of the main challenges and opportunities within the biotechnology industry.

L3. Critically evaluate the factors involved in the development and commercialisation of a biological product or process.

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 11. Demonstrate critical understanding of the development and application of current biotechnology research. Demonstrate knowledge and critical understanding of the key issues and factors which influence the biotechnology industry.
Practice: Applied Knowledge and Understanding	SCQF Level 11. Demonstrate originality in critically evaluating the development and commercialisation of a biotechnology product or process.
Generic Cognitive skills	SCQF Level 11. Apply critical analysis, evaluation and synthesis to issues at the forefront of developments and commercialisation in biotechnology.
Communication, ICT and Numeracy Skills	SCQF Level 11. Communicate effectively to peers and more senior colleagues at an appropriate level.

Autonomy, Accountability and Working with others	SCQF Level 11. Exercising autonomy and initiative in researching and evaluating current developments biotechnology.
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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	
Core theory and concepts will be delivered in group discussions. Applications and current research will be reviewed through critical evaluation of current journals publications. Additional resources and information will be available on the VLE.	
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	0
Tutorial/Synchronous Support Activity	24
Asynchronous Class Activity	12
Independent Study	164
	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:</p> <p>Journals –It is envisaged that students will primarily use peer-reviewed research and review articles in biotechnology, medical and bioscience journals as their main reading material throughout this module. Students will be directed to current and previous publications, through the use of repositories on the module VLE site, and through institutional subscriptions to relevant journals. For basic concepts in Biotechnology there are several books available.</p> <p>Centre for Biologics Evaluation and Research http://www.fda.gov/BiologicsBloodVaccines/default.htm</p> <p>The Food and Drug Administration (FDA) http://www.fda.gov/default.htm</p> <p>The European Medicines Agency (Formerly the EMEA) http://www.ema.europa.eu/ema/index.jsp?curl=/pages/home/Home_Page.jsp&jsenabled=true</p> <p>The Medicines and Healthcare Regulatory Agency (MHRA) http://www.mhra.gov.uk/index.htm</p> <p>National Institute of Clinical Excellence (NICE) http://www.nice.org.uk/</p>

The following are examples of recent books. These are not essential reading but may be used as a reference for basic concepts:

Biotechnology Fundamentals, Second Edition CRC Press; 2 edition (2016) ISBN-10: 149872342X

Biotechnology, Academic Cell; 2 edition (2015) ISBN-10: 0123850150

(**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:
Attendance at synchronous sessions (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	Steven Kelly
External Examiner	A Tsaousis
Accreditation Details	
Changes/Version Number	1.12 Delivery updated to HybridC

Assessment: (also refer to Assessment Outcomes Grids below)

Case study (60%) The written case study will follow the development of a product or process from the initial research (bench) to its application and use as a commercial product (bedside). Students will apply knowledge and understanding from lectures and tutorials to critically evaluate a selected product. There will be an opportunity for submitting a draft case study for formative feedback prior to the final submission.

Presentation (40%) The presentation will allow the student to consolidate their knowledge of the biotechnology industry by presenting a SWOT analysis of the industry.

(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)	Weighting (%) of Assessment Element	Timetabled Contact Hours

Case study	✓		✓	60	0
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Component 2					
Assessment Type (Footnote B.)	Learning Outcome (1)	Learning Outcome (2)	Learning Outcome (3)	Weighting (%) of Assessment Element	Timetabled Contact Hours
Presentation		✓		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

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.

[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)