Module Descriptor

Title	Research & Commercialisation in Biotechnology		
Session	2025/26	**Status**	Published
Code	BIOL11019	**SCQF Level**	11
Credit Points	20	**ECTS (European Credit Transfer Scheme)**	10
School	**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. The following UN SDGs will be relevant 3 and 10.

Module Delivery Method	On-Campus[1] ☒	Hybrid[2] ☐	Online[3] ☐	Work -Based Learning[4] ☐
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	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.
L4	
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 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 11** Demonstrate originality in critically evaluating the development and commercialisation of a biotechnology product or process.

[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

Generic Cognitive skills	**SCQF 11** Apply critical analysis, evaluation and synthesis to issues at the forefront of developments and commercialisation in biotechnology.
Communication, ICT and Numeracy Skills	**SCQF 11** Communicate effectively to peers and more senior colleagues at an appropriate level.
Autonomy, Accountability and Working with Others	**SCQF 11** Exercising autonomy and initiative in researching and evaluating current developments biotechnology.

Prerequisites	**Module Code**	**Module Title**
	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 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** (Note: Learning hours include both contact hours and hours spent on other learning activities)
Tutorial / Synchronous Support Activity	36
Independent Study	164
n/a	
n/a	
n/a	
n/a	
TOTAL	200

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

Centre for Biologics Evaluation and Research
http://www.fda.gov/BiologicsBloodVaccines/default.htm

The Food and Drug Administration (FDA) http://www.fda.gov/default.htm

The European Medicines Agency (Formerly the EMEA)
http://www.ema.europa.eu/ema/index.jsp?curl=/pages/home/Home_Page.jsp&jsenabled=true

The Medicines and Healthcare Regulatory Agency (MHRA)
http://www.mhra.gov.uk/index.htm

National Institute of Clinical Excellence (NICE) http://www.nice.org.uk/

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)

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:

The university is committed to providing a supportive learning environment that actively facilitates student success. In this module, there is a high degree of student-led flexibility. You are academically engaged if you are regularly engaged with scheduled live sessions on-campus and online, including engaging with online learning activities in your own time, course-related learning resources, and with timely completion and submission of assessments.

Whilst we understand that there may be times when conflicting priorities make participation challenging, for you to gain the most from this module it is recommended that you participate in all scheduled live classes and complete your self-directed learning activities in a timely manner.

It may be difficult to pass the assessment associated with this module if you are not regularly engaging with the module work and live classes. We may reach out to check how things are going and offer support if we observe that you have not been attending sessions or completing online activities.

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	Steven Kelly
External Examiner	A Tsaousis
Accreditation Details	
Module Appears in CPD catalogue	☐ **Yes** ☒ **No**
Changes / Version Number	

Assessment (also refer to Assessment Outcomes Grids below)
Assessment 1
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
Assessment 2
Presentation (40%)The presentation will allow the student to consolidate their knowledge of the biotechnology industry by presenting a SWOT analysis of the industry.
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**
Case study	☒	☐	☒	☐	☐	60	0

Component 2							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Presentation	☐	☒	☐	☐	☐	40	0

Component 3							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
	☐	☐	☐	☐	☐		
Combined total for all components						100%	0 hours

Change Control

What	When	Who