



Module Descriptor

Title	Applied Microbiology		
Session	2024/25	Status	Published
Code	BIOL09005	SCQF Level	9
Credit Points	20	ECTS (European Credit Transfer Scheme)	10
School	Health and Life Sciences		
Module Co-ordinator	Roderick Williams		
Summary of Module			
<p>In this module, students will be introduced through lectures and practical sessions required to the role(s) of microorganisms in industrial and pharmaceutical processes. Emphasis will be placed on:</p> <ul style="list-style-type: none">(a) Cleaning processes such as disinfection and sterilisation protocols that are essential in the food, health care and pharmaceutical industries for health protection.(b) The generic fermentation process for food production including instrumentation.(c) Selected industrial processes which exploit microorganisms' inherent metabolic activities for the biosynthesis of secondary metabolites such as organic acids and antibiotics.(d) Mechanisms of action of antibiotics, the development of resistance to antibiotics and assay methods for quantification of antibiotics and small-scale production of the antibiotic, penicillin.(e) The association of microorganisms with and the mechanism of food spoilage, the potential to spoil food to cause morbidity/mortality and the important measures available for the prevention of food spoilage e.g. preservation, pasteurisation, drying, and canning.(f) Use of standard microbiological protocols to prepare selective/differential media and use them to isolate bacteria from different food types and count bacteria. <p>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</p>			

Module Delivery Method	On-Campus¹ <input checked="" type="checkbox"/>	Hybrid² <input type="checkbox"/>	Online³ <input type="checkbox"/>	Work -Based Learning⁴ <input type="checkbox"/>		
Campuses for Module Delivery	<input type="checkbox"/> Ayr <input type="checkbox"/> Dumfries	<input checked="" type="checkbox"/> Lanarkshire <input type="checkbox"/> London <input type="checkbox"/> Paisley	<input type="checkbox"/> Online / Distance Learning <input type="checkbox"/> Other (specify)			
Terms for Module Delivery	Term 1	<input checked="" type="checkbox"/>	Term 2	<input type="checkbox"/>	Term 3	<input type="checkbox"/>
Long-thin Delivery over more than one Term	Term 1 – Term 2	<input type="checkbox"/>	Term 2 – Term 3	<input type="checkbox"/>	Term 3 – Term 1	<input type="checkbox"/>

Learning Outcomes	
L1	Describe the principles and practices of selected industrial, pharmaceutical and food processes.
L2	Describe the applications and roles of selected microorganisms in these processes.
L3	Perform and report on laboratory techniques and methods as scientific reports.
L4	Demonstrate competency in a range of standard microbiological techniques according to protocols to minimise infection in accordance with local microbiological safety regulations.
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 9 Demonstrate knowledge and understanding of essential facts and principles in respect of industrial processes
Practice: Applied Knowledge and Understanding	SCQF 9 Use this knowledge gained to develop solutions to practical problems in a routine but unfamiliar context
Generic Cognitive skills	SCQF 9 Link together different content strands when writing standard scientific reports

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

Communication, ICT and Numeracy Skills	SCQF 9 Be able to communicate effectively in writing scientific reports using data analysis, statistics and be able to communicate their findings orally
Autonomy, Accountability and Working with Others	SCQF 9 Be able to work individually or in teams as appropriate, demonstrate an ability to organise time management and negotiating skills

Prerequisites	Module Code BIOL08004	Module Title Introductory Microbiology
	Other Students are recommended to have taken Introductory Microbiology, BIOL08004, prior to taking this module	
Co-requisites	Module Code	Module Title

Learning and Teaching	
<p>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.</p> <p>This module will be delivered using lectures, tutorials and practical sessions.</p> <p>Students will be required to access lecture notes, links to reference sources and other support materials on VLE. This will provide students with core material which forms the basis of the syllabus and supplementary material to broaden their reading within the subject.</p> <p>Lectures will deliver fundamental information which will assist students in understanding key concepts relevant to the diversity and exploitation of microbial metabolism in a wide range of sectors.</p> <p>Practical sessions will allow students to develop their laboratory skills in areas such as the use selective/differential media for isolation and identification of microorganisms, assays for the determining microbial sensitivities and/or metabolite production levels.</p> <p>The class test will provide an opportunity for students to demonstrate theoretical knowledge and critical or analytical skills related to the utilisation of that knowledge within microbiological research and commercial/industrial/clinical processes.</p> <p>The scientific laboratory report will allow students to develop their data handling, presentation, critical analysis skills and the use of statistics for comparative analysis. Writing of the scientific laboratory report will provide students with the opportunity to develop the ability to use information from research articles, adapt and transfer the knowledge into the new context provided by the lab exercises. Tutorials will be provided to support development of the skills required to complete the scientific laboratory report.</p>	
Learning Activities	Student Learning Hours
During completion of this module, the learning activities undertaken to achieve the module learning outcomes are stated below:	(Note: Learning hours include both contact hours and hours spent on other learning activities)
Lecture / Core Content Delivery	24
Laboratory / Practical Demonstration / Workshop	24
Independent Study	152
Please select	

Please select	
Please select	
TOTAL	200

Indicative Resources

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

Hugo, W. B. and Russell, A.D. (1998 6th edition) Pharmaceutical Microbiology

Waites, M. J., Morgan, N.L., Rockey, J.S., and Higton, G. (2006) Industrial Microbiology. An Introduction Blackwell

Jay, J.M., Loessner, M.J., and Golden, D.A. (2005 7th Edition) Modern Food Microbiology. Springer

Sprenger, R.A. 2009 15th edition) Hygiene for Management Highfield.CO.UK Limited

(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:

Attendance at all synchronous sessions (lectures, tutorials and practicals), completion of asynchronous activities, and submission of assessments to meet the learning outcomes of the module. This module has a practical element as part of the Royal Society of Biology (RBS) and the Institute of Biomedical Science (IBMS) accreditation which must be attended.

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.

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

Supplemental Information

Divisional Programme Board	Biological Sciences Health
Overall Assessment Results	<input type="checkbox"/> Pass / Fail <input checked="" type="checkbox"/> Graded
Module Eligible for Compensation	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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	BSH L7-11
Moderator	F. Menzies
External Examiner	
Accreditation Details	<p>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 part of BSc (Hons) Applied Biomedical Science programme.</p> <p>This module is part of the BSc (Hons) Applied Bioscience and BSc (Hons) Applied Bioscience with Forensic Investigation programmes; accredited by Royal Society of Biology (RSB).</p> <p>This module is part of the BSc (Hons) Environmental Health with Professional Practice programme; accredited by The Royal Environmental Health Institute of Scotland.</p>
Module Appears in CPD catalogue	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Changes / Version Number	3.06

Assessment (also refer to Assessment Outcomes Grids below)

Assessment 1

One class test which contributes 30% to the module mark

Assessment 2

Two Laboratory reports will contribute 70% to the module mark.

Assessment 3

Competency in technical laboratory skills e.g. pipetting, dilutions, aseptic techniques, assays (chemical and biological). 0% of final mark (pass/fail)

(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	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	30	2

Component 2							
Assessment Type	LO1	LO2	LO3	LO4	LO5	Weighting of Assessment Element (%)	Timetabled Contact Hours
Scientific Report and Logbook	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	70	14

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	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0
Combined total for all components						100%	4 hours

Change Control

What	When	Who