Module specification

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Refer to the module guidance notes for completion of each section of the specification.

Module code	SCI546
Module title	Applied Microbiology
Level	5
Credit value	20
Faculty	FAST
Module Leader	Dr Neil Pickles
HECoS Code	100265
Cost Code	GAFS

Programmes in which module to be offered

Programme title	Is the module core or option for this programme
BSc (Hons) Biochemistry	Core

Pre-requisites

None

Breakdown of module hours

Learning and teaching hours	30 hrs
Placement tutor support	0 hrs
Supervised learning e.g. practical classes, workshops	0 hrs
Project supervision (level 6 projects and dissertation modules only)	0 hrs
Total active learning and teaching hours	**30** hrs
Placement / work based learning	170 hrs
Guided independent study	0 hrs
Module duration (total hours)	200 hrs

For office use only	
Initial approval date	14/10/2020
With effect from date	01/09/2022
Date and details of revision	
Version number	1

Module aims

This module aims to:

1. Establish a detailed knowledge of a range of microbial organisms; their structure, life cycles and interaction with hosts
2. Investigate the positive and negative aspects of microbial growth in a number of applied settings
3. Explore traditional and contemporary control measure for micro-organisms in a number of applied settings, and how these may change in the future
4. Develop an awareness of a range of routine microbiological tests

Module Learning Outcomes - at the end of this module, students will be able to:

1	Analyse the structure, reproduction and properties of a range of microbial organisms
2	Analyse the merit of a range of control measures available for microbial growth
3	Evaluate selected techniques used in a microbiology laboratory
4	Analyse the potential positive and negative impacts of microbes in applied settings

Assessment

Indicative Assessment Tasks:

Assessment 1. Poster presentation (1000 words equivalent) on the positive and negative aspects of microbial growth in applied settings.

Assessment 2. Examination (multiple choice), duration 2 hours, to test knowledge of microbes, control of growth and microbiological techniques.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)
1	4	Poster Presentation	25%
2	1, 2, 3	Examination	75%

Derogations

N/A

Learning and Teaching Strategies

Delivery of taught content in this module will involve flipped classroom, scale-up methodologies and a blended learning approach. This module will utilise online learning, both synchronous and asynchronous.

Students will benefit from a structured programme of directed learning.

Indicative Syllabus Outline

The module develops introductory microbiology skills and knowledge acquired at level 4 to a much deeper level and in relation to more applied settings. The topics will expand beyond human microbiology and will consider microbial growth in biotic and abiotic environments. The positive and negative aspects of microbes in different environment will be explored, with reference to medical and biotechnology settings.

Key topics:

- Bacteria, viruses, fungi and parasites
- Microbial structure, reproduction and properties
- Biofilms and quorum sensing
- Antibiotics and antimicrobial resistance (AMR)
- Microbiological practical techniques
- Epidemiology
- Microbial Life Cycles and relevance to control of infection and disease
- Control of Micro-organisms in the applied settings (e.g. abiotic and biotic surfaces, human hosts, water treatment and other environments)
- Positive and negative aspects of microbial growth

Indicative Bibliography:

Please note the essential reads and other indicative reading are subject to annual review and update.

Essential Reads

Goering, R., Dockrell, H., Zuckerman, M. and Chiodini, P.L. (2019) *Mims' Medical Microbiology and Immunology*. 6th Ed. London: Elsevier.

Other indicative reading

Ford, M. (Ed.) (2019) *Medical Microbiology*. 3rd Ed. Oxford: Oxford University Press.

Goering, R., Dockrell, H., Zuckerman, M. and Chiodini, P.L. (2019) *Mims' Medical Microbiology and Immunology*. 6th Ed.

Garner, D. (2019). *Microbiology Nuts & Bolts: Key Concepts of Microbiology & Infection* 3rd Ed. Microbiology Nuts and Bolts

Open access journals

Microbiology insights https://journals.sagepub.com/home/mbi

Microbial biotechnology https://sfamjournals.onlinelibrary.wiley.com/journal/17517915

mBio https://mbio.asm.org/

Employability skills – the Glyndŵr Graduate

Each module and programme is designed to cover core Glyndŵr Graduate Attributes with the aim that each Graduate will leave Glyndŵr having achieved key employability skills as part of their study. The following attributes will be covered within this module either through the content or as part of the assessment. The programme is designed to cover all attributes and each module may cover different areas. Click here to read more about the Glyndwr Graduate attributes

Core Attributes
Engaged
Creative
Enterprising
Ethical

Key Attitudes
Commitment
Curiosity
Resilience
Confidence
Adaptability

Practical Skillsets
Digital Fluency
Organisation
Leadership and Team working
Critical Thinking
Emotional Intelligence
Communication