

BIOL S8Z03: Microbiology 1

Module Details	
Module Code:	BIOL S8Z03
Full Title:	Microbiology 1 APPROVED
Valid From::	Semester 1 - 2018/19 (September 2018)
Language of Instruction:	
Duration:	1 Semester
Credits::	7.5
Module Owner::	Orla Sherlock
Departments:	Unknown
Module Description:	The student will apply their knowledge of the bacterial cell and basic microbiology to the study of microbial nutrition, ecology, growth, and tools of the microbiology laboratory.

Module Learning Outcome	
On successful completion of this module the learner will be able to:	
#	Module Learning Outcome Description
MLO1	Recall the generalized anatomy of bacterial cells.
MLO2	Describe the purpose and processes of selected procedures used in handling, maintaining, and studying microorganisms.
MLO3	Discuss the major environmental factors to which microbes must adapt for survival.
MLO4	Outline the principles of microbial population growth and apply these to the enumeration of microorganisms using direct and indirect quantification methods.
MLO5	Identify the major categories of commonly encountered microorganisms.
MLO6	Perform basic microbiology laboratory procedures for the growth, maintenance, identification and enumeration of microorganisms.
Pre-requisite learning	
Module Recommendations <i>This is prior learning (or a practical skill) that is strongly recommended before enrolment in this module. You may enrol in this module if you have not acquired the recommended learning but you will have considerable difficulty in passing (i.e. achieving the learning outcomes of) the module. While the prior learning is expressed as named DkIT module(s) it also allows for learning (in another module or modules) which is equivalent to the learning specified in the named module(s).</i>	
No recommendations listed	

Module Indicative Content
Topic 1: Proteobacteria Revision of microbial morphology and cytology.
Topic 2: Tools of the Microbiology Laboratory Laboratory culture and identification of microorganisms: laboratory methods for studying microorganisms: inoculation, incubation, isolation, inspection, information gathering and interpretation, identification.
Topic 3: Microbial Nutrition and Ecology Impact of nutrient availability, temperature, pH, gas content and osmotic pressure in the environment of microorganisms. Study of microbial associations and biofilm.
Topic 4: Microbial Growth Bacterial cell division, growth of bacterial populations, generation time calculations, direct and indirect quantification methodologies: ACC plate counts, microscopic counts, MPN techniques, membrane filtration, turbidity and standard curves.
Topic 5: Major Categories of Microorganisms Study of the commonly encountered bacterial families including Staphylococci, Streptococci and Enterobacteriaceae.
Practicals 1. Laboratory health and safety and GLP. 2. Media preparation, inoculation and aseptic techniques 3. Microbial staining and microscopic examination 4. Culture techniques and characterisation 5. Selective and differential media 6. Determination of metabolic characteristics of microorganisms and rapid identification of microbes using API systems. 7. Enumeration of microorganisms from a variety of samples using a variety of techniques.
Teaching and Learning Strategy Lectures: Blended and flexible learning will be used throughout. This will take the form of face to face interactive lecture sessions complemented by online resources (reusable learning objects and the National Digital Learning Repository) and online interactive activities (learn smart study assignments). Students will be directed to relevant sections of appropriate text to reinforce material covered in lectures. Online demonstrations will illustrate key concepts of the course and will be available to students via the VLE throughout the year. Practical exercises are designed to enable students to develop the required technical competencies, attitudes and behaviours in microbiology.

Module Assessment	
Assessment Breakdown	%
Course Work	25.00%
Practical	25.00%
Final Examination	50.00%
Module Special Regulation	

Assessments

Full Time On Campus			
Course Work			
Assessment Type	Continuous Assessment	% of Total Mark	10
Marks Out Of	0	Pass Mark	0
Timing	Every Second Week	Learning Outcome	1,2,3
Duration in minutes	30		
Assessment Description Students will complete formative weekly assessments on line via assigned e-reading and subsequent interactive quizzes consisting of a series of multiple choice, true and false, fill in the blank, short answer questions, diagram matching and labelling.			
Assessment Type	Continuous Assessment	% of Total Mark	15
Marks Out Of	0	Pass Mark	0
Timing	n/a	Learning Outcome	1,2,3
Duration in minutes	0		
Assessment Description Students will complete two online interactive exams which will be prepared for by completing the formative weekly assessments.			
No Project			
Practical			
Assessment Type	Practical/Skills Evaluation	% of Total Mark	25
Marks Out Of	0	Pass Mark	0
Timing	n/a	Learning Outcome	4,6
Duration in minutes	0		
Assessment Description Students will complete result report sheets and skills assessment during the practical class that are specifically designed to develop observation skills and to promote accurate data recording and subsequent interpretation.			
Final Examination			
Assessment Type	Formal Exam	% of Total Mark	50
Marks Out Of	0	Pass Mark	0
Timing	End-of-Semester	Learning Outcome	2,3,4,5
Duration in minutes	0		
Assessment Description End-of-Semester Final Examination			
Reassessment Requirement			
A repeat examination Reassessment of this module will consist of a repeat examination. It is possible that there will also be a requirement to be reassessed in a coursework element.			

Module Workload

Workload: Full Time On Campus

<i>Workload Type</i>	<i>Contact Type</i>	<i>Workload Description</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>	<i>Hours</i>
Lecture	Contact	No Description	Every Week	3.00	3
Practical	Contact	No Description	Every Week	3.00	3
Online Learning (non contact)	Non Contact	Directed e-book reading and subsequent on-line quiz assessment	Every Second Week	1.00	2
Independent Study	Non Contact	No Description	Every Week	3.00	3
Total Weekly Learner Workload					10.00
Total Weekly Contact Hours					6.00

This module has no Part Time On Campus workload.

Module Resources

Recommended Book Resources

Talaro, K. P.. (2018), Foundations in Microbiology: Basic Principles, 10th. McGraw-Hill, [ISBN: 978-0071316736].
Sherlock Orla. (2018), Fundamental Microbiology Laboratory Manual, DkIT..

Supplementary Book Resources

Bauman. (2014), Microbiology with Diseases by Taxonomy, 4th. Pearson, [ISBN: 9780321819314].
Michael T. Madigan,¹Kelly S. Bender,²Daniel H. Buckley,³W. Matthew Sattley,⁴David A. Stahl. Brock Biology of Microorganisms, 15th. Pearson, [ISBN: 978-01342619].

This module does not have any article/paper resources

Other Resources

Website, McGraw Hill Connect:LearnSmart for Talaro's Foundations in Microbiology, 8th Edition,
<http://learnsmart.prod.customer.mcgraw-hill.com/books/foundations-in-microbiology-2-2/>
Website, www.microbiologyonline.org.uk.
Website, SGM- Society for General Microbiology,
<http://www.sgm.ac.uk>
Website, Health Protection Agency, UK.,
<http://www.hpa.org.uk>