APPROVED

BIOL S8Z04: Microbiology 2

Module Details

Module Code:	BIOL S8Z04
Full Title:	Microbiology 2 APPROVED
Valid From::	Semester 2 - 2018/19 (February 2019)
Language of Instruction:	
Duration:	1 Semester
Credits::	7.5
Module Owner::	Orla Sherlock
Departments:	Unknown
Module Description:	Students successfully completing this module should have an understanding of beneficial and harmful microbe human interactions and the methods we employ to combat pathogens and control microorganisms. Students will apply international standard methods to isolate, enumerate and identify target microorganisms from different sources with due regard to health and safety.

Module Learning Outcome	
On successful completion of this module the learner will be able to:	
#	**Module Learning Outcome Description**
MLO1	Discuss microbes as agents of infection, their virulence, pathogenesis, interactions with the host and transmission.
MLO2	Describe commonly encountered pathogens their sources and reservoirs, modes of transmission, associated diseases and laboratory techniques to isolate, identify and enumerate them.
MLO3	Summarise the major categories of microbial control and its purposes.
MLO4	Evaluate chemotherapeutics as microbial infection control agents.
MLO5	Use microbiology and molecular procedures to study the growth and control of pathogens.

Pre-requisite learning
Module Recommendations *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).*
No recommendations listed

Module Indicative Content
Topic 1: Microbe-Human Interactions Human microbiota, factors in the development of a disease, sources and transmission of microbes, epidemiology and disease populations.
Topic 2: Commensals and Pathogens A number of microorganisms will be selected and profiled. Students will learn where to source information pertaining to reservoirs and sources/transmission/pathogenesis/ associated disease/ treatment/incidences/control/ laboratory isolation and detection/beneficial uses/legislation.
Topic 3: Microbial Growth Control Physical, mechanical and chemical methods of microbial control. Applications of microbial control.
Topic 4: Antimicrobials: Chemotherapeutic Agents Principles of antimicrobial therapy, mechanisms of action and major antimicrobial drug groups; acquisition of drug resistance, interactions between drugs and host, selecting and testing antimicrobial drugs, standardisation of antimicrobial techniques, establishing MIC and MBC values.
Topic 5: Molecular Methods in Microbiology Introduction to PCR as a diagnostic technique used in Microbiology.
Practicals 1. A series of microbes and the human body labs e.g. Pathogens of the gastrointestinal tract, focus E.coli 2. Introduction to epidemiology incorporating fomite and direct transmission of microbes and airborne transmission. 3. Investigation of microbial growth control methods including heat, cold temperatures and filtration 4. Evaluation of the efficacy of chemicals and natural products used to control growth via disc diffusion tests. 5. Selection and profiling chemotherapeutics agents for specific pathogens. 6. Establishing chemotherapeutic minimum inhibitory and minimum bactericidal concentrations. 7. Identification of microorganisms using molecular 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 (webcasts, podcasts, screencasts, video links etc) and online interactive activities (learn smart study assignments). Group and peer learning will be facilitated in class through the use of various classroom assessment techniques which will promote deep learning and enable feedback. Students will be directed to relevant sections of appropriate text to reinforce material covered in lectures.

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	S1 Week 7	**Learning Outcome**	1,2,3,4
Duration in minutes	0		

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	S1 Week 11	**Learning Outcome**	1,2,4
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**	10
Marks Out Of	0	**Pass Mark**	0
Timing	n/a	**Learning Outcome**	2,3,4,5
Duration in minutes	0		

Assessment Description
Students will complete result report sheets that are specifically designed to develop observation skills and to promote accurate data recording and subsequent interpretation.

Assessment Type	Practical/Skills Evaluation	**% of Total Mark**	15
Marks Out Of	0	**Pass Mark**	0
Timing	End-of-Semester	**Learning Outcome**	2,4,5
Duration in minutes	0		

Assessment Description
Students will complete a bell ringer laboratory exam to allow for accurate skills assessment.

Final Examination

Assessment Type	Formal Exam	**% of Total Mark**	50
Marks Out Of	0	**Pass Mark**	0
Timing	End-of-Semester	**Learning Outcome**	1,2,3,4
Duration in minutes	0		

Assessment Description
End-of-Semester Final Examination

Module Workload

Workload: Full Time On Campus					
Workload Type	*Contact Type*	*Workload Description*	*Frequency*	*Average Weekly Learner Workload*	*Hours*
Lecture	Contact	No Description	Every Week	3.00	3
Practical	Contact	No Description	Every Week	3.00	3
Directed Reading	Non Contact	No Description	Every Week	2.00	2
Independent Study	Non Contact	No Description	Every Week	3.00	3
				Total Weekly Learner Workload	11.00
				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 Micobiology: Basic Principles, 10th. McGraw-Hill, [ISBN: 978-0071316736].

Sherlock Orla. (2019), Pathogenesis Laboratory Manual, DkIT.

Supplementary Book Resources

Tortora, Funke, Case.. (2016), Microbiology, an Introduction, 12th. Pearson, [ISBN: 9780321929150].

Bauman. (2017), Microbiology with Diseases by Taxonomy, 5th. Pearson, [ISBN: 9780134140780].

Madigan, M T.Martinko, Dunlap, Clark.. (2018), Brock Biology of Microorganisms, 15th. Pearson, [ISBN: 9780132324601].

This module does not have any article/paper resources

Other Resources

Website, Health Protection Surveillance Centre,
http://www.hpsc.ie

Website, Health Protection Agency,
http://www.hpa.org.uk

Website, Center for Disease Control and Prevention,
http://www.cdc.gov

Website, The Food Safety Authority of Ireland,
http://www.fsai.ie

Website, Teagasc,
http://www.teagasc.ie

Website, Society for General Microbiology,
http://www.sg.ac.uk

Website, World Health Organisation,
http://www.who.int

Website, US Food and drug administration,
http://www.fda.gov