

ZPHA C3101: Control of Contamination and Infection

Module Title:		Control of Contamination and Infection			
Language of Instruction:		English			
Credits: 10					
NFQ Level:	VFQ Level: 7				
Medule Deli	roved In	1 =====================================			
Module Dell	verea in	<u>1 programme(s)</u>			
Teaching & Learning Strategies:		This module will be delivered via active classroom and practical modes. Independent learning can be supported by scaffolded online activities on Blackboard and other platforms lending to a blended approach. Supported active and enquiry based learning strategies will be used involving assignments, presentations and the interpretation of data. Reflection and application of learning to practice will encourage the embedding of learning. Group and peer learning will be facilitated during the preparation of assignments, presentations and reporting of practical activities. Pre-practical digital activities and quizzes will prepare students for the practicals and will be available through out the year. Digital competencies will be developed e.g by the use of electronic laboratory notebooks/ and the production of videos demonstrating competencies, attitudes and behaviours in Microbiology , Aseptic Techniques; Infection Control • to develop propriate recording skills; • to develop problem solving abilities and group skills; • to promote deep learning via investigation of a problem, application of prior knowledge; and analysis of results thus generating new knowledge; • promote digital capacities by keeping an electronic laboratory notebook and other means. In an aligned curriculum, formative and summative assessment are drivers of learning and valid authentic and consistent assessment and feedback will be used throughout the module.			
Module Aim	:	To allow Pharmacy Technicians to understand the fundamental theoretical and practical microbiological principles of infection and contamination control in a range of healthcare /pharmacy settings.			
Learning Ou	tcomes				
On successfu	I completion	of this module the learner should be able to:			
LO1	Describe the	e nature of micro-organisms and outline the relevance of micro-organisms in a range of settings.			
LO2	Discuss the	relevance of contaminants and healthcare associated infections (HAI) to the work of a Pharmacy Technician.			
LO3	LO3 Explain the principles of infectious disease and describe how transmission can be prevented and controlled in a range of settings.				
LO4	Describe the demonstrate	e factors that control the growth of microorganisms in the environment, clinical and industrial settings and the efficacy of physical and chemical methods of sterilisation/preservation/ disinfection.			
LO5	Explain how	apply the requirements of cGMP/cGPP and quality in the manufacture/preparation of sterile products.			
LO6	Develop cor	npetency in microbiological techniques for the handling, monitoring and control of microorganisms.			
Pre-requisit	e learning				
Module Recommendations This is prior learning (or a practical skill) that is recommended before enrolment in this module.					
No recommendations listed					
Incompatible Modules These are modules which have learning outcomes that are too similar to the learning outcomes of this module.					
No incompatible modules listed					
Co-requisite Modules					
No Co-requisite modules listed					
Requirements This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.					
No requireme	No requirements listed				



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Module Content & Assessment

Indicative Content

Basic concepts in microbiology

Basic concepts in microbiology. Ubiquitous nature and metabolic diversity of microorganisms. and their interactions with humans and the environment

Contamination, prevention and monitoring

Sources of animate and inanimate contamination in the manufacture or use of sterile and non sterile products including pyrogens Parenteral and sterile products. Sampling , bioburden testing, environmental monitoring, objectionable and indicator organisms. Risk assessment . Aseptic techniques in a preparation setting.

Pathogens: Infection Control

Concepts of pathogens including emerging and opportunistic pathogens, healthcare acquired infections (HAI). Antibiotic resistance and stewardship. Principles of infectious disease transmission. Breaking the chain of infection. Aseptic techniques in healthcare setting. Standard and transmission based precautions.

Microbial control and monitoring. Control of microbial growth.Physical and chemical methods of sterilisation and disinfection of equipment and materials. Filter sterilisation of air and liquids. Validation of these methods. Biological indicators. D, Z and F values. Preservatives.

Quality aspects of aseptic manufacturing/preparation.

Overview of the principles of cGMP /cGPP for sterile and non sterile products. Risk assessment. Quality control and quality assurance Overview of clean room design and classification. HEPA filters, unidirectional air flow cabinets, isolators, biological safety cabinets.

Practical

1. cGood Microbiological Practice and Health and Safety. Using SOPs. Correct personal laboratory and clean room behaviour and attitudes including: correct hand washing and gowning. Principles of validation. 2. Preparation and sterilisation of microbial media. Validation of heat sterilisation. Biological indicators. Determination of D, Z and F values. 3. Aseptic cultivation of microorganisms on solid and liquid selective, differential and other media. 4. Isolation and enumeration of micro-organisms from environmental sources, raw materials and finished products. Serial dilutions and viable count. 5. Environmental, hard surface and air microbial monitoring recording and interpretation. 6. Demonstration and interpretation of stains including the Gram stain. 7. Identification protocols using multiwell phenotypic systems eg API. 8. Evaluation of the relative effectiveness of chemical substances as anti-microbial agent. Challenge tests. LAL pyrogen testing. 9. Working in a unidirectional air flow environment. Transfer techniques. Aseptic techniques. Validation of aseptic techniques via broth test.

Assessment Breakdown	%
Continuous Assessment	60.00%
Practical	40.00%

Continuous Assossment

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Other	Students to prepare a group/individual presentation/poster on core topics. Includes a short Individual reflective assignment.	1,2	10.00	Week 4
Other	Students to prepare an individual assignment on a key topic. Can be used in cross module assessment.	2,3	20.00	Week 15
Reflective Journal	Learners will relate learning to their practice during the module.	1,2,3,4,5,6	10.00	n/a
Other	Short answer, MCQ, class /online activities. Low stake assessment to motivate and check knowledge.	1,2,3,4,5	15.00	n/a
Other	Short assignment on quality/ risk assessment topic. Cross module assessment with Quality module.	5	5.00	n/a

No Project

Practical				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	Practical assessment not only assesses safe practical competencies, recording and reporting skills via a range of formats; but also the application of theory into practice and the development of appropriate interpretive skills in a supported environment. Students to submit regular laboratory reports. These reports to show the theoretical context of the practical activity, the methodology used, appropriate presentation and interpretation of results and a reflection of skills learned and improvements to be made. A practical exam will demonstrate key competencies. Short examination of key practical concepts/methodology.	1,2,3,4,5,6	40.00	n/a

No End of Module Formal Examination

Continuous Assessment				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Other	Students to prepare a group/individual presentation/poster on core topics. Includes a short Individual reflective assignment.	1,2	10.00	n/a
Other	Students to prepare an individual assignment on a key topic. Can be used in cross module assessment.	2,3	20.00	n/a
Reflective Journal	Learners will relate learning to their practice during the module.	1,2,3,4,5,6	10.00	n/a
Other	Short answer, MCQ, class /online activities. Low stake assessment to motivate and check knowledge.	1,2,3,4,5	15.00	n/a
Other	Short assignment/test on quality/ risk assessment topic. Cross module assessment with Quality module.	5	5.00	n/a

No Project

Tractical	Practical				
Assessment Assessment Description	Outcome addressed	% of total	Assessment Date		
Practical/Skills Evaluation Practical assessment not only assesses safe practical, recording and reporting skills via a range of formats; but also the application of theory into practice and the development of appropriate interpretive skills in a supported environment. Students to submit laboratory reports as each topic is completed. These reports to show the theoretical context of the practical activity, the methodology used, appropriate presentation and interpretation of results and a reflection of skills learned and improvements to be made. Practical exam to demonstrate key competencies. Short examination of key practical concepts/methodology.	2,4,5,6	40.00	n/a		

No End of Module Formal Examination

SETU Carlow Campus reserves the right to alter the nature and timings of assessment



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Module Workload

Workload: Full Time			
Workload Type	Frequency	Average Weekly Learner Workload	
Lecturer Supervised Learning	12 Weeks per Stage	2.00	
Practicals	12 Weeks per Stage	2.00	
Independent Learning	15 Weeks per Stage	13.47	
	Total Hours	250.00	
Workload: Part Time			
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Workload Type	Frequency	Average Weekly Learner Workload
Lecture	12 Weeks per Stage	2.00
Practicals	12 Weeks per Stage	2.00
Independent Learning Time	15 Weeks per Stage	13.47
	Total Hours	250.00

Module Delivered In					
Programme Code	Programme	Semester	Delivery		
CW_SAPHF_D	Bachelor of Science in Pharmacy Technician Studies	1	Mandatory		