ZSCI H4102: Pharmaceutical Science

Module Title:	Pharmaceutical Science
Language of Instruction:	English

Credits:	5

NFQ Level:	8

Module Delivered In	1 programme(s)

Teaching & Learning Strategies:	This module will be delivered via a one-hour lecture and a three-hour practical per week. . Students may be required to carry out assignments, give presentations and take multiple choice questions. Independent learning will be facilitated during the preparation of assignments, presentations and practicals.

Module Aim:	To understand the procedures in drug production from synthesis to finished product manufacture. To develop analytical procedures for routine pharmaceutical analysis. To understand drug registration requirements.

Learning Outcomes	
On successful completion of this module the learner should be able to:	
LO1	Understand the procedures in drug production from synthesis to finished product manufacture.
LO2	Develop analytical procedures for routine pharmaceutical analysis.
LO3	Understand drug registration requirements.Validate existing drug manufacturing plant and instrumentation.

Pre-requisite 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 requirements listed

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Module Content & Assessment

Indicative Content
Pharmaceutical preparation 1. Introduction requirements for product registration 2. Preformulation: solubility, solubilisation. Polymorphism, eutectic points, degradation profiles. 3. Formulation theory and practice: simple drug delivery vehicles. 4. Accelerated stability and shelf life. Modified release medications. 5. Nanotechnological innovation. 6. Emulsion preparation: surface tension and surface energy. Experimental techniques. 7. Surfactants, critical micelle concentration, spreading and contact angle. Lapace excess pressure. Microemulsions and liquid crystal phases. Aerosols 8. Stability evaluation and chemical assay. Product registration 9. Regulatory bodies, IMB, FDA, etc. 10. Good manufacturing processes: quality management, production activities, internal audits, calibration 11. Validation: policy, documentation, qualification of equipment and ancillaries, process and analytical validation. Cleaning validation and change control. 12. Rejection and reuse of materials. Complaints and recalls. Contract manufacture 13. Materials management. Production & in-process controls.

Assessment Breakdown	%
Continuous Assessment	10.00%
Practical	20.00%
End of Module Formal Examination	70.00%

Special Regulation
Students must achieve a minimum grade (35%) in both practical/CA and final exam.

Continuous Assessment

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Short Answer Questions	Regular written examinations to evaluate student understanding of course content	1,2,3	10.00	n/a

No Project

Practical

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Practical/Skills Evaluation	Dissolution studies of rapid release and controlled-release medications. Formulation of simple emulsion and tablets Assessment of physical stability. Assay development. 16. Use of conductivity to determine solubility products of a number of sparingly-soluble drugs. 17. Extraction by Soxhlet apparatus of podophyllin from podophyllum rhizomes.	1	20.00	Sem 1 End

End of Module Formal Examination

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Formal Exam	Final year evaluation	1,2,3	70.00	End-of-Semester

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*
Lecture	12 Weeks per Stage	2.00
Practicals	12 Weeks per Stage	2.50
Independent Learning Time	15 Weeks per Stage	5.00
	Total Hours	129.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_SABTP_B	Bachelor of Science (Honours) in Biosciences with Biopharmaceuticals	7	Mandatory