ZSCI C1101: Current Concepts in Science

Module Title:	Current Concepts in Science.
Language of Instruction:	English

Credits:	5

NFQ Level:	6

Module Delivered In	1 programme(s)

Teaching & Learning Strategies:	This module will be taught in two theory classes of one hour duration. Course lecture summaries, course calendar, announcements and other course-related material will be available on Blackboard, a virtual learning environment. Students can contact lecturer outside of class hours to discuss formative feedback.

Module Aim:	The aim of this module is to introduce students to forensic, pharmaceutical and environmental theory and practical applications which form a basis for other modules. to scientific thinking and appreciation of science, with emphasis on forensic,

Learning Outcomes	
On successful completion of this module the learner should be able to:	
LO1	Describe various principles in forensics, pharmaceutical and environmental science.
LO2	Demonstrate knowledge, skills and competencies in the principles of Pharmaceutical concepts, forensic analysis, environmental science issues and ethics and philosophy of science.
LO3	Analyse raw data in a variety of units and evaluate the reliability of that data using simple statistical analysis.
LO4	Have an understanding of the ethical issues that arise in Bioscience.
LO5	Recognise the impact of science towards human and environmental wellbeing.
LO6	Communicate with peers and academic staff effectively through written projects, oral presentations and powerpoint presentations.

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

ZSCI C1101: Current Concepts in Science

Module Content & Assessment

Indicative Content
Pharmaceutical Science:Measurement Units, Calculations, Concentrations Introduction to the Pharmaceutical Industry. Measurements and weights. Density. Dosage & Percentage calculations. Ratio strength (parts). Proof strength. Dilutions. Solubility. Chemical calculations. Molarity, %w/v, %v/v, %w/w, Osmolarity. Isotonicity. Accuracy and precision of results.
Pharmaceutical Science:Topical, oral, liquid &transdermal preparations The structure and function of the skin. Preparation of creams, emulsions and lotions etc. Gels and Shampoos. Oral Syrups, elixirs and linctuses. Advantages of Delivery, Stability and Shelf-life. Transdermal drug absorption and delivery. Types of patches available.
Analysis a crime scene: Methods and techniques. Introduction to the techniques and practice of evidence collection, criminal evidence and the crime scene preservation.
Forensic Analysis Fingerprint, ballistics and tool mark analysis. Glass, paint, blood and blood spatter analysis. Toxicology analysis. Techniques used in the analysis of the above samples.
DNA Analysis An introduction to DNA fingerprinting and the techniques involved.
Environmental Science: Water. The role of water in the environment. Techniques involved in the measurement and monitoring of water quality. Water pollutants and their effects on ecosystems. Basic EU and National legislation relating to water quality.
Environmental Science: Soil and waste. Polluted soil remediation technologies including traditional technologies and more recent sustainable/ green bioremediation technologies. Techniques of waste removal from soil, water and other environmental issues. Basic EU and National legislation relating to soil quality.
Philosophy of Science and Ethics. Introduction to foundations, methods and implications of science; defining science, scientific explanation, justifying science, scientific observation and theory, the purpose of science, values and science. The place of ethics and bioethics in Science. Fundamental issues of ethics - genetic engineering, GMOs to name a few.
Case studies. Case study examples will include: Caenorhabditis elegans and its three Nobel prizes; nanotechnology in life sciences and the environment; science and wildlife conservation. Case studies may be substituted as appropriate.

Assessment Breakdown	%
Continuous Assessment	30.00%
Project	30.00%
End of Module Formal Examination	40.00%

Continuous Assessment

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Short Answer Questions	n/a	1,2,3,4	30.00	n/a

Project

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Project	Student will do a project on any aspect of the course.	1,2,4,5,6	30.00	n/a

No Practical

End of Module Formal Examination

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Formal Exam	End of year exam.	1,2,3,4,5	40.00	End-of-Semester

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

ZSCI C1101: Current Concepts in Science

Module Workload

Workload: Full Time		
Workload Type	*Frequency*	*Average Weekly Learner Workload*
Lecture	30 Weeks per Stage	2.00
Estimated Learner Hours	30 Weeks per Stage	1.33
	Total Hours	100.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_SASES_B	Bachelor of Science (Honours) in Environmental Science	1	Mandatory