

Module Title:	Current Concepts in Science
Language of Instruction:	English
Credits:	5
NFQ Level:	6
Module Delivered In	5 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 science issues, ethics and philosophy of science as well as practical applications which form a basis for other modules.
Learning Outcomes	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	Describe key concepts in Pharmaceutical science, forensic science, environmental science issues and ethics and philosophy of science.
LO2	Expand on the key concepts of Pharmaceutical concepts, forensic science, environmental science issues as well as ethics and philosophy of science.
LO3	Communicate with peers and academic staff effectively through written projects, oral presentations and powerpoint presentations.
Pre-requisite learning	
Module Recommendations	
<i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>	
No recommendations listed	
Incompatible Modules	
<i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</i>	
No incompatible modules listed	
Co-requisite Modules	
No Co-requisite modules listed	
Requirements	
<i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.</i>	
No requirements listed	

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. 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	50.00%
Project	50.00%

Continuous Assessment				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Short Answer Questions	The CA will be a combination of short answer questions, and/or Multiple choice questions and/or presentation (where applicable).	1,2,3	50.00	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.	1,3	50.00	n/a

No Practical

No End of Module Formal Examination

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

Module Workload

Workload: Full Time		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	12 Weeks per Stage	4.00
Estimated Learner Hours	15 Weeks per Stage	5.13
Total Hours		125.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_SABTP_B	Bachelor of Science (Honours) in Biosciences with Biopharmaceuticals	2	Mandatory
CW_SAPHA_B	Bachelor of Science (Honours) in Pharmaceutics and Drug Formulation	2	Mandatory
CW_SAASC_D	Bachelor of Science in Analytical Science	2	Mandatory
CW_SABFQ_D	Bachelor of Science in Biosciences	2	Mandatory
CW_SASCI_C	Higher Certificate in Science in Applied Biology or Applied Chemistry	2	Mandatory