

Module Title:	Laboratory 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 one 2 hour session per week. Both theoretical and practical content will be introduced in this session. Emphasis will be placed on the student learning good laboratory and safety techniques. This will include a safety audit of the science laboratories and small theoretical and practical assignments and GLP(Good laboratory practice) throughout the module
Module Aim:	To provide students with a good knowledge of working in a laboratory setting and the importance of GLP, within same.
Learning Outcomes	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	Understand some important Safety and GLP concepts.
LO2	Use safety equipment for storage, handling and personal protection using personal protection equipment
LO3	Perform techniques for efficient performance in a laboratory.
LO4	Prepare common bench solutions understanding the importance of precision/accuracy in the preparation of same
LO5	Operate basic analytical instruments with an emphasis on operation and accuracy
LO6	Identify hazards associated with the laboratory environment.
LO7	Organise a variety of functions associated with a modern laboratory.
LO8	Having obtained good basic laboratory skills moving forward to years 2,3,4 of their programme
LO9	Have a basic understanding of the importance of the factors involved in Laboratory organisation design and control
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

Good laboratory practice

Safety statement, Safety Health & Welfare Act. Accident prevention, safety rules, hazard symbols, risk phrase, safety phrase, MSDS. Safety inspection. Hazards of using glass. Electrical hazards. Fuse and cabling rating. Earthing.

First Aid

Treatment of thermal burns, chemical burns, eye damage, wounds, fractures, shock, swallowed poisons and inhaled poisons. Checking for shock. Controlling bleeding. Bandaging. Recovery position. AR and CPR. Contents of first aid cabinet. Emergency equipment and procedures. Accidents reports.

Fire

Fire prevention, explosions, fire door, flash point, ignition temperature, explosive limits and flammability range, classes of fires and appropriate extinguishers, fire notice, duties of a person discovering a fire, checking fire extinguishers. Fire safety checklist.

Chemicals and labware

Chemical labelling. Purity of reagents. Terms used to express concentration: %w/w, %w/v, %v/v, ppm and M. Chemical hazards. Threshold limit value: TWA, STEL and ceiling. Design and properties of general laboratory ware. Properties of glass. Properties of some compressed gases.

Laboratory techniques

Operation, use and maintenance of: balances; pH meters; filling, dispensing, heating and agitating devices; quickfit apparatus; filtration equipment. Care and operation of cylinder regulators. Measurement uncertainty. Precision, accuracy, repeatability, reproducibility, replicate.

Laboratory organisation and design

Stock control procedures for chemicals and equipment. Storage, waste disposal. Filing and use of reports, manuals, catalogues, technical literature and stores documents. Lighting, heating and ventilating the laboratory. Services. Suitable materials for floors, walls, work tops, sinks and fume hoods. Chemical store plan.

Assessment Breakdown	%
Continuous Assessment	50.00%
Practical	50.00%

No Continuous Assessment

No Project

Practical				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	Practical Log Book	1,2,3,4,5,6,7,8,9	35.00	Sem 1 End
Practical/Skills Evaluation	Practical Assessment	3,4,5	15.00	n/a

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>
Laboratory	30 Weeks per Stage	2.00
Estimated Learner Hours	30 Weeks per Stage	2.00
Total Hours		120.00

Module Delivered In

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