ZLAB C1101: Laboratory Science

Module Title:	Laboratory Science
Language of Instruction:	English

Credits:	5

NFQ Level:	6

Module Delivered In	6 programme(s)

Teaching & Learning Strategies:	This module will be taught in 2 x 2 hour sessions 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 The student will be encouraged to develop their presentation skills in a variety of ways using a series of technologies.

Module Aim:	To provide students with a good knowledge of working in a laboratory setting and the importance of GLP, and working safely within same

Learning Outcomes	
On successful completion of this module the learner should be able to:	
LO1	Explain important Safety and GLP concepts, use safety equipment for storage, handling and personal protection, identify hazards associated with the laboratory environment.
LO2	Prepare common bench solutions understanding the importance of precision/accuracy in their preparation, operate basic analytical instruments with an emphasis on operation and accuracy.
LO3	Organise a variety of functions associated with a modern laboratory, describe the factors involved in laboratory organisation design and control, apply various methods to present and interpret results.

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
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%

Continuous Assessment

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Short Answer Questions	In class assessment	1	50.00	n/a

No Project

Practical

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Practical/Skills Evaluation	Practical Log Book	1,2,3	35.00	Sem 1 End
Practical/Skills Evaluation	Practical Assessment		15.00	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*
Laboratory	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	1	Mandatory
CW_SABRE_B	Bachelor of Science (Honours) in Brewing and Distilling	1	Mandatory
CW_SAPHA_B	Bachelor of Science (Honours) in Pharmaceutics and Drug Formulation	1	Mandatory
CW_SAASC_D	Bachelor of Science in Analytical Science	1	Mandatory
CW_SABFQ_D	Bachelor of Science in Biosciences	1	Mandatory
CW_SASCI_C	Higher Certificate in Science in Applied Biology or Applied Chemistry	1	Mandatory