ZBIO C3102: Spectroscopy for Biosciences

Module Title:	Spectroscopy for Biosciences
Language of Instruction:	English

Credits:	5

NFQ Level:	7

Module Delivered In	2 programme(s)

Teaching & Learning Strategies:	Spectroscopy for Biosciences is taught as two 1-hour theory classes each week and one 3-hour practical class every second week over one semester. Students will be required to prepare practical reports analysing their own results. Course lecture notes, additional materials, announcements and other course-related information will be available on Blackboard, a virtual learning environment. Module-related issues or questions that may arise will be discussed at lectures. Online resources will be used. Students can contact lecturer outside of class hours to discuss feedback on reports and assessments. Blended learning and pedagogical technologies such as Blackboard Collaborate will be used where appropriate.

Module Aim:	To develop the learners' understanding of the analytical applications of UV-visible (UV-vis) and infrared (IR) spectroscopies and familiarise them with the principles, interpretation, and biologically relevant applications of mass spectrometry (MS), nuclear magnetic resonance (NMR) spectroscopy, and Raman spectroscopy. Learners will also develop their theoretical and practical knowledge in relation to chromatographic methods.

Learning Outcomes	
On successful completion of this module the learner should be able to:	
LO1	Describe the principles, instruments, and applications of various spectroscopic and chromatographic techniques, and interpret the output of these techniques to extract analytically meaningful information.
LO2	Demonstrate practical measurement and analytical skills using a range of laboratory instruments and data acquisition systems.
LO3	Work effectively in a group and demonstrate good communication skills within a group, in presentation format, and in written reporting of laboratory activities.

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.*
Successful completion of year 2 or equivalent

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Module Content & Assessment

Indicative Content
Chromatography System suitability for chromatography - parameters, calculations, and interpretation; van Deemter equation - theory and application
Spectrophotometric Techniques Principles, instrumentation, and biologically relevant applications of a range of spectroscopic/spectrometric techniques including ultra violet (UV) infra-red (IR) spectra, mass spectrometry, nuclear magnetic resonance spectroscopy (NMR), Raman spectroscopy.
Practical Practical skills will be advanced in chromatographic (TLC/IC/GC/HPLC) separation and analysis, and in spectrophotometric analysis (UV-visible, IR, AAS) and in associated sample preparation procedures.

Assessment Breakdown	%
Continuous Assessment	50.00%
Practical	50.00%

Special Regulation
Students must achieve a minimum grade (35%) in both the practical and CA

Continuous Assessment

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Presentation	Presentation summarising and appraising a relevant article from the scientific literature.	1,3	10.00	Week 4
Examination	1 hour exam	1	20.00	Week 7
Examination	1 hour exam	1	20.00	Week 12

No Project

Practical

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Practical/Skills Evaluation	Practical reports	1,2,3	50.00	Every Second Week

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*
Lecture	12 Weeks per Stage	2.00
Laboratory	12 Weeks per Stage	1.50
Estimated Learner Hours	15 Weeks per Stage	5.53
	Total Hours	125.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_SABTP_B	Bachelor of Science (Honours) in Biosciences with Biopharmaceuticals	6	Mandatory
CW_SABFQ_D	Bachelor of Science in Biosciences	6	Mandatory