ZNUT C2101: Nutritional Biochemistry

Module Title:	Nutritional Biochemistry
Language of Instruction:	English

Credits:	10

NFQ Level:	6

Module Delivered In	2 programme(s)

Teaching & Learning Strategies:	This module will be taught in three theory classes of one hour duration and the equivalent of a two hour practical class per week. Classes may take the form of formal lectures or tutorial-type sessions. A range of teaching techniques will be used as appropriate, including worksheets, PowerPoint and other presentations. Students will be encouraged to learn by active engagement in group work and class discussions. Material presented at theory classes will be reinforced, discussed and developed during practical classes.

Module Aim:	The aim of this module is to give the student a sound knowledge of the structure, functions and metabolism of nutrients and to develop basic biochemical practical and reporting skills, with due regard to Health and Safety.

Learning Outcomes	
On successful completion of this module the learner should be able to:	
LO1	Describe the classification, structure and functions of major biochemical molecules
LO2	Outline the control of metabolism and the central metabolic pathways
LO3	Carry out basic laboratory techniques with due regard to safety
LO4	Prepare scientific laboratory reports

Pre-requisite learning		
Module Recommendations *This is prior learning (or a practical skill) that is recommended before enrolment in this module.*		
4504	SCIE H1111	Chemistry
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
Basic Biochemical Systems The cell system, the biomembrane, the functions of water
Amino Acids and Proteins Structure of amino acids, essential and nonessential amino acids. Polymerisation and protein structure. The functions of proteins
Enzymology The definition and mode of action of enzymes. The factors influencing enzyme activity
Carbohydrates Classification, structure and functions of glucose, starch, glycogen and cellulose. Non-starch polysaccharides
Lipids The structure and functions of simple, complex and derived lipids. Essential fatty acids. The digestion and transport of lipids
Vitamins The biochemical functions of fat-soluble and water–soluble vitamins
Minerals Macrominerals and trace minerals, biochemical role of minerals
Metabolism and Bioenergetics Introduction to metabolism and the control of metabolism. Metabolic pathways; Glycolysis, the citric acid cycle, the electron transfer chain, β-oxidation. The generation of ATP. Ketosis. Amino acid catabolism. Gluconeogenesis
Practical Classes will cover Health & Safety regulations and requirements, relevant calculations and scientific reporting. Students will develop skills in the use of biochemical equipment such as pipettes, pH meters and UV spectrophotometers as well as basic laboratory techniques such as biochemical analysis, chromatography and the study of enzyme activity

Assessment Breakdown	%
Continuous Assessment	10.00%
Practical	40.00%
End of Module Formal Examination	50.00%

Continuous Assessment

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Examination	One short continuous assessment, in class	1,2	10.00	n/a

No Project

Practical

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Practical/Skills Evaluation	Practical Laboratory Book	3,4	40.00	Every Week

End of Module Formal Examination

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Formal Exam	Two hour written final examination.	1,2	50.00	End-of-Semester

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	3.00
Laboratory	12 Weeks per Stage	2.00
Estimated Learner Hours	15 Weeks per Stage	12.67
	Total Hours	250.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_SASPS_B	Bachelor of Science (Honours) in Sport and Exercise Science	3	Mandatory
CW_SASAC_B	Bachelor of Science (Honours) in Strength and Conditioning	3	Mandatory