

Module Title:	Biomolecules
Language of Instruction:	English
Credits:	5
NFQ Level:	6
Module Delivered In	3 programme(s)
Teaching & Learning Strategies:	This module will be taught as 5 one hour theory classes over 12 weeks. Classes may take the form of formal lectures or tutorial-type sessions. A range of teaching techniques will be used as appropriate, including discussion of case studies, worksheets, PowerPoint and other presentations. Students will be encouraged to learn through questioning and group discussions.
Module Aim:	To give the student a sound background in the structure, functions and metabolism of various biomolecules as well as a basic introduction to the principles of pharmacology and immunology.
Learning Outcomes	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	Describe the structure, functions and metabolism of various biomolecules.
LO2	Explain basic concepts of immunology.
LO3	Explain basic concepts of pharmacology
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>	
None	

Module Content & Assessment

Indicative Content

Proteins

Structure of amino acids. Classification and chemical properties. Essential amino acids. Protein structure, properties and function. Enzymes; classification and properties such as heat and pH sensitivity, specificity, rate of reaction.

Lipids

Structure and function of lipids. Glycerides, saturated and unsaturated fatty acids, essential fatty acids, phospholipids and cholesterol.

Carbohydrates

Sugars and polysaccharides. Structure and function of the chief monosaccharides and disaccharides. Structural and storage polysaccharides.

Micronutrients

Function of water-soluble and fat-soluble vitamins and of minerals.

Metabolism

Catabolic and anabolic metabolism. Metabolic control; location, compartmentation, hormonal control and feedback mechanisms. Glycolysis and tricarboxylic cycle. The electron transport chain, proton pump and ATP generation.

Molecular Biology

Structure of DNA and RNA, DNA replication, transcription and translation.

Transport and Signalling

Cellular transport mechanisms, ligands, cellular receptors and signal transduction, agonists and antagonists.

Immunology

Basic immunology concepts such as cells and mechanisms involved in the immunologic response, innate and adaptive immunity, humoral and cell mediated immunity. Infection and immunologic response, strength of the immune response.

Pharmacology

Introductory pharmacology: Factors involved in the absorption, distribution, metabolism and excretion of drugs. Pharmacokinetics and pharmacodynamics. Drug delivery and novel dosage devices. Dose calculation and clearance rates. Basic Mechanism of Drug Action: The drug-receptor complex. Multipharmacy - antagonism and synergism. Introduction to the properties and use of various classes of drugs.

Assessment Breakdown	%
Continuous Assessment	30.00%
End of Module Formal Examination	70.00%

Special Regulation

Learners are required to achieve a minimum grade (35%) in CA and Final Examination

Continuous Assessment

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Examination	1 hour examinations	1	30.00	n/a

No Project

No Practical

End of Module Formal Examination

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Formal Exam	n/a	1,2,3	70.00	End-of-Semester

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	5.00
Independent Learning	15 Weeks per Stage	4.33
Total Hours		125.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_SAPHA_B	Bachelor of Science (Honours) in Pharmaceutics and Drug Formulation	4	Mandatory
CW_SAASC_D	Bachelor of Science in Analytical Science	4	Mandatory
CW_SASCI_C	Higher Certificate in Science in Applied Biology or Applied Chemistry	4	Group Elective 2