

Unit Outline (Higher Education)

Institute / School: Institute of Innovation, Science & Sustainability

Unit Title: Biochemistry for Health and Nutrition

Unit ID: SCBCH2000

Credit Points: 15.00

Prerequisite(s): (SCCHM1000)

Co-requisite(s): Nil

Exclusion(s): (SCBCH2001)

ASCED: 010901

Description of the Unit:

This course will provide students with foundation studies in biochemistry especially relevant to further studies in food and nutrition. The course begins with an introduction to the cellular environment and interactions that stabilise biological macromolecules. This is followed by studies of the major classes of biological molecules: amino acids, proteins, nucleotides, nucleic acids, carbohydrates and lipids. The structure and function of biological membranes, and mechanisms of degradation and turnover of biological molecules, are also considered.

Grade Scheme: Graded (HD, D, C, P, MF, F, XF)

Work Experience:

No work experience

Placement Component: No

Supplementary Assessment: Yes

Where supplementary assessment is available a student must have failed overall in the Unit but gained a final mark of 45 per cent or above, has completed all major assessment tasks (including all sub-components where a task has multiple parts) as specified in the Unit Description and is not eligible for any other form of supplementary assessment

Course Level:

Level of Unit in Course	AQF Level of Course					
	5	6	7	8	9	10
Introductory	■	■	■	■	■	■
Intermediate	■	■	✓	■	■	■
Advanced	■	■	■	■	■	■

Learning Outcomes:

Knowledge:

- K1.** Describe the structures of biological molecules and their roles in biological processes.
- K2.** Discuss the relationship between the structure of macromolecules and their biological function.
- K3.** Differentiate between cellular components that are recycled and those that are degraded.
- K4.** Discuss the buffering mechanisms that operate in biological systems.

Skills:

- S1.** Relate the structure of biological macromolecules to their function.
- S2.** Relate structural dysfunction to human disease.
- S3.** Locate, interpret, evaluate and communicate biochemical information.

Application of knowledge and skills:

- A1.** Suggest why specific metabolic process dysfunctions, and dietary imbalances, lead to disease.
- A2.** Critically evaluate scientific and popular literature.

Unit Content:

Topics may include:

- Biomolecules and key functional groups; Small molecules as building blocks; Non-covalent interactions
- Water as the matrix of life: The cellular environment; Diffusion and osmosis; pH balance and buffering
- Amino acids and peptides: Classes of amino acids; Peptide synthesis; Biologically active amino acids and peptides
- Proteins: Protein structure; Protein folding; Globular and fibrous proteins
- Nucleotides and nucleic acids: DNA and RNA; Overview of gene expression; Genetic mutations
- Carbohydrates: Monosaccharides and disaccharides; Polysaccharides; Glycoconjugates
- Lipids and membranes: Lipid classes; Membrane structure; Transport of molecules and ions across membranes
- Degradation and turnover of biological molecules: Molecules and components that are recycled; Molecules that are degraded; Lysosomes and the proteasome

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
S1-S3, A1- A2, and any of K1-K4	Research and reporting on relevant topics	Written tasks	30-40%
K1-K4	Recall and comprehension of fundamental concepts	On-line quizzes	20-30%
K1-K4, S1, A1	Written responses of varying length	Test	35-45

Adopted Reference Style:

Australian Harvard

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