

Module Title Metabolism	Reference AS2029 SCQF SCQF Level 8 SCQF Points 15 ECTS Points 7.5
Keywords Biochemistry, metabolic pathways, metabolic control, macronutrient metabolism, micronutrient cofactors, synthesis of macromolecules.	Created August 2002 Approved July 2005 Amended May 2011 Version No. 3

This Version is No Longer Current

The latest version of this module is available [here](#)

Prerequisites for Module

AS1801 Chemistry for Life Sciences, AS1901 Biology for Life Sciences, and AS1026 Biomolecular Science (or equivalent).

Indicative Student Workload

<i>Contact Hours</i>	Full Time
Assessment	2
Lectures	28
Practicals	12
Tutorials	5

Corequisite Modules

None.

<i>Directed Study</i>	
Preparation of coursework	12

Precluded Modules

None.

<i>Private Study</i>	
Private Study	91

Aims of Module

To provide students with a detailed, integrated and applied knowledge and understanding of biochemistry including the principles of biochemistry and

Mode of Delivery

Theoretical material is delivered by lectures and web based materials, supported by tutorials and laboratory practicals.

Assessment Plan

integration of knowledge acquired in physiology and nutrition with biochemistry.

Learning Outcomes for Module

On completion of this module, students are expected to be able to:

- 1.Explain carbohydrate, lipid, protein and amino acid metabolism in well fed and fasting states, with particular regard to energy provision.
- 2.Explain the synthesis of proteins, nucleic acids, and fatty acids.
- 3.Explain metabolic integration across organs and tissues in different environmental conditions, with particular regard to energy provision.
- 4.Explain the importance of micronutrients to metabolism.
- 5.Analyse, interpret and report scientific data acquired in laboratory practicals.

Indicative Module Content

Introduction to the cellular and molecular basis of disease; factors affecting biochemical measurements and reference standards; evaluation and interpretation of relevant biochemical and medical data for complex conditions; metabolic effects of common

	Learning Outcomes Assessed
Component 1	1,2,3,4,5

Component 1 is an examination.

Indicative Bibliography

- 1.BAYNES, J.W. and DOMINICZAK, M.H., 2018. *Medical biochemistry*, 5th ed. St Louis: Elsevier Health.
- 2.BENDER, D.A.and CUNNINGHAM, S.M.C., 2021. *Introduction to nutrition and metabolism*, 6th ed. Boca Raton, Fla: CRC Press.
- 3.DEVLIN, T.M., 2010. *Textbook of biochemistry with clinical correlations*, 7th ed. New York: Wiley-Liss.
- 4.FRAYN, K.N. and EVANS, R.D., 2019. *Metabolic regulation: a human perspective*, 4th ed. Oxford: Wiley-Blackwell.
- 5.LIEBERMAN, M. and MARKS, A., 2017. *Marks' basic medical biochemistry: a clinical approach*, 5th ed. Philadelphia: Lippincott, Williams and Wilkins.

clinical conditions relating to over nutrition, under nutrition and metabolic stress. Major metabolic pathways; glycolysis; gluconeogenesis; glycogenesis; glycogenolysis; pentose phosphate pathway; tricarboxylic acid cycle; electron transport chain; fatty acid oxidation; fatty acid synthesis; lipogenesis; lipolysis; ketogenesis; cholesterol synthesis; lipoprotein metabolism; deamination; transamination; urea cycle; amino acid biosynthesis and catabolism; nucleotide biosynthesis and catabolism; genetic code; replication; transcription; translation; metabolic control; metabolic integration; metabolic adaptation; disordered metabolism.