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## MODULE DESCRIPTOR

### Module Title

Metabolism

Reference	AS2029	Version	4
Created	August 2017	SCQF Level	SCQF 8
Approved	May 2011	SCQF Points	15
Amended	August 2017	ECTS Points	7.5

### Aims of Module

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

### Module Delivery

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

**Indicative Student Workload**

	Full Time	Part Time
Contact Hours	45	N/A
Non-Contact Hours	105	N/A
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	N/A
<i>Actual Placement hours for professional, statutory or regulatory body</i>		

**ASSESSMENT PLAN**

If a major/minor model is used and box is ticked, % weightings below are indicative only.

**Component 1**

Type:	Examination	Weighting:	100%	Outcomes Assessed:	1, 2, 3, 4, 5
Description:	Component 1 is an unseen closed book examination.				

**MODULE PERFORMANCE DESCRIPTOR****Explanatory Text**

This module is assessed using the one component of assessment as detailed in the Assessment Plan. To pass this module, students must achieve a module grade D or better.

Module Grade	Minimum Requirements to achieve Module Grade:
<b>A</b>	A mark for C1 of 70% or more.
<b>B</b>	A mark for C1 between 60 and 69%.
<b>C</b>	A mark for C1 between 50 and 59%.
<b>D</b>	A mark for C1 between 40 and 49%.
<b>E</b>	MARGINAL FAIL. A mark for C1 between 35 and 39%.
<b>F</b>	FAIL. A mark for C1 of less than 35%.
<b>NS</b>	Non-submission of work by published deadline or non-attendance for examination

**Module Requirements**

Prerequisites for Module	AS1801 Chemistry for Life Sciences, AS1901 Biology for Life Sciences, and AS1026 Biomolecular Science (or equivalent).
Corequisites for module	None.
Precluded Modules	None.

**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.