

MODULE DESCRIPTOR

Module Title

Metabolism

Reference	PL2029	Version	1
Created	May 2022	SCQF Level	SCQF 8
Approved	June 2022	SCQF Points	15
Amended	August 2021	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**

Component 1 (examination, EX1) comprises 100% of the module grade. A minimum of a Grade D is required to pass the module.

Module Grade	Minimum Requirements to achieve Module Grade:
A	A
B	B
C	C
D	D
E	E
F	F
NS	Non-submission of work by published deadline or non-attendance for examination

Module Requirements

Prerequisites for Module	PL1026 Biomolecular Science (or equivalent), in addition to SCQF level 8 entry requirements 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.