

Module Title Human Biochemistry Keywords Metabolic pathways for carbohydrates, lipids, proteins, mechanisms for their control; integration of metabolism, disorders of metabolism.	Reference AS2098
	SCQF SCQF
	Level 8
	SCQF Points 15
	ECTS Points 7.5
	Created May 2002
	Approved June 2002
	Amended May 2011
	Version No. 3

This Version is No Longer Current

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

Prerequisites for Module

AS1026 Biomolecular Science, or an equivalent.

Corequisite Modules

None.

Precluded Modules

None.

Aims of Module

To enable students to explain metabolic pathways, their regulation, and understand the biological significance of their products.

Learning Outcomes for Module

Protein metabolism: protein turnover, hydrolysis of proteins, degradation of amino acids, urea cycle. Integration of metabolism: major control sites and junctions. Enzyme regulation, metabolic regulators, hormone regulators, induction and repression of enzyme synthesis. Metabolic adaptations and alterations in the fed and fasted state.

Indicative Student Workload

<i>Contact Hours</i>	Full Time
Assessment	6
Lectures	30
Tutorials/Seminars	2
<i>Directed Study</i>	
Directed Study	40
<i>Private Study</i>	
Private Study	72

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

1. Describe the nature and sequence of the biochemical reactions in the principal metabolic pathways of carbohydrates, lipids and proteins.
2. Explain the biological significance and fates of the metabolic intermediates and end products of the principal metabolic pathways.
3. Appreciate the major control sites in metabolic pathways, the mechanisms for their control and give an accurate and reasoned account of the integration of metabolism.
4. Explain selected disorders of metabolism in terms of molecular abnormalities and their metabolic consequences.

Indicative Module Content

Carbohydrate metabolism: glycolysis, physiological significance and cost of anaerobic and aerobic metabolism, the citric acid cycle. Gluconeogenesis, glycogenolysis, glycogen synthesis. Mechanisms of control of carbohydrate metabolism.

Lipid metabolism: dietary lipids, catabolism of triacylglycerols

Mode of Delivery

This is a lecture based module supplemented with tutorial sessions and guided reading.

Assessment Plan

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

Component 2 is assessed by an oral presentation of an inherited metabolic disorder.

Component 1 is a closed book examination.

Indicative Bibliography

1. STRYER, L. *Biochemistry*. Current Edition. W H Freeman & Co. Ltd.
2. CHAMPE, P.C., HARVEY, R.A., FERRIER, D.R. *Lippincott's Illustrated Reviews: Biochemistry, International Students Edition (Lippincott's Illustrated Reviews Series)*. Current Edition. Lippincott Williams and Wilkins.
3. NELSON, D.L. and COX, M.M. *Lehninger Principles of Biochemistry*. Current Edition. W. H. Freeman Ltd.

and fatty acids. Biosynthesis of fatty acids. Control of fatty acid metabolism.