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## MODULE DESCRIPTOR

### Module Title

Human Biochemistry

Reference	AS2502	Version	2
Created	August 2021	SCQF Level	SCQF 8
Approved	February 2018	SCQF Points	15
Amended	August 2021	ECTS Points	7.5

### Aims of Module

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

### Learning Outcomes for Module

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, nucleic acids and proteins.
- 2 Explain the biological significance and fates of the metabolic intermediates and end products of the principal human 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 and fatty acids. Biosynthesis of fatty acids. Control of fatty acid metabolism. Cholesterol synthesis, lipoprotein metabolism. 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. Nucleotide biosynthesis and catabolism. Inherited metabolic diseases.

### Module Delivery

This is a lecture based module supplemented with formative tests, question and answer sessions and guided reading.

Indicative Student Workload	Full Time	Part Time
Contact Hours	30	N/A
Non-Contact Hours	120	N/A
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	N/A
Actual Placement hours for professional, statutory or regulatory body		

## ASSESSMENT PLAN

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

### Component 1

Type:	Examination	Weighting:	70%	Outcomes Assessed:	1, 2, 3
Description:	Closed book examination consisting of essay and multiple choice questions.				

### Component 2

Type:	Coursework	Weighting:	30%	Outcomes Assessed:	4
Description:	Group presentation (normally comprising 3 class members) on a pre-selected inherited metabolic disorder.				

## MODULE PERFORMANCE DESCRIPTOR

### Explanatory Text

The first grade represents Component 1 (EX1) weighted as major and the second, Component 2 (CW1), weighted as minor. A minimum of Module Grade D is required to pass the module, with compensation of grade E in Component 1 or Component 2 permitted. Non-submission of either component will result in an NS grade.

Module Grade    Minimum Requirements to achieve Module Grade:

<b>A</b>	Awarded where C1 and C2 have any ONE of the following component grade combinations: A:A; A:B.
<b>B</b>	Awarded where C1 and C2 have any ONE of the following component grade combinations: A:C; A:D; A:E; B:A; B:B; B:C; C:B.
<b>C</b>	Awarded where C1 and C2 have any ONE of the following component grade combinations: B:D; B:E; C:B; C:C; C:D; D:A; D:B; D:C.
<b>D</b>	Awarded where C1 and C2 have with any ONE of the following component grade combinations: C:E; D:C; D:D; D:E; E:A; E:B; E:C.
<b>E</b>	Awarded where C1 = Grade F or the C1 and C2 components have any ONE of the following grade combinations: E:D; E:E; E:F OR where C2 = Grade F and C1 >Grade F.
<b>F</b>	Awarded ONLY where C1 is Grade F AND C2 is either Grade E or F.
<b>NS</b>	Non-submission of work by published deadline or non-attendance for examination

## Module Requirements

Prerequisites for Module	Successful completion of Stage 1, or equivalent.
Corequisites for module	None.
Precluded Modules	None.

**INDICATIVE BIBLIOGRAPHY**

- 1 STRYER, L. *Biochemistry*. Current Edition. W H Freeman & Co. Ltd.
- 2 CHAMPE, P.C., et al *Lippincott's Illustrated Reviews: Biochemistry, International Students Edition (Lippincott's Illustrated Reviews Series)*. Current Edition. Lippincott Williams and Wilkins.