

Module code: MOD006289	Version: 3 Date Amended: 06/Jun/2024
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1. Module Title
Essential Physiological Biochemistry

2a. Module Leader
Kanwar Virdee

2b. School
School of Allied Health and Social Care

2c. Faculty
Faculty of Health, Medicine and Social Care

3a. Level
5

3b. Module Type
Standard (fine graded)

4a. Credits
30

4b. Study Hours
300

5. Restrictions			
Type	Module Code	Module Name	Condition
Pre-requisites:	None		
Co-requisites:	None		
Exclusions:	None		
Courses to which this module is restricted:			

LEARNING, TEACHING AND ASSESSMENT INFORMATION

6a. Module Description

Biochemistry, sometimes called biological chemistry, is the study of chemical processes within and relating to living organisms. By controlling information flow through biochemical signalling and the flow of chemical energy through metabolism, biochemical processes give rise to the complexity of life. Over the last decades of the 20th century, biochemistry has become so successful at explaining living processes that now almost all areas of the life sciences from botany to medicine to genetics are engaged in biochemical research. Today, the main focus of pure biochemistry is on understanding how biological molecules give rise to the processes that occur within living cells, which in turn relates greatly to the study and understanding of tissues, organs, and whole organisms.

Building on your knowledge, we'll explore how the physiological actions of selected organs can be explained by their particular biochemical processes. We'll focus on the metabolic integration, rather than pathways, investigating the liver, communication systems (endocrine and neurological), blood and vascular system, muscle and adipose tissue and renal biochemistry.

6b. Outline Content

- Biochemistry of the blood and the vascular system (the blood vascular system; circulating blood cells; coagulation and complement: two of the body's defence mechanisms; blood as a transport medium)
- Biochemistry of the liver (physiology of the liver; synthetic functions; detoxification and waste disposal; maintenance of blood glucose concentration)
- Biochemistry of muscle (physiology of muscles; fuel metabolism within muscles; maintenance of ATP availability in active muscles; fatty acid as a fuel in muscle; protein and amino acids as fuels; fuel utilisation by muscle: adaptation to exercise and training)
- Biochemistry of the kidneys (renal physiology; metabolic pathways in the kidneys)
- Biochemistry of connective tissue: Bone and adipose (histology of connective tissue; ECM of connective tissue; bone; cartilage; adipose tissue; adipose as an endocrine tissue)

6c. Key Texts/Literature

The reading list to support this module is available at: <https://readinglists.aru.ac.uk/>

6d. Specialist Learning Resources

Clinical skills lab; Canvas

7. Learning Outcomes (threshold standards)		
No.	Type	On successful completion of this module the student will be expected to be able to:
1	Knowledge and Understanding	Explain the biochemistry of the blood and vascular system, the liver, muscle, kidneys, bone and adipose tissue
2	Knowledge and Understanding	Discuss the pathophysiology associated with alterations in the biochemistry of the human body
3	Intellectual, practical, affective and transferrable skills	Utilise problem solving skills and interpersonal skills when performing practical experiments, collecting and analysing data
4	Intellectual, practical, affective and transferrable skills	Demonstrate knowledge of health and safety aspects and procedures of working in the laboratory
5	Intellectual, practical, affective and transferrable skills	Submit evidence of appropriate scientific writing skills by providing adequately referenced, concisely written work

8a. Module Occurrence to which this MDF Refers				
Year	Occurrence	Period	Location	Mode of Delivery
2026/7	ZZF	Template For Face To Face Learning Delivery		Face to Face

8b. Learning Activities for the above Module Occurrence			
Learning Activities	Hours	Learning Outcomes	Details of Duration, frequency and other comments
Lectures	24	1-5	2 h x 12 combining lectures
Other teacher managed learning	24	1-5	3 h x 4 laboratory sessions 2 h x 6 workshops
Student managed learning	252	1-5	Self-directed study and assignment preparation.
TOTAL:	300		

9. Assessment for the above Module Occurrence

The assessment for some modules includes a presentation (see below for details on how this particular module is assessed). We recognise that presenting, especially to a large group, can cause significant anxiety or distress for some students. If this may affect you, please contact your Module Leader or the Disability and Neurodiversity Service as early as possible. We will work with you to consider appropriate reasonable adjustments. Depending on your individual needs, these might include, for example, presenting to a smaller group or presenting only to a member of academic staff.

Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
010	Coursework	5	30 (%)	Fine Grade	30 (%)

Laboratory report of 1500 words

Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
011	Examination Chelmsford	1-2	40 (%)	Fine Grade	30 (%)

Examination (2 h)

Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
012	Practical	3-4	30 (%)	Fine Grade	30 (%)

Objective Structured Practical Examination (OSPE)

In order to pass this module, students are required to achieve an overall mark of 40% (for modules at levels 3, 4, 5 and 6) or 50% (for modules at level 7*).

In addition, students are required to:

- (a) achieve the qualifying mark for each element of fine graded assessment as specified above
- (b) pass any pass/fail elements

[* the pass mark of 50% applies for all module occurrences from the academic year 2024/25 – see Section 3a of this MDF to check the level of the module and Section 8a of this MDF to check the academic year]