



Module Definition Form (MDF)

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| Module code: MOD002801 | Version: 9 Date Amended: 06/Dec/2023 |
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| 1. Module Title |
| The Physiology of Organ Systems (BMS) |

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| 2a. Module Leader |
| Francesca Panin |

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| 2b. School |
| School of Life Sciences |

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| 2c. Faculty |
| Faculty of Science and Engineering |

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| 3a. Level |
| 5 |

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| 3b. Module Type |
| Standard (fine graded) |

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| 4a. Credits |
| 15 |

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| 4b. Study Hours |
| 150 |

| 5. Restrictions | | | |
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| Type | Module Code | Module Name | Condition |
| Pre-requisites: | None | | |
| Co-requisites: | None | | |
| Exclusions: | None | | |
| Courses to which this module is restricted: | Biomedical Science, Bioscience, Life Sciences framework | | |

LEARNING, TEACHING AND ASSESSMENT INFORMATION

6a. Module Description

Centred around the concepts of homeostasis and the biology of disease, you will start with an introduction to the role of drugs and drug action, and their role in treating pathophysiology. You will then examine the cardiovascular system in detail, looking at normal functioning and control of the heart and circulatory system and differential supply of blood to the tissues. You will also study respiration and its control, in relation to gas exchange in lungs and tissues. The response of the body to physiological perturbations including altitude, diving, exercise and pregnancy will also be discussed. In addition you will look in detail at the brain and neurotransmitters, liver metabolism, and relationships between diet and risk of disease. We will also conduct a detailed examination of blood as a tissue, closely surveying both the cellular and plasma fractions, and the physiological responses to haemorrhage.

Throughout this module, you will receive an overview of normal integrated physiological processes which will then be contrasted with changes resulting from disease conditions. You will explore these effects using case studies and related discussions. You will develop a range of key skills in physiology by participating in practical sessions where you will collect a range of physiological data using yourselves as subjects. You will also develop your scientific writing skills through researching and critically reviewing literature on a relevant physiology subject matter, and communicating your findings. You will thus be well equipped to explore physiology and pathophysiology in a range of contexts, from pharmacology, pathology, medical fields, and biomedical science.

6b. Outline Content

- Pharmacology – molecules, pharmacodynamics and pharmacokinetics –
- Structure and function of the heart and generation of the heart beat –
- Neural and hormonal control of the heart beat and the cardiac cycle –
- Starling's Law and cardiac output -Peripheral circulation and blood pressure in both health and disease –
- Electrocardiograms and blood pressure monitoring in healthy and diseased states. –
- Respiratory exchange, function of haemoglobin in gaseous transport. –
- Control of respiration -Physiological adaptations to high altitude, diving, exercise and pregnancy –
- The brain – functional anatomy and neurotransmitters –
- Functions of the liver – energy metabolism, xenobiotic metabolism, bile production –
- reproductive science, including infertility and embryology
- Composition and role of blood, haemostasis and haemorrhage –
- Relationship between nutrition and disease

6c. Key Texts/Literature

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

6d. Specialist Learning Resources

Appropriately equipped laboratories for physiology practical sessions. Technical support

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 | Discuss the physical principles and physiological mechanisms involved in a variety of key organs and systems |
| 2 | Knowledge and Understanding | Compare and contrast normal organ function with that when the system is stressed, such as with exercise, pregnancy, altitude, and dietary imbalance |
| 3 | Intellectual, practical, affective and transferrable skills | Access and evaluate knowledge of the physiology and pathophysiology of human organ systems and communicate information effectively in a way that is well-organised, topical and shows awareness of the limits of current hypotheses |
| 4 | Intellectual, practical, affective and transferrable skills | Demonstrate laboratory skills and appropriate practical physiology techniques, including data collection, analysis and interpretation |

8a. Module Occurrence to which this MDF Refers

| Year | Occurrence | Period | Location | Mode of Delivery |
|--------|------------|---|----------|------------------|
| 2025/6 | ZZF | Template For Face To Face Learning Delivery | | Face to Face |

| 8b. Learning Activities for the above Module Occurrence | | | |
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| Learning Activities | Hours | Learning Outcomes | Details of Duration, frequency and other comments |
| Lectures | 27 | 1-3 | 9 x 3hr lectures with case studies |
| Other teacher managed learning | 9 | 4 | 1 x 3 hour practical + 1 x 3 hrs computer workshop + 3 hrs revision |
| Student managed learning | 114 | 1-4 | Background reading, online activities, preparation for lectures and practicals, and completion of assessments |
| TOTAL: | 150 | | |

| 9. Assessment for the above Module Occurrence | | | | | |
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| Assessment No. | Assessment Method | Learning Outcomes | Weighting (%) | Fine Grade or Pass/Fail | Qualifying Mark (%) |
| 010 | Coursework | 1-4 | 50 (%) | Fine Grade | 40 (%) |
| Coursework 1500 words group poster (40% Qualifying Mark as stipulated by the IBMS) | | | | | |
| Assessment No. | Assessment Method | Learning Outcomes | Weighting (%) | Fine Grade or Pass/Fail | Qualifying Mark (%) |
| 011 | Examination Cambridge | 1-4 | 50 (%) | Fine Grade | 40 (%) |
| Exam (1 hour 30 Minutes) (40% Qualifying Mark as stipulated by the IBMS) | | | | | |

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]