# Module Definition Form (MDF)

| Module code: MOD005691 | **Version:** 5 **Date Amended:** 21/Jun/2024 |
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| 1. Module Title |
|---|
| Physiological Profiling for Endurance |

| 2a. Module Leader |
|---|
| Dan Gordon |

| 2b. School |
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| School of Psychology, Sport and Sensory Sciences |

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

| 3a. Level |
|---|
| 5 |

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

| 4a. Credits |
|---|
| 15 |

| 4b. Study Hours |
|---|
| 150 |

**5. Restrictions**

| Type | Module Code | Module Name | Condition |
|---|---|---|---|
| Pre-requisites: | None | | |
| Co-requisites: | None | | |
| Exclusions: | None | | |
| **Courses to which this module is restricted:** | BSc (Hons) Sport and Exercise Science, BSc (Hons) Strength and Conditioning, BSc (Hons) Sports and Exercise Therapy | | |

## LEARNING, TEACHING AND ASSESSMENT INFORMATION

### 6a. Module Description

Aerobic physiology and functioning are the linchpins to all athletic and health-based activities, it from this starting point that this module will begin. Accordingly this module will study the process of profiling aerobic endurance performance and health from a physiological and analytical perspective. The philosophy behind this module is the notion of validity and reliability in test selection. As such the module will address the protocols and limitations associated with the assessment of maximum aerobic power (VO2max), while aerobic capacity will be addressed in the context of maximal lactate steady state, lactate minimum, individual anaerobic threshold, onset of blood lactate accumulation (OBLA) and DMax and the ventilatory threshold.

The relevance of performance economy as a diagnostic tool will be considered and projected to show how this simple concept of sub-maximal oxygen uptake can be used to establish the performance indicator termed velocity at VO2max (vVO2max). Consideration will be given to the dynamics of oxygen supply and utilisation at the onset of exercise through a reflection of oxygen uptake kinetics. These concepts will all be used to explore exercise intensity domains and how the role of critical power and the W' can be used to provide an objective measure of an integrated response to exercise. Clinical skills will also be considered through the application of such techniques as ECG, thoracic impedance, respiratory flow loops and cardiopulmonary exercise testing. This module will help to develop a series of transferable skills including practical (laboratory) techniques and skills relevant to general employment including report writing, data collection, handling and presentation and will be of particular interest to individuals wishing to apply their exercise physiology knowledge and work within a Sports Science Support environment both with athletes and clinical populations. The context for the journey within this module will be established using a series of live briefs showcasing how these concepts and transferable skills are utilised by graduates of ARU in the workplace.

### 6b. Outline Content

- Validity and reliability
- Maximal aerobic power (VO2max)
- Aerobic capacity: Individual anaerobic thresholds, Maximal lactate steady state, Ventilatory thresholds
- Sub-maximal responses: Economy, oxygen uptake kinetics
- Exercise domains: Critical power and the W'
- Cardiorespiratory assessment: ECG's heart rate variability, spirometry, CPET
- Transferable laboratory skills and competencies using industry (British Association of Sport & Exercise Sciences) BASES guidelines

### 6c. Key Texts/Literature

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

| 6d. Specialist Learning Resources |
|---|
| Cambridge Centre for Sport and Exercise Sciences |

| 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 | Demonstrate an applied understanding of the physiological principles of endurance profiling and assessment. |
| 2 | Knowledge and Understanding | Evaluate the assessment protocols in respect of specificity, validity and reliability. |
| 3 | Intellectual, practical, affective and transferrable skills | Interpret appropriate endurance-based physiological data. |
| 4 | Intellectual, practical, affective and transferrable skills | Execute practical activities evidencing a safe and effective working practice when undertaking a physiological assessment. |

| 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 | | | |
|---|---|---|---|
| **Learning Activities** | **Hours** | **Learning Outcomes** | **Details of Duration, frequency and other comments** |
| Lectures | 24 | 1-4 | Lectures 2-hours per week |
| Other teacher managed learning | 24 | 3-4 | Details of duration, frequency and other comments: Laboratory-based practical's 1 hour per week, group-based tutorials 1 hour per week |
| Student managed learning | 102 | 1-3 | Completion of weekly readings, tasks and preparation for assessments |
| TOTAL: | 150 | | |

| 9. Assessment for the above Module Occurrence | | | | | |
|---|---|---|---|---|---|
| **Assessment No.** | **Assessment Method** | **Learning Outcomes** | **Weighting (%)** | **Fine Grade or Pass/Fail** | **Qualifying Mark (%)** |
| 010 | Practical | 1-3 | 60 (%) | Fine Grade | 30 (%) |
| **Individual Viva Voce, of 15 minutes where two topics will be discussed using skills and competency portfolio developed during practical classes and seminars.** | | | | | |
| **Assessment No.** | **Assessment Method** | **Learning Outcomes** | **Weighting (%)** | **Fine Grade or Pass/Fail** | **Qualifying Mark (%)** |
| 011 | Coursework | 2,4 | 40 (%) | Fine Grade | 30 (%) |
| **Practical assessing all the key elements of a laboratory assessment of cardiopulmonary health, using industry led approaches.** | | | | | |

| Assessment components for Element 011 | | | | |
|---|---|---|---|---|
| **Component No.** | **Assessment Title** | **Submission Method** | **Weighting (%)** | **Components needed for Mark Calculation?** |
| 011/1 | Group-based Cardiopulmonary Laboratory Assessment Protocol. | | 25 (%) | All |
| 011/2 | Group Based Practical Exam | | 75 (%) | |

**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]**