MODULE **DESCRIPTOR**

MODULE TITLE	APPLIED PHYSIOLOGY & SCIENTIFIC ENQUIRY		
MODULE CODE	XS2902 (L5)	**CREDIT VALUE**	40 UK CREDITS / 20 ECTS
SCHOOL	SCHOOL OF SCIENCES		

MODULE **AIMS**

The aim of this module is to provide students with the skills necessary to carry out data collection and analysis of data, and to enable them to interpret critically the research findings within an applied sport and exercise physiology framework. Students will develop understanding of cardiovascular, respiratory and muscular physiology and how these systems interact both acutely and chronically in response to exercise stimuli. Students will develop their ability to conduct experiments and to undertake physiological measurement using a range of laboratory equipment, whilst also developing a range of data analysis skills.

MODULE **CONTENT**

Indicative syllabus content:

This module will investigate the physiological testing guidelines outlined by the UK governing body for Sport and Exercise Sciences (British Association for Sport & Exercise Sciences), whilst also addressing the core physiology competencies required by the Association for Nutrition. Students will use integrative methodologies and an applied approach to investigate the interactions of body's cardiovascular, respiratory and muscular systems during anaerobic and aerobic exercise.
The module will also apply the use of statistical techniques to practical work and address the implications for design and data handling. The module will build on previous knowledge and introduce the concepts of factorial ANOVA designs and multiple regression statistics and their application to Sport and Exercise Physiology testing/research.

Content will typically include but not limited to:
Cardiovascular Physiology: The components of the cardiovascular system, including structure of the heart, blood vessels and blood, along with the neural and hormonal control of the heart. The structure and function of the heart including properties of cardiac muscle cells and electrophysiology will also be covered.
Respiratory Physiology: Structure and function of the respiratory system; Mechanics of respiration; Gas exchange at rest and during exercise; Neuronal control of ventilation; Pulmonary responses to exercise.
Muscle Physiology: A review of the structure and function of skeletal muscle; The role of muscle architecture and fibre anatomy in force production; Force velocity relationships; Muscle metabolism; Contractile properties related to different sports and exercise; Fatigue mechanisms, defeating vs limiting factors; Recovery; Hypertrophy and atrophy.

INTENDED **LEARNING OUTCOMES**

On successful completion of this module a student will be able to:

1. Explain the control mechanisms of the cardiovascular, respiratory and muscular systems and their interactions during exercise.
2. Identify the acute and chronic responses of these systems to exercise-induced stress.
3. Evaluate techniques of physiological measurement used to identify acute and chronic responses.
4. Carry out a range of methodological and statistical tests commonly used within the discipline of Sport & Exercise Physiology.
5. Implement statistical techniques such as Factorial ANOVA & multiple regression on SPSS and to interpret and report the results as they relate to Sport & Exercise Physiology.

TEACHING METHODS

The module will be delivered by a combination of lectures and practical sessions and workshops. The practical sessions will be mainly used for laboratory work but will also include some tutorials, demonstrations and data interpretation exercises.

To facilitate the achievement of the learning outcomes listed, students will need to take a pro-active role in their own learning. Students will be expected to work on their own initiative in the development of appropriate skills, taking a critical appreciation of their progress. eLearn resources will be utilised to support student learning.

ASSESSMENT METHODS

This module is assessed through two practical assessments (VO2max & Wingate) and two laboratory reports (VO2max & Muscle Fatigue).