

MODULE DESCRIPTOR

MODULE TITLE	Principles of Physiology and Scientific Enquiry		
MODULE CODE	XS1902	CREDIT VALUE	40 /20 ECTS
SCHOOL	SCHOOL OF SCIENCE		

MODULE AIMS

This module aims:

- To provide an introduction to the principles of muscle and skeletal physiology, neurology, endocrinology, immunology and biochemical principles related to exercise, performance and health.
- To introduce the research processes and develop skills in presenting supporting evidence.
- To equip students with the relevant IT skills for future degree level work related to physiology.
- To introduce the students to basic statistical techniques and principles.
- To show how the statistical techniques and principles can be applied to answer research questions with an exercise and health framework.

MODULE CONTENT

Content will typically include but not limited to:

Skeletal system: Axial and appendicular skeleton, structure of bone, joints, planes of motion, joint levers.

The nervous system: Cells of the nervous system, functional anatomy of the nervous system, motor units, proprioception, reflexes, control of posture, walking, running.

Muscle structure and function: Types of muscle and their physiological roles, introduction to muscle architecture, muscle pennation.

Endocrinology: Hormones, control of body functions, mode of action. Neuroendocrine co-ordination, relationship of hypothalamus, hypophysis and other neuroendocrine glands. Hormones and prostaglandins in the control of the menstrual cycle, pregnancy, parturition and lactation.

Immunology: immune system, natural and acquired immunity; hypersensitivity, examples of immune malfunction in relation to exercise and general wellbeing.

Bioenergetics: identify metabolic pathways and how they are influenced by daily activity and exercise: ATPase, Creatine kinase, glycolysis (anaerobic threshold), glycogen metabolism, fat metabolism, oxidative phosphorylation.

Cardiovascular and Respiratory Exercise Physiology: Introduction to cardiovascular and respiratory parameters at rest and during exercise.

Introduction to research methodologies: the scientific method of problem solving, types of research, research methods process, developing the problem, developing the hypotheses. Basic literature searching strategies, using the Harvard/APA system of referencing.

Introduction to statistics: central tendency / variability / range of scores, basic concepts of statistical techniques, probability, relationships among variables, differences among groups, nonparametric techniques related to sport and exercise science.

Introduction to the use of SPSS including: importing data from Excel, variable view / data view, defining variables, descriptive statistics, simple statistical tests (T-tests, Correlation, Non-parametric tests), interpreting the data output, exporting graphs to Word

Introduction to PowerPoint (including preparing slides for presentations / posters)

INTENDED LEARNING OUTCOMES

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

1. Describe the basic principles of physiology, neurology, endocrinology, immunology, biochemistry and anatomy and their interactions during daily living and exercise.
 2. Identify, understand and apply statistical techniques and principles in order to analyse and interpret scientific data within a health and exercise context.
 3. Design and run a simple experiment and present the findings.
 4. Identify relevant information from course textbooks and other literature and reference effectively.
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TEACHING METHODS

This module is taught using a combination of weekly lectures, practicals and workshops. Students are required to read widely in order to benefit from the lectures. Lectures provide the basic material for the workshops and practicals, wherein the material is applied within a health and exercise context. Extensive use of elearn will support the delivery.

Assessments require students to research additional material based around the lectures and workshops. During the year students are given the opportunity to conduct laboratory tests designed to introduce aspects of physiological and anatomical testing.

ASSESSMENT METHODS

This module is assessed through a MCQ (20% each), an essay (20%) and a Group practical assignment and poster presentation (40%).