MODULE **DESCRIPTOR**

MODULE TITLE	INTRODUCTION TO BIOMECHANICS IN SPORT		
MODULE CODE	XS1100 (L4)	**CREDIT VALUE**	20 UK CREDITS / 10 ECTS
SCHOOL	SCHOOL OF SCIENCES		

MODULE **AIMS**

The aims of the module are to:

- To introduce students to kinematics and kinetics in the context of sport science, measurement, mathematical models and systems of units.
- To introduce students to the analysis of motion in a sporting context.

MODULE **CONTENT**

Indicative syllabus content:

Biomechanical Theory Introduction to the forms and causes of motion. Kinematics and kinetics. Biomechanics in sport science. Units, Equations and Review The International System of Units (SI). Base and derived units. Conversion of units. The use of equations and units in equations. Graphs and information. Linear Kinematics (Displacement, velocity and acceleration) Displacement, velocity and uniform acceleration. Motion and gravity. Flight. Kinematic equations. Measurements, motion and non-uniform acceleration. Linear Kinetics Newton's laws of motion. Friction. Momentum, energy and power. Angular Kinematics Angular displacement, angular velocity and angular acceleration. Motion on a circle. Relationship between linear and angular motion. Angular Kinetics, Equilibrium and Human Movement Inertia. Angular momentum. Centripetal/centrifugal forces. Centre of Mass. Turning moments. Levers. Stability. Practical Application Practical application of biomechanical theory will be explored. Topics include sprint starts and aspects of cycling.

INTENDED **LEARNING OUTCOMES**

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

1. Apply kinematic and kinetic equations in the context of sport and fitness.
2. Decompose problems through the use of the free body diagrams.
3. Identify problems, perform calculations, and formulate solutions from given situations or sporting activities using models and measurement.
4. Observe, record, and analyse test/practical procedures.

TEACHING METHODS

Key lectures will be delivered to cover aspects of theory and application to theory. These will be supported by tutorials, practicals, computer sessions and other teaching tools to introduce & develop your theory, mathematical, IT and communication skills and application of concepts.
Applications based assessments will allow you to investigate the deeper significance of the philosophies in the context of Sport Science through independent research.
The use of Blackboard as an online resource and as an assessment tool will allow you to develop your understanding of the key concepts and practical applications during the module. Formative online quizzes will give you the opportunity to self-assess and provide you with an aid to your understanding of the key Biomechanical concepts and applications.

ASSESSMENT METHODS

This module is assessed through on-line class tests.