

MODULE DESCRIPTOR

Module Title

Fundamental Principles of Biomechanics

Reference	HS2134	Version	1
Created	February 2018	SCQF Level	SCQF 8
Approved	March 2018	SCQF Points	15
Amended		ECTS Points	7.5

Aims of Module

To enable the student to understand the basic concepts and theories of applied biomechanics.

Learning Outcomes for Module

On completion of this module, students are expected to be able to:

- 1 Explain the actions of forces and moments and the concept of equilibrium in biomechanics.
- 2 Discuss tensile and compressive loading and the associated linear stress-strain relationship in biomechanics.
- 3 Discuss the kinematics of simple translation and rotational biomechanical systems, kinetics of rigid bodies and apply the concepts of work, power and energy.
- 4 Explain the effects of friction, mass moment of inertia and the dynamics of simple systems in biomechanics.
- 5 Explain the anatomical structure and function of the musculoskeletal system of the human body.

Indicative Module Content

Planes, axes, osteology, arthrology, myology. Micro and macroscopic structure of muscles, muscle contracture. Vector analysis in biomechanics. Forces, moments, gravity and equilibrium. Load analysis, forces and bending moment analysis during human motion. Rectilinear and curved path motion of human body segments. Newton's Laws applied to linear and circular human joint motion including the effect of friction. Linear and angular kinetics including Mass moment of Inertia. Impulse and momentum. Work and Energy related to human movement.

Module Delivery

The module is delivered by means of lectures, tutorials and guided self study and is integrated with applications within the laboratory.

Indicative Student Workload	Full Time	Part Time
Contact Hours	60	N/A
Non-Contact Hours	90	N/A
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	N/A
Actual Placement hours for professional, statutory or regulatory body		

ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

Component 1

Type:	Coursework	Weighting:	100%	Outcomes Assessed:	1, 2, 3, 4, 5
Description:	All components will be assessed by coursework				

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

Written coursework assessed with a grading proforma. Overall grade determined as follows:

Module Grade	Minimum Requirements to achieve Module Grade:
A	Rows 1-4: Minimum of 2 rows at A, 1 row at B and 1 row at C Rows 5-7: Minimum of 2 rows at distinction and 1 row at pass Row 8: Pass
B	Rows 1-4: Minimum of 2 rows at B, 1 row at C and 1 row at D Rows 5-7: Minimum of 1 row at distinction and 2 rows at pass Row 8: Pass
C	Rows 1-4: Minimum of 2 rows at C and 2 rows at D Rows 5-7: Minimum of 3 rows at pass Row 8: Pass
D	Rows 1-4: Minimum of 3 rows at D and 1 row at E Rows 5-7: Minimum of 2 rows at pass Row 8: Pass
E	Rows 1-4: Minimum of 3 rows at E Rows 5-7: Minimum of 1 row at pass
F	Failure to achieve any of the above
NS	Non-submission of work by published deadline or non-attendance for examination

Module Requirements

Prerequisites for Module	None, in addition to course entry requirements.
Corequisites for module	None.
Precluded Modules	None.

INDICATIVE BIBLIOGRAPHY

- 1 RICHARDS, J., 2018. The Comprehensive Textbook of Clinical Biomechanics, 2nd Edition, with access to e-learning course. Elsevier
- 2 WINTER, D.A., 2009. Biomechanics and Motor Control of Human Movement. John Wiley & Sons, Inc
- 3 WATKINS, J., 2010. Structure and Function of the Musculoskeletal System-2nd Edition. Human Kinetics