

Module Details	
Module Title:	Mathematics for Clinical Technologists
Module Code:	ENM4005-B
Academic Year:	2019-20
Credit Rating:	20
School:	Department of Biomedical and Electronics Engineering
Subject Area:	Engineering Mathematics
FHEQ Level:	FHEQ Level 4
Pre-requisites:	
Co-requisites:	

Contact Hours	
Type	Hours
Lectures	48
Directed Study	152

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Academic Year (Sept - May)

Module Aims
The aim of this module is to make students familiar with basic understanding of numerical mathematics as applied to mechanical and biomechanics suitable for the Clinical Technology students. This module focuses on foundation mathematics as well as mathematical analysis of human motion including quantitative maths applied for mechanical techniques for the analysis of human movement.

Outline Syllabus
Semester 1 In semester one and part of semester two students become familiar and learn foundation of maths including arithmetic of whole numbers, fractions, decimal numbers, percentage and ration, algebra, indices, simplifying algebraic expressions, factorisation, algebraic fractions,

transposing formulae, solving equations, functions, sequence and series, sets, functions, graphs of functions, the straight line, the exponential of function, the logarithm function, measurement, introduction to trigonometry, trigonometrical function and their graphs, trigonometrical identities and equations, solution of triangles, vectors, table and charts, correlation and integration.

Semester 2

In semester 2 students become familiar with an introduction to applied maths for biomechanics, application of mathematics in biomechanics and collection of mathematical kinematic data (Unit of measurements, vectors and scalars) with many numerical examples and theories of maths.

Learning Outcomes

1	Conduct basic numerical calculations which are essential for each undergraduate student to know.
2	Conduct a numerical calculation of velocity and acceleration using the first central difference method.
3	Conduct a numerical calculation of the area under a parameter-time curve as well as carry out the conversions for the calculation of lower extremity angles.
4	Solve quantitative problems using basic mathematical and numerical techniques that employ angular kinematic principles and human movements. Students will learn basic numerical techniques related to human body and this will help them to be ready for other related modules in stage 2 and 3.

Learning, Teaching and Assessment Strategy

Key lectures will deliver core content, providing students with the opportunity to acquire the information to enhance their knowledge and understanding of subject (LO 1,2,3,4). This will be complemented by many numerical examples and tutorials to allow students to apply this learning for future modules including biomechanics (LO3,4). Directed study provides students with the opportunity to undertake guided reading and to develop their own portfolio of learning to enhance transferable skills and knowledge (LO 1,2,3,4).

Quizzes will help students to understand mathematical aspects of basic human movements. This will be done by interactive teaching sessions with many hands out and questions/answers (LO1,2,3).

Module material is blocked to assist self-paced learning. Principles, theory and practical calculation skills are developed in formal lectures, and practised in tutorials and calculator-based classes with continual reflection and oral feedback.

There will be formative assessments in the form of monthly quizzes followed by a set of summative assessment at the end of each semester:

- 1) Class tests (20%): Written classroom tests during the course will assess both the application of practical skills to the knowledge base of the module and the wider learning outcomes expressed in the descriptor (LO1,2).
- 2) Summative final exam (closed book) (80%): The formal examination will assess all the learning outcomes expressed in the descriptor (LO1,2,3,4).

LO1: SM1, SM2, SM3, SM4, SM5, SM6

LO2: SM1, SM2, SM3, SM4, SM5, SM6

LO3: SM5, SM6, EA1, EA2, EA3, D4
LO4: SM5, SM6, P2, P4, G1, G2

Mode of Assessment

Type	Method	Description	Length	Weighting
Summative	Examination - closed book	Examination - Closed Book	2 hours	80%
Summative	Classroom test	Classroom Test	1 hour	20%

Reading List

To access the reading list for this module, please visit <https://bradford.rl.talis.com/index.html>.

Please note:

This module descriptor has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but minor changes may occur given the interval between publishing and commencement of teaching. Upon commencement of the module, students will receive a handbook with further detail about the module and any changes will be discussed and/or communicated at this point.