

COURSE SPECIFICATION DOCUMENT

NOTE: ANY CHANGES TO A CSD MUST GO THROUGH ALL OF THE RELEVANT APPROVAL PROCESSES, INCLUDING LTPC.

Academic School/Department:	Business and Economics
Programme:	Combined Studies
FHEQ Level:	4
Course Title:	Calculus with Applications
Course Code:	MTH 4110
Course Leader:	Ana Oliveira
Student Engagement Hours:	160
Lectures:	45
Seminar / Tutorials:	15
Independent / Guided Learning :	100
Semester:	Fall/Spring/Summer
Credits:	16 UK CATS credits 8 ECTS credits 4 US credits

Course Description:

This course provides a sound understanding of the concepts of calculus and their applications to business and economics. Emphasis in providing the theory side by side with practical applications and with numerous examples. Topics include co-ordinate geometry of straight lines, quadratic curves, exponential and logarithmic functions; elementary differentiation and integration; and applications to maxima, minima, and optimization. It also deals with differentiation and integration of trigonometric and inverse trigonometric functions.

Prerequisites: MTH 3110

Aims and Objectives:

To provide students with an understanding of the fundamentals of calculus and their applicability. To give students the opportunity to investigate a range of mathematical applications in areas of business and economics as well as social and life sciences.

Programme Outcomes :

Combined Studies: Ai, C i, Cii, Ciii, Di

Economics: A4, D
Business: B4, D2

A detailed list of the programme outcomes are found in the Programme Specification. This is located at the Departmental/Schools page of the portal.

Learning Outcomes:

- Have a sound and broad understanding of functions; understand the idea of limits and continuity and have the ability to calculate and apply them
- Have a broad understanding of the concepts and processes of the differentiation and integration of functions of one variable, including geometrical interpretations
- Have an understanding of calculus of several variables including partial derivatives, optimization of functions of two variables, Least-Square methods, Lagrange Multipliers and double integrals.
- Be able to choose the correct method/strategy to solve business oriented problems using appropriate mathematical language

Indicative Content:

- Functions and Functional Models
- Limits and Continuity; L'Hopital Rule
- The Derivative and techniques of differentiation
- Application of the derivative
- Indefinite and definite integral
- Functions of several variables and partial derivatives
- Least-Square method
- Optimization of functions of two variables and the method of Lagrange Multipliers
- Double integrals

Assessment:

This course conforms to the Richmond University Special Programme Assessment Norms for Mathematics approved by Academic Council on 28 June 2012.

Teaching Methodology:

Course material is presented and analyzed in the following ways:

- a) Formal presentation of topics and worked exercises.
- b) Self-learning assignments and directed mathematical exercises.
- c) Participation in individual and group investigations in calculus.
- d) Where appropriate, students will be introduced to solution aids, such as hand-held calculators, mathematical tables and computer software.

Bibliography:

Indicative Text(s):

