Academic School / Department: Business and Economics

Programme: BA Business Administration

***FHEQ* Level:**   4

Course Title: Calculus with Applications

Course Code: MTH 4110

Course Leader: Ana Oliveira

Student Engagement Hours: 160 (Standard 4- credit BA Course)
Lectures: 40
Seminar / Tutorials: 20
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 3XXX Functions with Applications

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:
    BA (Hons) Business Management: B4, C1, C2, D2
    BA (Hons) Economics: D

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BA (Hons) Finance and Investment: B2, C1, C2, D3
BSc (Hons) Accounting and Finance: B2, C1, C2, D3

A detailed list of the programme outcomes are found in the Programme Specification.

This is located at the archive maintained by the Registry and found at: https://www.richmond.ac.uk/programme-and-course-specifications/

Learning Outcomes:
By the end of this course, successful students should be able to:
- 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 Math Assessment Norms approved at Academic Board and located at: https://www.richmond.ac.uk/policies/

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Teaching Methodology:
Course material is presented and analysed 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.
d) Where appropriate, students will be introduced to solution aids, such as hand- held calculators, mathematical tables and computer software.

Indicative Text(s):

Laurence Hoffmann, Gerald Bradley, David Sobecki and Michael Price, "Applied Calculus for Business, Economics, and the Social and Life Sciences", 11th ed., McGraw-Hill, 2012.

Margaret Lial, Raymond Greenwell and Nathan Ritchey, "Calculus with Applications", 11th ed., Pearson, 2016

Journals

Web Sites

See syllabus for complete reading list

Change Log for this CSD:

Nature of Change	Date Approved & Approval Body (School or AB)	Change Actioned by Registry Services
Course description	27th Nov 17	Y
Aims and objectives	27th Nov 17	
Learning outcomes	27th Nov 17	
Indicative content	27th Nov 17	
Indicative Text	Sept 2019	