Course Unit Title:	Business Calculus and Applications
Course Unit Code:	BUS195
Type of Course Unit: (Compulsory/Optional)	Compulsory
Level of Course Unit: (first, second or third cycle)	Bachelor (1st Cycle)
Year of Study:	2
Semester when the unit is delivered:	4
Number of ECTS credits allocated:	5
Name of lecturer(s):	TBA

Learning Outcomes of the course unit:

Upon successful completion of this course students should be able to:
- construct and present mathematical arguments with accuracy and clarity;
- manipulate quantitative calculations logically and with high levels of accuracy apply and manipulate common functions used in calculus;
- calculate, manipulate and use differential and integral calculus of a single variable;
- use analytic techniques to solve ordinary differential equations of first-order;
- extend calculus techniques to the differential calculus to several variables;
- apply calculus techniques to multi-dimensional optimization problems;

Mode of Delivery:	Distance Learning
Prerequisites and co-requisites:	None
Recommended optional program components:	None

Course Contents:

Objective: To develop the core mathematical skills a business student would need to deal with basic calculations and applied business problems. Students will be provided with key mathematical analysis and tools for modeling of a wide range of applications used in business, finance and economics. This course is designed with an aim to apply calculus techniques and analysis to mathematical problems associated with quantitative study in areas relevant to business, finance and economics.

Description:
Limits and Continuity
Limits, Continuity, Continuity applied to inequalities

Differentiation
Definition of the derivative, Rules for differentiation, Derivative as a rate of change, Product and quotient rules, Chain rule

Applications of the derivative
Derivatives of exponentials and logarithms, Higher order derivatives, Implicit differentiation, Logarithmic differentiation, Marginal analysis, Elasticity of demand

Curve Sketching
Relative and absolute extrema, First derivative test, Concavity, Second derivative test, Asymptotes (vertical, horizontal and oblique), Optimization

Integration
Differentials, Anti-derivatives and the indefinite integral, Basic integration rules
Integration by substitution, Fundamental Theorem of Calculus, Area, Definite integrals, Area between two curves

Applications of Integration
Integration by parts, Partial fractions, Approximate integration and error analysis
Consumer's and Producer's Surplus, Average value, Present value, Annuities

Recommended or required reading:	Michael Sullivan: FINITE MATHEMATICS: AN APPLIED APPROACH, 11th Edition, Wiley. Frank Budnick, S.: APPLIED MATHEMATICS FOR BUSINESS, ECONOMICS AND THE SOCIAL SCIENCES (4th EDITION) McGraw-Hill R. A. Barnett, M. R. Ziegler & K. Byleen: CALCULUS FOR BUSINESS, ECONOMICS,LIFE AND SOCIAL SCIENCES (12TH EDITION) Prentice-Hall, Inc.
Planned learning activities and teaching methods:	Virtual Lectures, Workshops, Group work, Assignments and Exams
Assessment methods and criteria:	Examinations 50% Ongoing evaluation 50%
Language of Instruction:	English
Work Placement(s):	No
Place of Teaching:	Blackboard Virtual Learning Platform