

<b>Course Unit Title:</b>	Business Calculus and Applications
<b>Course Unit Code:</b>	BUS195
<b>Type of Course Unit: (Compulsory/Optional)</b>	Compulsory
<b>Level of Course Unit: (first, second or third cycle)</b>	Bachelor (1 <sup>st</sup> Cycle)
<b>Year of Study:</b>	2
<b>Semester when the unit is delivered:</b>	4
<b>Number of ECTS credits allocated:</b>	5
<b>Name of lecturer(s):</b>	TBA
<b>Learning Outcomes of the course unit:</b>	
<p>Upon successful completion of this course students should be able to:</p> <ul style="list-style-type: none"> <li>• construct and present mathematical arguments with accuracy and clarity;</li> <li>• manipulate quantitative calculations logically and with high levels of accuracy apply and manipulate common functions used in calculus;</li> <li>• calculate, manipulate and use differential and integral calculus of a single variable;</li> <li>• use analytic techniques to solve ordinary differential equations of first-order;</li> <li>• extend calculus techniques to the differential calculus to several variables;</li> <li>• apply calculus techniques to multi-dimensional optimization problems;</li> </ul>	
<b>Mode of Delivery:</b>	Face- to- face
<b>Prerequisites and co-requisites:</b>	None
<b>Recommended optional program components:</b>	None
<b>Course Contents:</b>	
<p><b>Objective:</b> 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.</p>	
<p><b>Description:</b> Limits and Continuity Limits, Continuity, Continuity applied to inequalities</p>	
<p><b>Differentiation</b> Definition of the derivative, Rules for differentiation, Derivative as a rate of change, Product and quotient rules, Chain rule</p>	

**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

<b>Recommended or required reading:</b>	<p>Michael Sullivan: FINITE MATHEMATICS: AN APPLIED APPROACH, 11th Edition, Wiley.</p> <p>Frank Budnick, S.: APPLIED MATHEMATICS FOR BUSINESS, ECONOMICS AND THE SOCIAL SCIENCES (4<sup>th</sup> EDITION) McGraw-Hill</p> <p>R. A. Barnett, M. R. Ziegler &amp; K. Byleen: CALCULUS FOR BUSINESS, ECONOMICS, LIFE AND SOCIAL SCIENCES (12<sup>TH</sup> EDITION) Prentice-Hall, Inc.</p>								
<b>Planned learning activities and teaching methods:</b>	<table border="1"> <tr> <td data-bbox="609 1213 1036 1318">Class Instruction</td> <td data-bbox="1036 1213 1461 1318">42 Hours</td> </tr> <tr> <td data-bbox="609 1318 1036 1381">Consultation</td> <td data-bbox="1036 1318 1461 1381">5-15 Hours</td> </tr> </table>	Class Instruction	42 Hours	Consultation	5-15 Hours				
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<b>Assessment methods and criteria:</b>	<table border="1"> <tr> <td data-bbox="609 1381 1079 1455">Final exam</td> <td data-bbox="1079 1381 1461 1455">50%</td> </tr> <tr> <td data-bbox="609 1455 1079 1486">Midterm exam</td> <td data-bbox="1079 1455 1461 1486">40%</td> </tr> <tr> <td data-bbox="609 1486 1079 1518">Class Participation</td> <td data-bbox="1079 1486 1461 1518">10%</td> </tr> <tr> <td data-bbox="609 1518 1079 1591"></td> <td data-bbox="1079 1518 1461 1591">100%</td> </tr> </table>	Final exam	50%	Midterm exam	40%	Class Participation	10%		100%
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<b>Language of Instruction:</b>	English								
<b>Work Placement(s):</b>	No								
<b>Place of Teaching:</b>	Regular Classroom European University Cyprus, Nicosia								