

COURSE OUTLINE

GENERAL

SCHOOL	Sciences and Engineering		
ACADEMIC UNIT	Computer Science		
LEVEL OF STUDIES	1 st Cycle		
COURSE CODE	MATH-195	SEMESTER	Fall, Spring
COURSE TITLE	Calculus I		
INDEPENDENT TEACHING ACTIVITIES <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>	WEEKLY TEACHING HOURS	CREDITS	
	3.5	6	
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	General background		
PREREQUISITE COURSES:	MATH-180 or MPT		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	English		
IS THE COURSE OFFERED TO ERASMUS STUDENTS			
COURSE WEBSITE (URL)			

LEARNING OUTCOMES

<p>Learning outcomes <i>The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.</i></p> <p><i>Consult Appendix A</i></p> <ul style="list-style-type: none"> ● <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i> ● <i>Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i> ● <i>Guidelines for writing Learning Outcomes</i>
<p>After completion of the course students are expected to be able to:</p> <ul style="list-style-type: none"> ● Compute limits. ● Determine points of discontinuity and intervals of continuity for functions. ● Use standard differentiation techniques for finding derivatives and tangent lines. ● Use the derivative to analyze functions and sketch graph. ● Apply Rolle's theorem and the mean value theorem. ● Find definite and indefinite integrals using basic integration techniques. ● Differentiate and integrate exponential functions and functions involving logarithms, and employ the logarithmic differentiation technique when appropriate.

<p>General Competences</p> <p>Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?</p>	
<p>Search for, analysis and synthesis of data and information, with the use of the necessary technology</p> <p>Adapting to new situations</p> <p>Decision-making</p> <p>Working independently</p> <p>Team work</p> <p>Working in an international environment</p> <p>Working in an interdisciplinary environment</p> <p>Production of new research ideas</p>	<p>Project planning and management</p> <p>Respect for difference and multiculturalism</p> <p>Respect for the natural environment</p> <p>Showing social, professional and ethical responsibility and sensitivity to gender issues</p> <p>Criticism and self-criticism</p> <p>Production of free, creative and inductive thinking</p> <p>.....</p> <p>Others...</p> <p>.....</p>
<p>Adapting to new situations, decision-making, working independently, critical and quantitative thinking, synthesis of ideas.</p>	

SYLLABUS

- Limits, asymptotes and continuity of functions.
- The derivative function, basic techniques of differentiation, derivatives of trigonometric functions, the chain rule, Implicit differentiation.
- Analysis of functions for sketching graphs.
- Applications of the Rolle’s theorem and the Mean Value theorem and an overview of the area problem.
- The antiderivative, basic techniques for finding Indefinite and Define integrals.
- Derivatives and integrals of exponential functions and functions involving logarithms, logarithmic differentiation.

TEACHING and LEARNING METHODS - EVALUATION

<p>DELIVERY</p> <p>Face-to-face, Distance learning, etc.</p>	<p>Face-to-face</p>											
<p>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</p> <p>Use of ICT in teaching, laboratory education, communication with students</p>	<p>Use of ICT in teaching / Χρήση ΤΠΕ</p> <p>Communication with students / Επικοινωνία με Φοιτητές</p>											
<p>TEACHING METHODS</p> <p>The manner and methods of teaching are described in detail.</p> <p>Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</p> <p>The student's study hours for each learning activity are given as well as the hours of non-</p>	<table border="1"> <thead> <tr> <th>Activity</th> <th>Semester workload</th> </tr> </thead> <tbody> <tr> <td>Lectures</td> <td>49</td> </tr> <tr> <td>Practice problems</td> <td>49</td> </tr> <tr> <td>Examinations</td> <td>4</td> </tr> <tr> <td>Study of textbook, lecture notes and online material.</td> <td>48</td> </tr> </tbody> </table>		Activity	Semester workload	Lectures	49	Practice problems	49	Examinations	4	Study of textbook, lecture notes and online material.	48
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<i>directed study according to the principles of the ECTS</i>	Course total	150
<p align="center">STUDENT PERFORMANCE EVALUATION</p> <p><i>Description of the evaluation procedure</i></p> <p><i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i></p> <p><i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i></p>	<p>- One test</p> <p>- Final Exam</p>	

ATTACHED BIBLIOGRAPHY

Required Textbooks / Readings:				
Title	Author(s)	Publisher	Year	ISBN
Calculus, 10th edition	Anton H., Bivens I., Davis S.	Wiley	2012	978-0470647721
APEX Calculus I, 3 rd edition	Hartman G.	CreateSpace Independent Publishing Platform	2015	978-1514225158
Recommended Textbooks / Readings:				
Title	Author(s)	Publisher	Year	ISBN
Calculus (International Metric Edition), 6th edition	Stewart J.	Brooks/Cole	2008	978-0495383628