

COURSE OUTLINE

(1) GENERAL

SCHOOL	Engineering		
DEPARTMENT	Electrical and Computer Engineering		
LEVEL OF STUDY	Undergraduate		
COURSE UNIT CODE	1.001	semester OF STUDIES	1 ^o
COURSE TITLE	Calculus I		
COURSEWORK BREAKDOWN		TEACHING WEEKLY HOURS	ECTS Credits
Theory		5	6
TOTAL		5	6
COURSE UNIT TYPE	General background		
PREREQUISITES			
LANGUAGE OF INSTRUCTION/EXAMS	Greek		
COURSE DELIVERED TO ERASMUS STUDENTS			
WEB PAGE (URL)			

(2) LEARNING OUTCOMES

Academically Outcomes
<p>This course is one of the basic Applied Analysis courses taught in the Department and focuses on the material of the calculus of one-variable functions. It aims to give the student the basic knowledge of advanced applied mathematics for engineers needed in his/her science in the area of differential and integral calculus of one-variable functions. This knowledge is necessary and mainly used in the Mathematics courses of the curriculum that follow as well as in subsequent courses of the Electrical Engineering specialty.</p> <p>With the successful completing of course, the student will be in position:</p> <ul style="list-style-type: none"> • To use efficiently the differential and comprehensive calculus functions of one variable, as well as the theory of series and functions. • To solve engineering problems, when they arise as applications of differential and integral calculus of one-variable functions. • To develop semi-analytical solutions in problems where detailed solutions are not admissible
General Skills
<p>Search, analysis and composition data and information. Adaptation in new situations. Autonomous work. Work in an interdisciplinary environment. Generating new research ideas.</p>

(3) SYLLABUS

One-variable functions. Exponential and logarithmic function. Trigonometric, hyperbolic functions and their inverses. Limits and continuity of one-variable functions. Derivative and applications of the derivative. Polar coordinate system and functions in parametric form. Derivation of complex functions and functions in parametric form. Sequences and series of real numbers. Power series and Taylor series. Indefinite and definite integrals. Integration methods. Generalized integrals. Applications of Definite Integral. Ordinary differential equations of first order: definitions, methods of solution and application to physical problems.

(4) TEACHING METHODS - ASSESSMENT

MODE OF DELIVERY	Face-to-face in class	
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY	Support the Learning process via of the e-class electronic platform	
TEACHING ORGANIZATION	Method description/Activity	Semester Workload
	Lectures	65
	Exercises	40
	Non guided study	75
	Total Contact Hours	180
ASSESSMENT METHODS	Study and exercise solutions during the duration of semester (20%) and final examination (80%)	

(5) RECOMMENDED BIBLIOGRAPHY

- *Thomas' Calculus (14th Edition)*, Hass, Joel; Heil, Christopher, Thomas, George Brinto and; Weir, Maurice D, Publisher: Pearson
- *Thomas Calculus with Differential Equations (11th Edition)*, Finney R.L., Weir M.D. and Giordano F.R., Publisher: Addison Wesley