COURSE OUTLINE

(1) GENERAL

SCHOOL	Department of Informatics and Computer Engineering		
ACADEMIC UNIT	University of West Attica		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE		**SEMESTER**	**A**
COURSE TITLE	Mathematical Analysis I		

INDEPENDENT TEACHING ACTIVITIES 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	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	3	
Tutorials	2	
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).	5	5

COURSE TYPE general background, special background, specialised general knowledge, skills development	General Background
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (in English)
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/ICE257/

(2) LEARNING OUTCOMES

Learning outcomes

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.
Consult Appendix A

- Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area
- Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B
- Guidelines for writing Learning Outcomes

With the successful completion of the course the students are expected to understand and be able to work on several issues of Analysis and Calculus such as Limits, Differential Calculus, Series, Integration, Functions of multiple parameters.
Students are asked to use the Matlab software package in related problems and applications.
The students are expected to gain the knowledge that is needed in order to proceed with the rest courses and to deal with the mathematical problems that occur in the field of Computer Science.

General Competences

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?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	Project planning and management
Adapting to new situations	Respect for difference and multiculturalism
Decision-making	Respect for the natural environment
Working independently	Showing social, professional and ethical responsibility and sensitivity to gender issues
Team work	Criticism and self-criticism
Working in an international environment	Production of free, creative and inductive thinking
	……

Working in an interdisciplinary environment Production of new research ideas	Others… …….

Search for, analysis and synthesis of data and information, with the use of the necessary technology
Decision-making
Working independently
Team work
Working in an international environment
Respect for difference and multiculturalism
Production of free, creative and inductive thinking

(3) SYLLABUS

- Differential Calculus: functions of one variable, limits, derivative, differential techniques and applications.
- Integrals: Defined and non-defined integral, integration techniques and applications.
- Series: Convergence criteria, power series, Taylor and Maclaurin series.
- Functions of many variables: Partial derivatives, differential of a function, local infima and suprima, multiple integral.
- Introduction to mathematical programming: Introduction to Matlab and applications.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY, Distance learning, etc.	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	Use of ICT in teaching, communication with students
TEACHING METHODS The manner and methods of teaching are described in detail. 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. The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS	**Activity** / **Semester workload** Lectures: 26 Tutorials: 26 Project: 33 Non-directed study: 40 Course total: **125**
STUDENT PERFORMANCE EVALUATION Description of the evaluation procedure 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 Specifically-defined evaluation criteria are given, and if and where they are accessible to students.	Written examinations with open questions in Greek language. Every question in the exam paper has a mark weight that is announced in advance to the students.

(5) ATTACHED BIBLIOGRAPHY

(1) Γεωργούδης, Μακρυγιάννης, Πρεζεράκος , ΜΑΘΗΜΑΤΙΚΑ ΓΙΑ ΜΗΧΑΝΙΚΟΥΣ, Σύχρονη Εκδοτική, Αθήνα 2017

(2) Γλαμπεδάκης Μιχάλης – Γλαμπεδάκης Αντώνης, ΜΑΘΗΜΑΤΙΚΑ ΜΕ MATLAB, εκδόσεις ΙΩΝ, Αθήνα 2013

(3) Γλαμπεδάκης Μιχάλης – Γλαμπεδάκης Αντώνης, ΜΑΘΗΜΑΤΙΚΑ ΙΙ ΜΕ MATLAB, εκδόσεις ΙΩΝ, Αθήνα 2014

(4) Γλαμπεδάκης Μιχάλης – Γλαμπεδάκης Αντώνης, ΓΡΑΜΜΙΚΗ ΑΛΓΕΒΡΑ ΜΕ MATLAB, εκδόσεις ΙΩΝ, Αθήνα 2014

(5) Κίτσος Χρήστος, ΤΕΧΝΟΛΟΓΙΚΑ ΜΑΘΗΜΑΤΙΚΑ & ΣΤΑΤΙΣΤΙΚΗ, Εκδόσεις Νέων Τεχνολογιών, Αθήνα 2002

(6) Μπράτσος Αθανάσιος, ΑΝΩΤΕΡΑ ΜΑΘΗΜΑΤΙΚΑ, Εκδόσεις Σταμούλη, Αθήνα 2003

(7) Κάππος Δ., ΜΑΘΗΜΑΤΑ ΑΝΑΛΥΣΕΩΣ, ΑΠΕΙΡΟΣΤΙΚΟΣ ΛΟΓΙΣΜΟΣ, Τόμος Α, Αθήνα 1962.

(8) Κάππος Δ., Μαθήματα Αναλύσεως, Διαφορικές Εξισώσεις, Αθήνα, 1966
(9) Spiegel M., Advanced Calculus, New York, 1963.
(10) Hille E., Analysis, Vol. I, Robert Krieger Publishing Company, New York, 1979.
(11) Salas S.L., Calculus: One and Several Variables, John Wiley and Sons, New York, 1982.
(12) Spence L. E., Finite Mathematics and Calculus, Harper and Row Publishers, New York, 1982.

- Related academic journals:

Journal of Mathematical Sciences
Journal of Differential Equations
American Journal of Mathematics