COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF STATISTICS AND ACTUARIAL – FINANCIAL MATHEMATICS		
LEVEL OF STUDIES	UNDERGRADUATE PROGRAM		
COURSE CODE	331-1006	SEMESTER	A
COURSE TITLE	CALCULUS 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
	5	8
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	General background
PREREQUISITE COURSES:	NO
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES
COURSE WEBSITE (URL)	http://www.actuar.aegean.gr/index.php/en/academics/undergraduate-programs

(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*

Students who have successfully completed the course will have:

- Obtained the needed theoretical background and the critical ability to use differential and integral calculus in one variable in order to study some problems appearing in Probability Theory, Statistics, Financial and Actuarial Mathematics.
- The ability to handle problems concerning bounds of sets, supremum of a set, infimum of a set, sequences of real numbers (convergence, monotonicity, recursive sequences), limits of functions, continuity of functions, derivative of a function, maxima and minima of a function, Taylor's Theorem, convex and concave functions apply certain techniques of differential and integral calculus of one variable to study the behavior of a real function, to approximate a real function by a polynomial and to evaluate definite and indefinite integral of some special classes.

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 *Adapting to new situations* *Decision-making* *Working independently* *Team work* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*Project planning and management* *Respect for difference and multiculturalism* *Respect for the natural environment* *Showing social, professional and ethical responsibility and sensitivity to gender issues* *Criticism and self-criticism* *Production of free, creative and inductive thinking* *……* *Others…* *…….*

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

All above are aligned to Level 6 of European Qualification Framework

(3) SYLLABUS

Convergence of sequences, functions, continuity, derivatives, fundamental theorems of calculus, L' Hospital's rule, Taylor's theorem, introduction to integration, definite and indefinite integrals, calculation of integrals, mean-value theorem, applications using the software package Mathematica.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Communication with students via e-mail
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	39
Tutorials	26
Independent study	160
Course total (25 per ECTS)	*225*

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*	Student evaluation is done in Greek through a written examination which includes short-answers questions and problem solving. For students with disabilities, evaluation takes place via oral exams.

examination of patient, art interpretation, other *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Spivak Michael, Calculus, University Publ. of Crete, 2010.
2. Finney R.L., Weir M.D., Giordano F.R., Calculus Vol. I, University Publ. of Crete, 2009.
3. Pantelidis N. George., Analysis, Vol. I, Ziti Publ., 2008.
4. Rassias Th., Mathematical Analysis I, Tsotras Publ., 2014.
5. Georgiou D., Iliadis S, Megaritis A., Real Analysis, Tziola Publ., 2017.
6. Ntougias S., Calculus Vol. A, LIBERAL BOOKS, 2007.
7. Halidias N., Applied Mathematics, New Technologies Publ., 2017
8. Filippakis M., Applied Analysis and Elements of Linear Algebra, Tsotras Publ., 2017.

- Related academic journals: