COURSE OUTLINE

GENERAL

SCHOOL	School of Science
ACADEMIC UNIT	Department of Mathematics
LEVEL OF STUDIES	Graduate
COURSE CODE	AN8

COURSE CODE	AN8	**SEMESTER**	Spring
COURSE TITLE	Differential Equations		

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**
	3	7,5
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*	*specialised general knowledge*	
PREREQUISITE COURSES:		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek	
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes	
COURSE WEBSITE (URL)		

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*

The course aims to an introduction to a wide class of differential equations at graduate level. Material varies from classical topics on differential equations to recent research problems.

Working independently
Team work
Production of free, creative and inductive thinking
Production of analytic and synthetic thinking
Search for, analysis and synthesis of data and information, with the use of the necessary technology

SYLLABUS

Second order o.d.e.'s: Sturmian theorems, Oscillation theorems. Differential inequalities and applications. Study by considering integral equations. Equations with distributed arguments. Delay equations and systems: solutions by the method of steps, existence and uniqueness by the use of fixed point theorems, stability. Fractional derivatives and fractional differential equations. Time scales and dynamic equations. Other topics.

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Lectures/ Class presentations	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of the platform "E-course" of the University of Ioannina	
TEACHING METHODS *The manner and methods of teaching are described in detail. Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials,*	**Activity**	**Semester workload**
	Lectures/Presentations	45
	Assignments/Essays	52,5
	Individual study	90
	Course total	**187,5**

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*	

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
	Students choose evaluation by one or both of the following:
	  1. Class presentation – Essays – Assingments
	  2. Final Written Examination
	
	In case that a student participates to both, the final grade is the maximum of the two grades.

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.	Evaluation criteria and all steps of the evaluation procedure are accessible to students through the platform "E-course" of the University of Ioannina.

ATTACHED BIBLIOGRAPHY

- Suggested bibliography:
C, Corduneanu, Principles of Differential and Integral Equations
R. D. Driver, Ordinary and Delay Differential Equations
T. A. Burton, Volterra Integral and Differential Equations
R. K. Miller, Nonlinear Volterra Integral Equations
P. Hartman, Ordinary Differential Equations
Related academic journals