

COURSE OUTLINE

GENERAL

SCHOOL	School of Science		
ACADEMIC UNIT	Department of Mathematics		
LEVEL OF STUDIES	Postgraduate		
COURSE CODE	AA6	SEMESTER	1
COURSE TITLE	Numerical solution of partial differential equations		
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	7,5
<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>	Special background		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes		
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>In modern times it is almost unthinkable not to use computers to simulate physical problems. One of the major languages/programming packages is the Matlab package. Based on knowledge gained at the undergraduate level we apply known methods of numerical</p>

solution of differential equations encountered in physical problems.

Upon completion of the course, graduate students are expected to:

- Use the Matlab package with ease.
- Be able to numerically solve initial and boundary value problems.
- Be able to evaluate their numerically obtained results.

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

- Adapting to new situations
- Decision-making
- Working independently
- Team work

SYLLABUS

Numerical solution of parabolic and elliptic partial differential equations by methods of finite differences and finite elements.

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	In class	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	Use of the computer (Mechanics) lab	
TEACHING METHODS <i>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</i>	Activity	Semester workload
	Lectures	26
	Lab	13

<i>workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</i> <i>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</i>		
	Course total	39
STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure</i> <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> <i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i>	1. Weekly assignments 2. Final project	

ATTACHED BIBLIOGRAPHY

- Suggested bibliography:
- Related academic journals: