COURSE OUTLINE

GENERAL

SCHOOL	School of Science		
ACADEMIC UNIT	Department of Mathematics		
LEVEL OF STUDIES	Graduate		
COURSE CODE	**MAE816**	**SEMESTER**	**8**
COURSE TITLE	Difference Equations – Discrete Models		

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	6
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*	• special background • specialised general knowledge • skills development
PREREQUISITE COURSES:	None
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	• Greek • English if required
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE (URL)	http://users.uoi.gr/kmavridi/

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 are taught Difference Equations, which are the discrete analogue of Differential Equations. Also, they learn how to use this knowledge in specific problems, which emerge in various research areas.

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	*Others*
Production of new research ideas	

- Search for, analysis and synthesis of data and information, with the use of the necessary technology.
- Decision-making.
- Working independently.
- Criticism and self-criticism.
- Production of free, creative and inductive thinking.

SYLLABUS

Linear difference equations. Systems of linear difference equations. Nonlinear difference equations. Stability theory for difference equations. Asymptotic theory for difference equations. Difference equations with continuous variable. Discrete models in various sciences.

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	• Face to face. • Using website and web-forum. • Counseling by visiting office or using internet. • Questions can be submitted by visiting office or using internet. • Other means, if requested by the students, if it is possible (i.e. by phone).

<table>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>

Using the full potential of Moodle platform.
Communication with the students through instant messaging systems available by social network, or by email.
Announcements regarding the course through social networks.

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<tr><td>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</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures</td><td>39 hours</td></tr>
<tr><td>Study theory and solving exercises</td><td>39 hours</td></tr>
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<tr><td>Course total</td><td>78 hours</td></tr>
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<tr><td>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.</td><td>

Written exams during Exams Periods.
Weakly exercises during semester.
Written tests during semester.
Other ways, if special treatment is required (i.e. medical reasons). Special treatment must be fully justified and proved.

For all the above, the preferred language is Greek. English can also be used if required.

All the above are fully explained to the students at the course website.
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ATTACHED BIBLIOGRAPHY

- Suggested bibliography: As described at http://eudoxus.gr/
- Related academic journals: None.