



ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ
Α.ΔΙ.Π.
ΑΡΧΗ ΔΙΑΣΦΑΛΙΣΗΣ & ΠΙΣΤΟΠΟΙΗΣΗΣ
ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΣΤΗΝ ΑΝΩΤΑΤΗ
ΕΚΠΑΙΔΕΥΣΗ

HELLENIC REPUBLIC
H.Q.A.
HELLENIC QUALITY ASSURANCE
AND ACCREDITATION AGENCY

ΤΕΧΝΟΛΟΓΙΚΟ ΕΚΠΑΙΔΕΥΤΙΚΟ ΙΔΡΥΜΑ ΑΝΑΤΟΛΙΚΗΣ ΜΑΚΕΔΟΝΙΑΣ ΚΑΙ ΘΡΑΚΗΣ
ΜΟΝΑΔΑ ΔΙΑΣΦΑΛΙΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΕΙ ΑΜΘ

Quality Assurance in Higher Education Course Data Collection Form

ΤΕΧΝΟΛΟΓΙΚΟ ΕΚΠΑΙΔΕΥΤΙΚΟ ΙΔΡΥΜΑ
ΑΝΑΤΟΛΙΚΗΣ ΜΑΚΕΔΟΝΙΑΣ & ΘΡΑΚΗΣ
ΑΓΙΟΣ ΛΟΥΚΑΣ,
65404 ΚΑΒΑΛΑ

EASTERN MACEDONIA AND THRACE
INSTITUTE OF TECHNOLOGY
AGIOS LOUKAS
65404 KAVALA

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF TECHNOLOGICAL ENGINEERING		
ACADEMIC UNIT	ELECTRICAL ENGINEERING		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	AN5	SEMESTER	1 ^o
COURSE TITLE	APPLIED PROGRAMMING		
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
LECTURES		2 (Theory) + 2 (Lab)	4
<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>	<i>General Background, Specialised general knowledge,</i>		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK / ENGLISH		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES		
COURSE WEBSITE (URL)	http://engmath.teiimt.gr/moodle/		

(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*

This module will provide to the students with the elementary knowledge and practical abilities in Matlab, that are necessary in order to use this tool effectively in technical numerical calculations and in the visualization of the results the students get from various other courses.

With the successful completion of the course the students have to be able:

1. To design and implement computer programs, that consist of multiple lines of code to solve numerical analysis problems and also analyze electrical engineering problems.
2. To succeed in this, students have to be able:
 - To write simple programs that will implement numerical methods and algorithms.
 - To calculate the solutions to electrical engineering problems using numerical methods.
 - Analyze the application and accuracy of numerical methods in various problems in electrical engineering.
 - To synthesize multiple programs creating larger size software.
 - To filter numerical results in readable form, which answers in specific questions of

the analysis and design of the subject of electrical engineer.	
General Competences	
<i>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?</i>	
<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>
<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>
<i>Decision-making</i>	<i>Respect for the natural environment</i>
<i>Working independently</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>
<i>Team work</i>	<i>Criticism and self-criticism</i>
<i>Working in an international environment</i>	<i>Production of free, creative and inductive thinking</i>
<i>Working in an interdisciplinary environment</i>
<i>Production of new research ideas</i>	<i>Others...</i>

<ol style="list-style-type: none"> 1. Retrieve, analyse and synthesise data and information, with the use of necessary technologies 2. Adapt to new situations/problems and make decisions about methods/algorithms 3. Work autonomously, but also work in groups 4. Be critical and self-critical 5. Advance free, creative and causative thinking 	

(3) SYLLABUS

<ol style="list-style-type: none"> 1. Introduction to Matlab <ol style="list-style-type: none"> 1.1. The user environment in Matlab. 1.2. Problem solving methodologies. 1.3. Working with matrices and arrays. 2. Determining functions. 3. Working with data files. 4. Program design. 5. Programming with operators, functions, conditional statements and loops. 6. Debugging. 7. Basic and advance plotting. 8. Application to electrical engineering.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	In classroom, distance learning via the asynchronous platform
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	Presentations using Power Point transparencies. Use of Matlab software, material in the e-class platform (videos, exercises, quizzes, etc.) use of whiteboard. Contact with the students electronically (via e-mail, a group in facebook, via Skype).

<p>TEACHING METHODS</p> <p><i>The manner and methods of teaching are described in detail.</i></p> <p><i>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.</i></p> <p><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></p>	<table border="1"> <thead> <tr> <th><i>Activity</i></th> <th><i>Semester workload</i></th> </tr> </thead> <tbody> <tr> <td>Lectures</td> <td>26</td> </tr> <tr> <td>Lab exercises</td> <td>26</td> </tr> <tr> <td>Hours of personal study/exams</td> <td>48</td> </tr> <tr> <td>Course total (30 hours / ECTS)</td> <td>100</td> </tr> </tbody> </table>		<i>Activity</i>	<i>Semester workload</i>	Lectures	26	Lab exercises	26	Hours of personal study/exams	48	Course total (30 hours / ECTS)	100
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Course total (30 hours / ECTS)	100											
<p>STUDENT PERFORMANCE EVALUATION</p> <p><i>Description of the evaluation procedure</i></p> <p><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></p> <p><i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i></p>												
<ul style="list-style-type: none"> - Final exam (50%) which includes: <ul style="list-style-type: none"> • Solution of problems related to the electrical engineering with quantitative data • Comparative evaluation of theory - Two group assignments (20%) - Two individual assignments (20%) <p>3. Attendance of lectures / Regular visit to e-class / facebook group (10%)</p>												
<p>(5) ATTACHED BIBLIOGRAPHY</p> <p>- Suggested bibliography: - Related academic journals:</p> <ol style="list-style-type: none"> 1. Γεωργίου Α. Γραββάνη, και Κωνσταντίνου Μ. Γιαννουτάκη, "Προγραμματισμός με τη χρήση Matlab", εκδ. Παπασωτηρίου, Αθήνα, 2012. 2. Βασιλείου Χ. Μούσα, "Βασική χρήση και προγραμματισμός του Matlab 7", εκδ. Ίων, Αθήνα, 2010. 3. Βασίλης Τσιάντος, "Matlab για Μηχανικούς", εκδ. Τζιόλας, Θεσσαλονίκη, 2015. 4. Ευάγγελου Χατζίκου, "Matlab 6 για Μηχανικούς", εκδ. Τζιόλα, Θεσσαλονίκη, 2003. 5. Adrian Biran & Moshe Breiner, "Matlab για Μηχανικούς", εκδ. Τζιόλα, 2003. 6. Thomas L. Harman, James Dabney, Norman Richert, "Advanced Engineering Mathematics with Matlab", second edition, Brooks/Cole Thomson Learning, 2000. 7. L.F. Shampine, I. Gladwell, S.Thompson, "Solving ODEs with Matlab", Cambridge University Press, Cambridge, 2003. 												