

COURSE OUTLINE

1. GENERAL INFORMATION

SCHOOL	MARITIME AND INDUSTRIAL STUDIES		
DEPARTMENT	INDUSTRIAL MANAGEMENT AND TECHNOLOGY		
LEVEL OF STUDY	UNDERGRADUATE		
COURSE UNIT CODE	TEΠΛΗ02	SEMESTER OF STUDY	4 th
COURSE TITLE	DATA PROCESSING-PROGRAMMING-LANGUAGES		
INDEPENDENT TEACHING ACTIVITIES <i>in case in which credits are awarded for separate components/parts of the course, e.g. in lectures, laboratory exercises, etc. If credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>	WEEKLY TEACHING HOURS	CREDITS	
Lecture, Laboratory Exercises and Project		5.5	
<i>Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at section 4.</i>			
COURSE TYPE <i>general background, special background, specialized general knowledge, skills development</i>	General background		
PREREQUISITE COURSES:	None		
LANGUAGE OF INSTRUCTION and EXAMINATION/ASSESSMENT:	Greek		
THE COURSE IS OFFERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)	https://eclass.unipi.gr/courses/BDT236/		

2. LEARNING OUTCOMES

LEARNING OUTCOMES

The course learning outcomes, specific knowledge, skills and competences of an appropriate (certain) level, which students will acquire upon successful completion of the course, are described in detail. It is necessary to consult:

APPENDIX A

- Description of the level of learning outcomes for each qualifications' cycle, according to the European Higher Education Area's Qualification Framework.
- 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 familiarize students with the basic concepts of programming and with the use of MATLAB for problem solving.

Upon successful completion of the course, the students will be able to:

- Use MATLAB to solve problems (modeling, programming, optimization)
- Develop logic in their programs using the program commands and sequences
- Design programs based on functions
- Develop more sophisticated programs using tables and data structures
- Manage data files in their programs

General Competences

Taking into consideration the general competences that students/graduates must acquire (as those are described in the Diploma Supplement and are mentioned below), at which of the following does the course attendance aims

Search for, analysis and synthesis of data and information, by the use of technologies that are necessary according to the case
Adapting to new situations
Decision-making
Independent work
Team work
Working in an international environment
Working in an interdisciplinary environment
Introduction of innovative research

Project planning and management
Respect for difference and multiculturalism
Environmental awareness
Social, professional and ethical responsibility and sensitivity to gender issues
Critical consciousness, criticism and self-criticism
Development of free, creative and inductive thinking

- Search for, analysis and synthesis of data and information, by the use of technologies that are necessary according to the case
- Adapting to new situations
- Decision-making
- Independent work
- Team work
- Social, professional and ethical responsibility and sensitivity to gender issues
- Critical consciousness, criticism and self-criticism
- Development of free, creative and inductive thinking

2. COURSE CONTENT

The course includes the following topics:

1. THE MATLAB ENVIRONMENT

1.1. NAVIGATION

1.1.1. NAVIGATION ON THE PC

1.1.2. NAVIGATION ON MATLAB ENVIRONMENT

1.2. MATLAB as an environment, activation and navigation, help

2. MATLAB AS A POCKET PC ENVIRONMENT

2.1. PERMITTED SIZES

2.1.1. Scalars

2.1.2. Vectors (unidimensional tables, vectors)

2.1.3. Two-dimensional tables (arrays)

2.1.4. Character sequences (words, strings)

2.2. PERMITTED OPERATIONS

2.2.1. Numerical operations

2.2.2. Character operations

2.2.3. Logical operations

2.2.3. Relevant operations

2.2.4. Priority operations

3. MATLAB AS "LINE PROGRAMMING" ENVIRONMENT (PROGRAMMING WITH DIRECT USER-PC INTERACTION)

3.1. PERMITTED SIZES

3.1.1. Numbers – tables – character sequences

3.1.2. Multidimensional tables

3.1.3. Data structures

3.1.4. Cell arrays

3.2. PERMITTED FUNCTIONS

3.2.1. Linear systems solving

3.2.2. Polynomial data approach

3.2.3. Graphics and plots

3.2.4. Input-output commands (interaction with computer memory)

4. MATLAB AS "PROGRAMMING LANGUAGE" ENVIRONMENT

4.1. PROGRAMS - FILES .M

4.1.1. M files for command execution (script files)

4.1.2. M files for function execution (function files)

4.2. CONTROL OF VARIABLES – COMMAND FLOW

4.2.1. Satisfaction of conditions – branching of executable commands (if end, if else end, if elseif ... else end, case)

4.2.2. Command repetition – loops (loops, for end, nested loops, while end)

4.3. FINAL PROGRAMMING ELEMENTS

Students also attend a laboratory training program in the Laboratory of Production Management Information Systems in order to develop an intuitive and hands-on understanding of the concepts presented in the lectures. Students are trained in workshops with a rotation system. The workshop program is posted on the course website and eclass at the beginning of the semester.

In addition, articles, audiovisual lecture material, web addresses, useful information and exercises are posted at eclass.

3. TEACHING METHODS - ASSESSMENT

<p>TEACHING MODE <i>Face-to-face, in-class lecturing, on distance teaching and distance learning etc.</i></p>	In-class lecturing / Laboratory teaching	
<p>USE OF INFORMATION AND COMMUNICATION TECHNOLOGY <i>Use of ICT in Teaching, Laboratory Education, Communication with students</i></p>	<p>Teaching: Lectures with audiovisual media, support of the learning process through the eclass platform Laboratory Education: Use of MATLAB, open access and in-house software for laboratory exercises Communication with students: face-to-face at office hours, email, eclass</p>	
<p>COURSE DESIGN <i>Description of teaching techniques, practices and methods: Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, clinical practice, Art Workshop, Interactive teaching, Educational visits, project, Essay writing, Artistic creativity, etc.</i></p> <p><i>The study hours for each learning activity as well as the hours of non- directed study are given according to the principles of the ECTS</i></p>	<p>Activity / Method</p>	<p>Semester Workload</p>
	Lectures	26
	Laboratory exercises	26
	Project	41
	Self-study of lecture material and exercises	43
	Counselling	0.5
	Exams (written)	1
Course Total	137.5	
<p>STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS <i>Detailed description of the evaluation procedures: Language of evaluation, assessment methods, formative or summative (conclusive), multiple choice questionnaires, short- answer questions, open-ended questions, problem solving, written work, Essay/report, oral exam, public presentation, laboratory work, art interpretation, other.....etc</i></p> <p><i>Evaluation criteria are specifically defined and given as well as if and where they are reported and accessible to students.</i></p>	<p>Language of exams: Greek</p> <p>Assessment Methods: After the last lecture, the exam material is posted at eclass. The final course grade is formed by the optional project (30%) and by the written exams taken in the examination period of the spring semester and, in case of failure, in the September resits.</p> <p>The written examination includes problem solving / exercises and short-answer questions. It is conducted with closed books.</p> <p>The evaluation of students with special learning difficulties in writing and reading (as certified and qualified by a competent institution) is performed according to the relevant procedure decided by the Department Assembly.</p> <p>Notification of the Assessment Criteria: The evaluation criteria are made known during the first lecture and are</p>	

	clearly stated on the course website and e-class. The answers to the exam questions are posted at eclass after the exam date. Students have the opportunity to discuss their exam paper with the course instructor (at the posted office hours) after the announcement of the course grades.
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4. SUGGESTED BIBLIOGRAPHY

<p><i>-Suggested Bibliography :</i></p> <ul style="list-style-type: none">• Book [50656337]: MATLAB: A PRACTICAL INTRODUCTION TO PROGRAMMING AND PROBLEM SOLVING [in Greek], STORMY ATTAWAY <p><i>-Scientific Journals: not applicable</i></p> <p><i>-Lecture Notes</i></p> <p><i>-Laboratory Workbook</i></p>
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