1. GENERAL

SCHOOL	ENGINEERING		
DEPARTMENT	PRODUCT AND SYSTEMS DESIGN ENGINEERING		
LEVEL OF STUDIES	UNDER GRADUATE		
COURSE CODE	**1102**	**SEMESTER**	**2nd**
COURSE TITLE	**PROGRAMMING METHODOLOGIES AND TECHNOLOGIES**		
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**
Lectures		**2**	**6**
Laboratory		**2**	
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*	General background		
PREREQUISITE COURSES:	NONE		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK/ENGLISH		
COURSE DELIVERED TO ERASMUS STUDENTS	YES		
MODULE WEB PAGE (URL)	https://eclass.uowm.gr/courses/MRE218		

2. LEARNING OUTCOMES

Learning outcomes
The aim of this course is to enrich students' knowledge of basic programming principles, good software development practices and the ability to use software libraries to solve specialized problems. For this purpose, the use of Python was chosen, which is a powerful and rapidly evolving programming language, capable to function as an introductory programming language but also to offer a reliable and almost universal software development tool. Its open character has contributed to the existence and continuous development of software libraries pertaining to it for all areas of interest (graphics, data analysis, artificial intelligence, web programming, distributed programming, etc.). The course introduces basic concepts but also advanced programming topics such as algorithm development techniques, program flow control structures, it introduces the data structures provided by Python (lists, dictionaries, tuples) while introducing the concepts and principles of object-oriented programming. Upon successful completion of the course, the student should: 1. Understand the basic concepts of Computer Programming. 2. Be able to analyze a complex problem into individual simpler problems. 3. Be able to encode the problem in algorithmic form. 4. Understands the basic principles and logic of programming and code development. 5. Write structured programs that include function calls and data entry/exit in Python.

6. Be able to use structured data formats such as tables in the programs he/she develops
7. Be able to clearly express the documentation of the program.

General Skills

- Theoretical and practical background regarding the cognitive field of programming.
- Search, analysis and synthesis of data and information.
- Decision making.
- Promoting free, creative and inductive thinking.

3. COURSE CONTENTS

- An Introduction to Computing and Problem Solving
- Core objects, Variables, Input and Output (string functions, Print Formatting, list Object)
- Structures that control Flow.
- Relational and Logical Operators, Decision structures.
- The while loop
- The for loop
- Lists, strings, tuples, dictionaries
- Functions, User Defined Functions, Scope of Variables, Lambda Expressions.
- Object-Oriental Programming

4. TEACHING METHODS - ASSESSMENT

MODE OFDELIVERY	1. THEORY In class, face to face 2. LABORATORY In laboratory facilities, face to face.
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	● Use of appropriate Python software ● Video and slide presentations via projector ● Support of teaching process via the electronic platform e-class
TEACHING METHODS	

Activity	*Semester workload*
Lectures	50
Laboratory exercises	50
Non-directed study	50
Course total	**150**

ASSESSMENT METHODS	1. THEORY: Final written exam which includes: i. Short-answer questions ii. Multiple choice questions iii. Problem solving

5. ATTACHED

- Suggested bibliography:

- **ΕισαγωγήστονΠρογραμματισμόμετηνPython, SchneiderDavid**
- **Python - Εισαγωγή στους υπολογιστές, Νικόλαος Αβούρης, Μιχαήλ Κουκιάς, Βασίλειος**

Παλιουράς, Κυριάκος Σγάρμπας