COURSE OUTLINE

BASIC PROGRAMMING PRINCIPLES

1. GENERAL

SCHOOL	CLASSICS AND HUMANITIES
DEPARTMENT/UPS	HUMANITIES / DIGITAL APPLICATIONS IN ARTS AND CULTURE
LEVEL OF STUDIES	UNDERGRADUATE – LEVEL 6

COURSE CODE	XXXXX		**SEMESTER**	1ST
COURSE TITLE	BASIC PROGRAMMING PRINCIPLES			

TEACHING ACTIVITIES *If the ECTS Credits are distributed in distinct parts of the course e.g. lectures, labs etc. If the ECTS Credits are awarded to the whole course, then please indicate the teaching hours per week and the corresponding ECTS Credits.*	**TEACHING HOURS PER WEEK**	**ECTS CREDITS**
	3	6
Please, add lines if necessary. Teaching methods and organization of the course are described in section 4.		
COURSE TYPE *Background, General Knowledge, Scientific Area, Skill Development*	SCIENTIFIC AREA	
PREREQUISITES:	NO	
TEACHING & EXAMINATION LANGUAGE:	GREEK	
COURSE OFFERED TO ERASMUS STUDENTS:	YES	
COURSE URL:	https://eclass.duth.gr/courses/XXXXXX/	

2. LEARNING OUTCOMES

Learning Outcomes
Please describe the learning outcomes of the course: Knowledge, skills and abilities acquired after the successful completion of the course.

Upon successful completion of the course, participants will be able to:
- Understand the fundamental concepts of discrete mathematics and apply them to problem-solving.
- Understand and apply fundamental programming concepts to write simple programs.
- Write and execute programs that solve problems.
- Break down complex tasks into smaller, manageable components.
- Design and implement functions to create modular, reusable code.
- Work with lists, arrays, and strings to store, retrieve, and manipulate data collections.
- Use basic data structures to efficiently manage and process information.
- Apply recursive functions to solve problems.
- Use files for reading and writing, enabling programs to store and retrieve data permanently.
- Debug and troubleshoot programs, efficiently identifying and correcting syntax and logical errors.
- Follow best practices in programming.
- Apply basic algorithmic thinking and understand how computational solutions can be optimised for performance.

General Skills
Name the desirable general skills upon successful completion of the module

Search, analysis and synthesis of data and information,	Project design and management
ICT Use	Equity and Inclusion
Adaptation to new situations	Respect for the natural environment
Decision making	Sustainability
Autonomous work	Demonstration of social, professional and moral responsibility and sensitivity to gender issues
Teamwork	
Working in an international environment	Critical thinking

- Search, analysis and synthesis of data and information, ICT Use
- Autonomous work
- Teamwork
- Promoting free, creative and inductive reasoning
- Production of new research ideas
- Working in an interdisciplinary environment

3. COURSE CONTENT

1. Introduction to discrete mathematics: sets, propositional logic, Boolean algebra, and functions.
2. Combinatorics and graph theory.
3. Computer architecture and programming.
4. Variables, data types, and basic input/output operations.
5. Decision structures.
6. Loop structures.
7. Functions and modular programming.
8. Data structures: lists, arrays, collections.
9. Data structures: stacks, queues, graphs, and trees.
10. Recursion: solving problems with recursive functions.
11. Complexity and efficiency of algorithms.
12. Basic file handling.
13. Debugging and error handling.

4. LEARNING & TEACHING METHODS - EVALUATION

TEACHING METHOD *Face to face, Distance learning, etc.*	• Lectures • Active learning (hands-on learning) - Experiential learning • Collaborative learning
USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY (ICT) *Use of ICT in Teaching, in Laboratory Education, in Communication with students*	• Digital assessment tools • Online collaboration tools • Use of ICT in teaching and communication with students • PPT presentations • Teaching material, announcements and communication through the eClass platform • Communication with students via email
TEACHING ORGANIZATION *The ways and methods of teaching are described in detail.* *Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliographic research & analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive learning, Study visits, Study / creation, project, creation, project. Etc.* *The supervised and unsupervised workload per activity is indicated here, so that total workload per semester complies to ECTS standards.*	<table><tr><td>*Activity*</td><td>*Workload/semester*</td></tr><tr><td>Lectures</td><td>26</td></tr><tr><td>Laboratory Exercise</td><td>13</td></tr><tr><td>Essay</td><td>37</td></tr><tr><td>Projects</td><td>46</td></tr><tr><td>Study and analysis of bibliography</td><td>55</td></tr><tr><td>Written examination</td><td>3</td></tr><tr><td>**Total**</td><td>180</td></tr></table>
STUDENT EVALUATION *Description of the evaluation process* *Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay / Report, Oral Exam,*	Formative Essay (compulsory): 50% Final written examination: 50%

Presentation in audience, Laboratory Report, Clinical examination of a patient, Artistic interpretation, Other/Others	2
Please indicate all relevant information about the course assessment and how students are informed	

5. SUGGESTED BIBLIOGRAPHY

- Deitel, H., Daitel, P. (2014). C Προγραμματισμός, 7η Έκδοση. Εκδόσεις Μ. Γκιούρδας.
- Schneider, D. (2016). Εισαγωγή στον προγραμματισμό με την Python. Εκδόσεις Μ. Γκιούρδας
- Ζάχαρης, Ν. (2023). Επίλυση προβλημάτων με τη γλώσσα C# [Προπτυχιακό εγχειρίδιο]. Κάλλιπος, Ανοικτές Ακαδημαϊκές Εκδόσεις. https://dx.doi.org/10.57713/kallipos-204
- Κατωπόδης, Κ. (2016). Εισαγωγή στα Διακριτά Μαθηματικά. Εκδόσεις Ζήτη.
- Μανής, Γ. (2015). Εισαγωγή στον Προγραμματισμό με αρωγό τη γλώσσα Python [Προπτυχιακό εγχειρίδιο]. Κάλλιπος, Ανοικτές Ακαδημαϊκές Εκδόσεις. https://dx.doi.org/10.57713/kallipos-749
- Μισυρλής, Ν. (2007). Εισαγωγή στον Προγραμματισμό με την C. 3η έκδοση.
- Τζάλλας, Α., Γκόγκος, Χ., & Τσούλος, Ι. (2024). Μια σύγχρονη προσέγγιση στη γλώσσα C [Προπτυχιακό εγχειρίδιο]. Κάλλιπος, Ανοικτές Ακαδημαϊκές Εκδόσεις. https://dx.doi.org/10.57713/kallipos-394

ANNEX OF THE COURSE OUTLINE

Alternative ways of examining a course in emergency situations

Teacher (full name):	XXXXXXXX
Contact details:	XXXXXXXX
Supervisors: (1)	YES
Evaluation methods: (2)	Essay (compulsory): 50% Final written examination: 50%
Implementation Instructions: (3)	The written exams will be conducted via the eClass platform on a date and time that will be announced in advance. Students will be informed of the exam duration and content well ahead of the scheduled exam. The assignment must be submitted through eClass by a specified deadline.

(1) Please write YES or NO
(2) Note down the evaluation methods used by the teacher, e.g.
  ➢ *written assignment* or/and exercises
  ➢ written or oral examination with distance learning methods, provided that the integrity and reliability of the examination are ensured.
(3) In the **Implementation Instructions** section, the teacher notes down clear instructions to the students:

a) in case of **written assignment and / or exercises:** the deadline (e.g. the last week of the semester), the means of submission, the grading system, the grade percentage of the assignment in the final grade and any other necessary information.
b) in case of **oral examination with distance learning methods:** the instructions for conducting the examination (e.g. in groups of X people), the way of administration of the questions to be answered, the distance learning platforms to be used, the technical means for the implementation of the examination (microphone, camera, word processor, internet connection, communication platform), the hyperlinks for the examination, the duration of the exam, the grading system, the percentage of the oral exam in the final grade, the ways in which the inviolability and reliability of the exam are ensured and any other necessary information.
 c) in case of **written examination with distance learning methods**: the way of administration of the questions to be answered, the way of submitting the answers, the duration of the exam, the grading system, the percentage of the written exam of the exam in the final grade, the ways in which the integrity and reliability of the exam are ensured and any other necessary information.
There should be an attached list with the Student Registration Numbers only of students eligible to participate in the examination.