COURSE OUTLINE

(1) GENERAL

SCHOOL	SOCIAL SCIENCES
ACADEMIC UNIT	DEPARTMENT OF CULTURAL TECHNOLOGY AND COMMUNICATION
LEVEL OF STUDIES	UNDERGRADUATE
COURSE CODE	PLR 132 **SEMESTER** 2ⁿᵈ
COURSE TITLE	ALGORITHMS AND DATA STRUCTURES

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 and Laboratories	4	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*	Core Course/Skills Development
PREREQUISITE COURSES:	None
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE (URL)	https://eclass.aegean.gr/courses/131367/

(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*

After the completion of the specific course students …

- They will acquire a detailed and structured way of thinking necessary for the development of programs in C.
- They will be able to make programs in C language.
- They will have understood the mechanisms of memory management.
- They will have realized the need to segment a program into smaller sections, each of which performs a specific function.
- They will have understood how a PC communicates with its peripherals, reads and stores information.
- They will have the appropriate background so that they can easily attend the next programming courses in languages such as C ++ and Java.

General Competences

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Working in an interdisciplinary environment
- Production of free, creative and inductive thinking
- Transfer of know-how in other environments

(3) SYLLABUS

The course concerns the development of algorithms with the principles of structured procedural programming. The C language was chosen as the most characteristic language for teaching both structured programming and basic data structures. C is also the basis for most modern object-oriented programming languages such as C ++, Java and C #. The programming language C is taught: Language syntax: variables, constants, expressions, basic data types, sentences, operators. Data input / output. Flow control commands. Repetitions, Functions, Pointers, Arrays, Structures, Communication Channels and File Management.

Lecture schedule	
No	Lecture
1	Basic concepts.
2	Data types. Int, Char, Float and Double, Variable size and address. Our first program in C.
3	The printf () and scanf () functions
4	Other library functions
5	Condition commands - The if, switch, case and break commands.
6	Repeat commands - While, do-while, for
7	Functions. Defining and calling functions,
8	Passing arguments to functions. Scope of variables.
9	Pointers. One-dimensional arrays. Relationship between pointers and arrays.
10	Character arrays (C-strings). Multi-dimensional arrays. Passing arrays to functions.
11	Structures
12	Communication channels and file management
13	Recap

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of open source software for laboratory education. Use ICT in teaching and communication with students.

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

Activity	Semester workload
Lectures	13 *2 hours = 26 hours
Lectures' study	13*3 hours = 39 hours
Laboratory Practice	13*2 hours = 26 hours
Laboratory Preparation	13*3 hours = 39 hours
Tutorials	13*2 hours = 26 hours
Course total	156 hours

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.

The final exam is done with a written exam at the end of the semester and with the implementation of semester assignments. Students are examined with open notes.

The evaluation criteria become known during the initial-introductory lecture and are posted throughout the semester on the website for storing the course content (eclass.aegean.gr). The evaluation of students is based on the grade of the final written examination in all the taught material in a percentage of 70% and the assignments that receive 30% of the grade.

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

- Η ΓΛΩΣΣΑ C ΣΕ ΒΑΘΟΣ, ΧΑΤΖΗΓΙΑΝΝΑΚΗΣ Μ. ΝΙΚΟΣ, 5η έκδοση Έτος Έκδοσης: 2017, Εκδότης: Κλειδάριθμος, Κωδικός ISBN: 978-960-461-715-9
- Η ΤΕΧΝΗ ΚΑΙ ΕΠΙΣΤΗΜΗ ΤΗΣ C, Eric S. Roberts, Έτος Έκδοσης: 2004, Εκδότης: Κλειδάριθμος, Κωδικός ISBN: 960-209-791-4
- Γ. Τσεκούρας, "Αλγόριθμοι και Δομές Δεδομένων", Σημειώσεις μαθήματος, 2009
- Feibel Werner, "Using ANSI C in Unix", McGraw-Hill Osborne Media, 1990.
- Gough Brian, "An Introduction to GCC", Network Theory Limited, 2004.
- Hutchinson Robert, Just Steven, "Programming Using the C Language", McGraw-Hill Companies, 1988.
- Schildt Herbert, "C: The Complete Reference", McGraw-Hill Osborne Media, 2000.

- Related academic journals:
- Programming and Computer Software, Springer
- New Generation Computing, Springer