(1) GENERAL

SCHOOL	ENGINEERING
ACADEMIC UNIT	Informatics and Computer Engineering
LEVEL OF STUDIES	Undergraduate
COURSE CODE	ICE1-1004 SEMESTER 1st
COURSE TITLE	Computer programming

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	3	
Tutorial and problems solving	2	
Computer Laboratory	1	
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).	**6**	**6**

COURSE TYPE general background, special background, specialised general knowledge, skills development	Background, skills development
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/CS174/

(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

Upon successful completion of the course, the student must:
- understand the syntax of C language and be familiar with the Integrated Development Environment (eg. editor, compiler, software libraries, reference manuals, online help)
- construct with relative ease the basic programming statements: data types, variables, constants, value assignments, expressions, loops and control structures
- understand and be able to use abstract data types (arrays, strings), functions, recursion, scope of variables, pointers and structures
- use and be familiar with formatted input/output, the C preprocessor, files and the arguments of main
- be able to analyze computer programs developed in C language and define their operation
- be able to design and apply problem solutions on the computer through C programming

General Competences

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?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	Project planning and management Respect for difference and multiculturalism Respect for the natural environment

Adapting to new situations	Showing social, professional and ethical responsibility and sensitivity to gender issues
Decision-making	
Working independently	Criticism and self-criticism
Team work	Production of free, creative and inductive thinking
Working in an international environment	......
Working in an interdisciplinary environment	Others...
	....
Production of new research ideas	

- Working independently
- Production of free, creative and inductive thinking

(3) SYLLABUS

Computer architecture. Principles of structured programming. Compilation. Linking. Executable programs. The C programming language. Variables, data types, expressions and assignments. Simple input/output. Loops. Conditional statements. Arrays. Functions. Scope of variables. Recursion. Pointers. Dynamic memory allocation. Strings. Structures. Formatted input/output. The C preprocessor. Macros. Input/Output redirection. Data streams. Text files. Binary files. Serial/random file access. Special topics (the arguments of main(), enumerated data types, unions). Computer labs in C programming environment to consolidate the language.

(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 web-based asynchronous elearning systems (eclass and moodle) to support the educational material (notes, powerpoint presentations, self assignments, past exams etc.) and examinations Use of email and announcements in elearning system to communicate and inform 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	39
	Tutorials	26
	Computer Laboratory	13
	Written assignments	30
	Self study	42
	Course total	150

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,
	I. Final written exam (70%) which contains :
	   - Questions with short answers
	   - Questions with multiple answers
	   - Software program development
	
	II. Passed all computer laboratory assignments and final laboratory examination (30%)
	
	For successful completion, a grade of at least 5 out of 10 is required in both the written final exam as well as in the laboratory part of the course.

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 exam material and the assessment process are made known to students in the lecture hall, the laboratory and the e-learning platform of the course.

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Χατζηγιαννάκης, Ν., Η Γλώσσα C σε Βάθος, 5η έκδ., Κλειδάριθμος, 2017.
2. Καρολίδης Δ., Μαθαίνετε εύκολα C, εκδ. Άβακας, 2013.
3. Τσελίκης Γ., Τσελίκας Ν., C Από τη Θεωρία στην Εφαρμογή, 3η έκδ., 2016.
4. Μαστοροκώστας, Π., Διαδικαστικός Προγραμματισμός – Η Γλώσσα C, ΣΕΑΒ, 2015.
5. Καρανικόλας, Ν., Εμβάθυνση στον Προγραμματισμό με τη Γλώσσα C, Εκδόσεις Νέων Τεχνολογιών, 2009.

- Additional bibliography

1. Kernighan B., RitchieD., Η Γλώσσα Προγραμματισμού C, 2η έκδ., Κλειδάριθμος
2. Aitken P., Jones, Πλήρες Εγχειρίδιο της C, 6η έκδ., Γκιούρδας, 2006.
3. Roberts E., Η Τέχνη και Επιστήμη της C, Κλειδάριθμος, 2004.
4. DeitelH.M., DeitelP.J., C Προγραμματισμός, Γκιούρδας, 2003.
5. PrataS., CPrimerPlus, 5thed., TheWaiteGroup, SAMS, 2004.
6. Harbison S.P., Steele G.L., C: A Reference Manual, 5thed.,Prentice Hall, 2002.
7. Bronson G.J., A First Book of ANSI C, 4th ed., Course Technology, 2006.
8. Wikibooks, Programming in C, (A comprehensive look at the C programming language and its features) - http://en.wikibooks.org/wiki/Programming:C

- Related academic journals: