COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF SCIENCES
ACADEMIC UNIT	PHYSICS DEPARTMENT
LEVEL OF STUDIES	UNDERGRADUATE

COURSE CODE	25	**SEMESTER**	2

COURSE TITLE	Programming Languages

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**
	4	5
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*	skills development
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE (URL)	http://ecourse.uoi.gr/enrol/index.php?id=881

(2) LEARNING OUTCOMES

The course provides students with introductory knowledge in computer programming. Specifically, students acquire skills in programming using the C programming language. Emphasis is placed on open-source and free software, with the use of Linux as the operating system. Students engage in lab exercises, solving problems directly on the computer. Upon successful completion of the course, students will be able to:

- Use the Linux operating system.
- Develop and compile simple programs in C.
- Implement logic in their programs using control flow statements.
- Design programs using functions.
- Develop more complex programs using arrays and data structures.
- Manage data files in their programs.

Search for, analysis and synthesis of data and information, with the use of the necessary technology.
Adapting to new situations
Working independently
Criticism and self-criticism
Production of free, creative and inductive thinking

(3) SYLLABUS

Learning the C programming language.
- Introduction to the Linux operating system.
- Input-output commands.
- Data types, operators, and expressions.
- Control flow statements.
- Loops.
- Functions and program structure.
- Recursion, recursive functions.
- Pointers and arrays.
- Structures.
- File handling.

(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*	- The course website is used for distributing lecture notes and posting announcements. - A Moodle platform is used for special exercises (VPL – Virtual Programming Lab). - Video projectors are used during both lectures and labs. - The lab component of the course is conducted exclusively using computers with the Linux operating system. - A virtual machine (VirtualBox OVA with Linux, C, C++, Python, ROOT, etc.) is provided for installation on students' personal computers for practice.

Activity	Semester workload
Lectures (Theory - Examples)	26
Lab Exercises	26
Study and analysis of bibliography	70
Exams	3
Course total	125

Laboratory performance (30%)
Students develop programs on a weekly basis. The development of these programs is done exclusively using a computer.

Written Exam (70%)
A written exam is held at the end of the course, which includes program development based on the material taught or/and tests during the course (with multiple choice questions, short answer questions, etc.).

A passing grade in the laboratory component, as described in the course regulations, is a prerequisite for participating in the final exams.

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:
- Related academic journals:

- Course notes in PDF format.

- "C: From Theory to Application"
  G.S. Tselikis – N.D. Tselikas,
  ISBN: 9786188676206, GEORGIOS TSELIKIS, 2023

- "C Programming, 9th Edition"
  Paul Deitel, Harvey Deitel,
  ISBN: 9789605127541, X. GIOURDA & CO EE, 2023

- "The C Programming Language in Depth"
  Nikos M. Chatzigiannakis,
  ISBN: 9789604617159, KLEIDARITHMOS PUBLISHING, 2017

- "C for Scientists and Engineers"
  Cheng H.,
  ISBN: 9789604183258, TZIOLA PUBLISHING, 2012