

<b>INSTITUTION</b>	NATIONAL AND KAPODISTRIAN UNIVERSITY OF ATHENS					
<b>SCHOOL</b>	SCHOOL OF SCIENCE					
<b>DEPARTMENT</b>	INFORMATICS AND TELECOMMUNICATIONS					
<b>COURSE LEVEL</b>	UNDERGRADUATE					
<b>COURSE TITLE</b>	<b>Introduction to Programming</b>					
<b>COURSE CODE</b>	<b>K04</b>	<b>Semester</b>	<b>1</b>	<b>ECTS</b>	<b>7</b>	
<b>TEACHING HOURS per week</b>	<b>THEORY</b>	<b>3</b>	<b>SEMINAR.</b>	<b>1</b>	<b>LABORATORY</b>	<b>2</b>
<b>COURSE TYPE</b>	<b>Select one of the following and delete the rest</b> Compulsory (YM)					
<b>URL</b>	<a href="https://eclass.uoa.gr/courses/D8/">https://eclass.uoa.gr/courses/D8/</a>					
<b>EXPECTED PRIOR KNOWLEDGE/ PREREQUISITES AND PREPARATION:</b>	None					
<b>TEACHING AND EXAMINATIONS LANGUAGE:</b>	GREEK					
<b>THE COURSE IS OFFERED TO ERASMUS STUDENTS</b>	NO					

<b>COURSE CONTENT</b>
<p>Introduction and history of computers and programming. Computer organization and information representation. Programming languages and software. Procedural programming language principles. Compilation, linking and executing programs. The C programming language. Development environments for C. The compiler gcc. Small C program examples. Types, declarations, variables and constants. Statements, expressions, operators and the assignment. Control flow. The structure of a C program, functions and global variables. The lifetime of a variable, the scope of a declaration. Recursion. Memory addresses, pointers and arrays. Dynamic memory allocation. Strings. Arrays of pointers, pointers to pointers, multidimensional arrays. Pointers to functions. Command line parameters. Enumerations, structures, recursive structures (lists, binary trees), unions, bit fields, user-defined types. Input/Output. File input/output. The Preprocessor and macro definitions. Sorting and searching in arrays. Programming guidelines. Usual bugs when programming in C.</p>

<b>STUDENT LEARNING OBJECTIVES</b>
Teaching-Learning Goals-Expected Learning Outcomes

The course aims to familiarize the student with programming using C language and support her/him to obtain the knowledge background to cope with all the undergraduate programming courses of the curriculum of our Department.

Upon successful completion of the course the student will be able to:

- Design an algorithm to solve a specific problem
- Explain the functionality of a specific algorithm
- Program using the appropriate procedural programming concepts
- Program in C using the appropriate language constructs
- Explain the functionality of a functionality of a specific C program

TEACHING AND LEARNING METHODS - ASSESSMENT											
<b>TEACHING METHOD</b>	In Class (Face to Face)										
<b>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES</b>	<p>Learning process supported by web site page where all course material is uploaded as well as the course of the lectures</p> <p>Mailing list, Announcements, Task assignments, Email communication</p> <p>Live transmission of lectures</p> <p>Ability to track recorded lectures</p> <p>Laboratory work</p>										
<p><b>TEACHING ORGANIZATION</b></p> <p><i>Describe in detail the way and methods of teaching:</i></p> <p>Enhanced Lectures, Online Lectures, Seminars, Tutorial, Laboratory, Laboratory Exercise, Study &amp; analysis of literature, Practice (Positioning), Interactive teaching, Developing a project, Individual / group work Telework (reference to tools) etc.</p> <p><i>Details of the student's study hours for each learning activity and hours of non-guided study are shown to ensure that the total workload at the semester corresponds to the ECTS</i></p>	<p>During the lectures, slides are used as well as program code which is explained and executed to illustrate the theory. For the lab classes, first year students are divided into eight groups. There is also an optional lab class for the rest of students. Any time during the semester, students can express any questions or views about the theory, the lab work or the assignments into the course's discussion forum.</p> <table border="1"> <thead> <tr> <th>Activity</th> <th>Student Workload (hours)</th> </tr> </thead> <tbody> <tr> <td>Lectures + Tutorials</td> <td>52</td> </tr> <tr> <td>Laboratory</td> <td>26</td> </tr> <tr> <td>Assignments / Independent Study</td> <td>97</td> </tr> <tr> <td><b>Total Course</b></td> <td><b>175</b></td> </tr> </tbody> </table>	Activity	Student Workload (hours)	Lectures + Tutorials	52	Laboratory	26	Assignments / Independent Study	97	<b>Total Course</b>	<b>175</b>
Activity	Student Workload (hours)										
Lectures + Tutorials	52										
Laboratory	26										
Assignments / Independent Study	97										
<b>Total Course</b>	<b>175</b>										

<p><b>ASSESSMENT OF STUDENTS</b> <i>Description of the assessment process</i></p> <p><i>Assessment Methods, Formative or Concluding, Multiple Choice Test, Quick Response Questions, Test Development Questions, Problem Solving, Written Work, Report / Report, Oral Examination, Public Presentation, Laboratory Work, Other / Other</i></p> <p><i>Fully defined evaluation criteria are mentioned and if and where they are accessible to students.</i></p>	<p>The requirements of the course consist of a written exam plus a sequence of practical work assignments. For the first year students, performance in the labs is also taken into account.</p>		
	<b>Assessment methods</b>	<b>Number</b>	<b>Percentage</b>
	Written examination	1	50% (1 <sup>st</sup> year students) / 70% (other)
	Assignments	4	30%
	Laboratory	13	20% (1 <sup>st</sup> year students)

<p><b>LITERATURE AND STUDY MATERIALS / READING LIST</b></p> <ul style="list-style-type: none"> <li>• P. Stamatopoulos, "Introduction to Programming: Lecture Notes" + "Lab Notes", 2017.</li> <li>• Brian W. Kernighan, Dennis M. Ritchie. "The C Programming language", Prentice-Hall (Greek Edition), 1988</li> <li>• Γ. Σ. Τσελίκης, Ν. Δ. Τσελίκας. "C: Από τη Θεωρία στην Εφαρμογή", 3η έκδοση, 2016.</li> <li>• Νικόλαος Μισυρλής. "Εισαγωγή στον Προγραμματισμό με την C", 3η έκδοση, 2007.</li> <li>• Νίκος Χατζηγιαννάκης. "Η Γλώσσα C σε Βάθος", 5η έκδοση, εκδόσεις Κλειδάριθμος, 2017.</li> <li>• Δημήτριος Καρολίδης. "Μαθαίνετε εύκολα C", 2013.</li> </ul>
---