

## COURSE OUTLINE

### (1) GENERAL

<b>SCHOOL</b>	UNIVERSITY OF THESSALY		
<b>ACADEMIC UNIT</b>	DEPARTMENT OF CIVIL ENGINEERING		
<b>LEVEL OF STUDIES</b>	UNDERGRADUATE		
<b>COURSE CODE</b>	ΓΚ0304	<b>SEMESTER</b>	1
<b>COURSE TITLE</b>	COMPUTER PROGRAMMING		
<b>INDEPENDENT TEACHING ACTIVITIES</b> <i>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</i>	<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>	
	4	5	
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
<b>COURSE TYPE</b> <i>general background, special background, specialized general knowledge, skills development</i>	General Background		
<b>PREREQUISITE COURSES:</b>			
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	Greek		
<b>IS THE COURSE OFFERED TO ERASMUS STUDENTS</b>	Yes		
<b>COURSE WEBSITE (URL)</b>	<a href="https://eclass.uth.gr/courses/CIV_U_292/">https://eclass.uth.gr/courses/CIV_U_292/</a>		

### (2) LEARNING OUTCOMES

<p><b>Learning outcomes</b> <i>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.</i></p> <p><i>Consult Appendix A</i></p> <ul style="list-style-type: none"> <li>• <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i></li> <li>• <i>Descriptors for Levels 6, 7 &amp; 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i></li> <li>• <i>Guidelines for writing Learning Outcomes</i></li> </ul>
<p><b>Knowledge</b> This course familiarizes students with the philosophy and basic principles of programming. At the end of the course students should have: Knowledge of the basic concepts and philosophy of computer science, the use of computers and networks. A good knowledge of the Specialised Office Application Skills offered by the Microsoft Excel package. Knowledge of basic concepts of object-oriented programming</p> <p><b>Skills</b> Upon completion of the course the student will possess advanced skills related to: The development of fundamental algorithmic procedures. - The ability to understand and apply the general methodology of the programming</p> <p><b>Abilities</b> After completing the course, the student will be able to: - Concisely but clearly convey basic mathematical concepts and corresponding algorithmic procedures. - be able to solve, through programming, their own problems related to engineering science</p>

### 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?*

<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>
<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>
<i>Decision-making</i>	<i>Respect for the natural environment</i>
<i>Working independently</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>
<i>Team work</i>	<i>Criticism and self-criticism</i>
<i>Working in an international environment</i>	<i>Production of free, creative and inductive thinking</i>
<i>Working in an interdisciplinary environment</i>	<i>.....</i>
<i>Production of new research ideas</i>	<i>Others...</i>
	<i>.....</i>

- Search, analysis and synthesis of data and information
- Decision making
- Autonomous work
- Analysis and design of problems
- Promotion of free, creative and deductive thinking

### (3) SYLLABUS

Course content per week of teaching

1. Introduction to Computer Science. Historical review. Internet. Computer networks.
2. Introduction to Microsoft Excel worksheets. Basic functions. Operations. Common problems.
3. Use of Microsoft Excel to create functions and graphs. Logical functions. Problem solving. Exercises.
4. Introduction to Visual Basic for Applications. Macros and Buttons. Simple commands (offset, resize...).
5. Using variables in Visual Basic for Applications. Mathematical operations. Types of variables.
6. Logical functions. Creating hypotheses (Conditional). Integrating logic into code writing. Exercises.
7. Learning to insert text (strings). Functions with strings.
8. Loops Programming (Loops Programming).
9. Loops Programming (Loops Programming). Immersion exercises
10. Subroutines and equations. Working on worksheets.
11. Introduction to MATLAB programming language, Basic commands
12. Use of variables in MATLAB. Mathematical operations. Charts - graphs. Types of variables.
13. Use MATLAB in logical functions. Creating hypotheses (Conditional). Exercises
14. Using MATLAB in Loops Programming. Exercises

#### (4) TEACHING and LEARNING METHODS - EVALUATION

<b>DELIVERY</b> <i>Face-to-face, Distance learning, etc.</i>	Face to face	
<b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b> <i>Use of ICT in teaching, laboratory education, communication with students</i>	Use of ICT in communicating with students	
<b>TEACHING METHODS</b> <i>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.</i>  <i>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</i>	<i>Activity</i>	<i>Semester workload</i>
	Lectures	14*2=28 hours
	Laboratory exercises	14*2=28 hours
	Studing	70 hours
	Course total	126
<b>STUDENT PERFORMANCE EVALUATION</b>		
<b>Description of the evaluation procedure</b>  <i>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</i>  <i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i>	<p><b>Language of Evaluation</b> Greek (English for Erasmus students)</p> <p><b>Assessment methods</b> 100% Written Course Examinations: Students are invited in limited time and with open They are asked to be able to evaluate all that they have been taught and to be able to solve correctly the problems given to them in a structured way by developing their own algorithms.</p>	

#### (5) ATTACHED BIBLIOGRAPHY

**-Suggested bibliography:**

- Programming techniques & use of computer software in construction, Anastasios C. Sextos, Evangelos H. Katsanos
- Matlab for Scientists and Engineers, 3rd Edition, Hatzikos Evangelos, Kamoutsis Konstantinos.
- Microsoft Excel 2010 Programming Manual with VBA, John Walkenbach.+
- Microsoft Excel 2019, Karolidis Dimitrios A., Xarchakos Konstantinos I.

Advanced Techniques in Computing Sciences and Software Engineering, Applied Mechanics and Materials, Advanced Materials Research, Quality and Reliability Engineering International.