

COURSE LAYOUT

1. GENERAL

SCHOOL	APPLIED ECONOMICS AND SOCIAL SCIENCES		
DEPARTMENT	AGRICULTURAL ECONOMICS AND RURAL DEVELOPMENT		
DEPARTMENTS (Teaching to)	Agricultural Economics and Rural Development / Biotechnology / Crop Science		
STUDY LEVEL	Undergraduate		
COURSE CODE	3445	SEMESTER	2 nd / 4 th
COURSE TITLE	COMPUTER PROGRAMMING AND APPLICATIONS		
INDEPENDENT TEACHING ACTIVITIES		WEEKLY TEACHING HOURS	ECTS
Theory: Lectures		2	
Laboratory: Use of Software Tools		3	
Total		5	5
COURSE TYPE		Scientific Area	
PREREQUISITES			
LANGUAGE		Greek	
IS THE COURSE OFFERED for ERASMUS STUDENTS?		Yes (in Greek)	
COURSE WEB PAGE		https://oeclass.aua.gr/eclass/courses/AOA241/	

2. LEARNING OUTCOMES

Learning Outcomes
<p>Upon successful completion of the course the student will</p> <ul style="list-style-type: none"> - have acquired the fundamental principles of programming, algorithmic structures and software development techniques, - acquire programming skills in a high-level programming language environment, - be able to combine the various algorithmic structures and instructions of a programming language, - acquire the ability of composing programs which solve specific problems not only in the field of his/her scientific field but, more generally, scientific or other problems of practical interest, - be able to process by programs big volumes of data, - cease being restricted by the dedicated capabilities of existing software packages and will be able to develop software for the solution of special problems, - acquire a broader analytic and synthetic way of thinking and of skills for the solution of a problem (not necessarily of a problem that requires a computer program) by splitting it into simpler problems that achieve intermediate targets.
General Competences
<ul style="list-style-type: none"> - Search, analysis and synthesis of data and information by use of the necessary technologies. - Adaptation to new situations. - Decision making. - Individual work. - Team work. - Work in a multidisciplinary environment - Development of judgment and self- judgment - Advancement of free, creative and deductive thinking.

3. COURSE CONTENT

Theory
1. Algorithms and problem solving

2. Programming development environment
3. Introduction to structured programming
4. Fundamental and user-defined data types
5. Variables, Operations, Expressions
6. Use of programming objects
7. Input of data / Output of results
8. Conditions - Program control structures
9. Iteration structures
10. Management of Arrays
11. Built-in and user-defined functions and Procedures
12. File management
13. Debugging and error handling
14. Link of program with other environments

Laboratory

Training on all the above, hands on computer.

4. TEACHING and LEARNING METHODS - Evaluation

TEACHING METHOD	In Classroom and in Laboratory (face-to-face) or Distance Learning (if required). On the web page of the course there is posted educational material for asynchronous distance learning.													
USE OF INFORMATICS and COMMUNICATION TECHNOLOGIES	Exploitation of Information and Communication Technologies in teaching, in laboratory training and in the communication with students. Use of dedicated software. Use of integrated e-learning system. Communication with students via open eclass platform and e-mail.													
TEACHING ORGANISATION	<table><tr><td>Activity</td><td>Work Load</td></tr><tr><td>Lectures</td><td>26 hours</td></tr><tr><td>Laboratory work</td><td>39 hours</td></tr><tr><td>Group and/ or individual projects</td><td>15 hours</td></tr><tr><td>Individual study</td><td>45 hours</td></tr><tr><td>Total contact hours and training</td><td>125 hours</td></tr></table>		Activity	Work Load	Lectures	26 hours	Laboratory work	39 hours	Group and/ or individual projects	15 hours	Individual study	45 hours	Total contact hours and training	125 hours
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STUDENTS EVALUATION	<p>I. Final written examination: Code writing in a programming language, mainly on computer and, alternatively in classroom, which concerns the solutions of problems of practical interest</p> <p>II. Weekly Laboratory exercises: Construction of simple programs concerning the study material of the week.</p> <p>III. Group or Individual Project: Construction of programs concerning practical problems. The evaluation concluded with an oral presentation.</p> <p>The final grade is the sum of the above individual evaluations. Rating Scale: 0-10 Minimum Grade: 5</p> <p>The assessment criteria are explicitly defined and can be found on the eClass page of the lesson. Students can have access to their written examination and software records.</p> <p>If required, students' evaluation can also be realized remotely through the eClass platform for the written examination, and through video conferencing tools for</p>													

	presentation of projects or oral examinations.
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5. BIBLIOGRAPHY

-Proposed literature:

1. MANOS KAFES, EXPLORATION OF PYTHON, 1st EDITION, 2017, KLEIDARITHMOS PUBLICATIONS LTD, Athens.
2. TONY GADDIS, STARTING WITH PYTHON, 2020, DA VINCI PUBLICATIONS M.E.P.E., Athens.
3. Stratos Kalafatoudis, Georgios Stamoulis, Programming with Python, 2018, NEW TECHNOLOGIES PUBLICATIONS PRIVATE CAPITAL COMPANY, Athens.
4. Nikolaos Avouris, Michail Koukias, Vassilios Paliouras, Kyriakos Sgarbas, Python - Introduction to computers (4th Edition), 2018, FOUNDATION OF TECHNOLOGY & RESEARCH-UNIVERSITY PUBLICATIONS, KRITI.
5. Karolidis Dimitrios A., Learn easily Python, 2018, Xarchakou Penelope., Athens.
6. Nikolaos Samaras, Konstantinos Tsiplidis, The book of Python, 2019, Kritiki Publications., Athens.
7. MATTHES ERIC, PYTHON PROGRAMMING LANGUAGE THROUGH EXAMPLES AND EXERCISES, 2020, DISIGMA Publications IKE, Thessaloniki.

-Related scientific journals:

1. Bioinformatics, Oxford University Press.
2. Science of Computer Programming, Elsevier.
3. Applied Computing and Informatics, Elsevier.
4. Journal of Bioinformatics and Computational Biology, Imperial College Press.