COURSE OUTLINE

(1) General

School:	Social Sciences		
Academic Unit:	Geography		
Level of studies	Undergraduate		
Course Code:	GEO 441	Semester:	G
Course Title:	Introduction to computer programming		
Independent Teaching Activities		Weekly Teaching Hours	Credits
Lecture		2	
Laboratory practice		2	
		Course total	5
Course Type:	Required Elective		
Prerequisite Courses:	Introduction to Informatics		
Language of Instruction and Examinations	Greek		
Is the course offered to Erasmus students:	No		
Course Website (Url):	https://geography.aegean.gr/pps/index_en.php?content=0&lesson=441		

(2) Learning Outcomes

Learning Outcomes

Upon completion of the course the student is expected to:

- List the basic programming instructions
- Analyze a computational problem in subproblems and procedures/functions
- Design an algorithm using a logic diagram
- Describe and use the data structures supported by a programming language
- Write code into a computer programming language
- Apply Object Oriented Programming methodology
- Use classes and methods for geographic data calculations
- Respond to the challenges of implementing new geographic data calculations

General Competences

1. Search for, analysis and synthesis of data and information, with the use of the necessary technology
2. Working independently
3. Project planning and management

4. Production of free, creative and inductive thinking

(3) Syllabus

Teaching modules:

- Software Engineering - Algorithms - Programs
- Basic programming language elements
- Programming using decision instructions
- Programming using looping instructions
- Procedures
- Data Structures
- Object-Oriented Programming - Classes - Objects
- Calculations for geographic data I
- Calculations for geographic data II
- Calculations for geographic data III
- Calculations for geographic data IV
- Calculations for geographic data V

(4) Teaching and Learning Methods - Evaluation

Delivery:	Face-to-face.
Use of Information and Communication Technology:	Diagrams drawing applications - R programming language / R Studio
Teaching Methods:	

Activity	Semester workload
Lecture	26
Laboratory practice	26
Project	40
Non-supervised study	39
Performance evaluation/Exams	3
Course total	134

Student Performance Evaluation	Individual assignments (4) - Laboratory examination - Written examination

(5) Attached Bibliography

- Introduction to Programming and Statistical Analysis with R, D. Karlis - I. Djoufras, Hellenic Academic eBooks (kallipos.gr) (in Greek)
- Data science through the R language, V. S. Verkyios - V. Kaglis - H. K. Stavropoulos, Hellenic Academic eBooks

(kallipos.gr) (in Greek)
- Lecture Notes by the instructor (in Greek).