

COURSE OUTLINE

(1) General

School:	Social Sciences		
Academic Unit:	Geography		
Level of studies	Undergraduate		
Course Code:	GEO 442	Semester:	F
Course Title:	Special Topics in Geographic Information Systems		
Independent Teaching Activities	Weekly Teaching Hours	Credits	
Lecture		2	
Laboratory practice		2	
Course total			5
Course Type:	Required Elective		
Prerequisite Courses:	None		
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=442		

(2) Learning Outcomes

Learning Outcomes

The emphasis of the course is on advanced issues related to spatial data analysis. The successful completion of the course will allow the students to:

- Gain in depth understanding of advanced theoretical issues in GIS
- Acquire expertise in the use of various open source GIS software and statistical computing language R.
- Take the right decisions regarding the path of analysis for various spatial issues
- Acquire the ability of managing and presenting a small research project

General Competences

1. Search for, analysis and synthesis of data and information, with the use of the necessary technology
2. Decision-making
3. Working independently
4. Working in an interdisciplinary environment
5. Production of new research ideas
6. Project planning and management
7. Criticism and self-criticism
8. Production of free, creative and inductive thinking

(3) Syllabus

Advanced topics in Applied GIS including: Land cover/use change detection, Spatial patterns of land cover changes (landscape metrics), modeling land cover/use change (logistic regression and agent based models), environmental modeling and GIS as well as small research projects assigned to group of students. The course is based on computer lab exercises.

(4) Teaching and Learning Methods - Evaluation

Delivery:	face-to-face	
Use of Information and Communication Technology:	Use of PC and suitable software (GRASS GIS, R, Fragstats)	
Teaching Methods:	Activity	Semester workload
Lecture		26
Laboratory practice		26
Project		50
Non-supervised study		30
Performance evaluation/Exams		3
	Course total<	135
Student Performance Evaluation	100% assignments and presentation of the final project.	

(5) Attached Bibliography

1. Course notes
2. Matsatsinis N. Spanoudakis N and Samaras A., 2005. Introduction to artificial intelligence and to multi-agents systems. New Technology Publishers. Athens (in greek).
3. Malczewski Jacek, 1999, GIS and Multicriteria Decision Analysis. Wiley pub., 392p.
4. Longley P., Goodchild M., Maguire D. and Rhind D. (eds). 1999. Geographical Information Systems: Management Issues and Applications, Vol 2, 2nd Edition, Wiley pub., 431 p.
5. Longley P., Goodchild M., Maguire D. and Rhind D., 2006, Geographic Information Systems and Science, (ελληνική μετάφραση). Εκδόσεις κλειδάριθμος.
6. Burrough P.A., and R.A. McDonnell, 1998, Principles of Geographical Information Systems, Oxford University Press.
7. Demers, M.N, 2000, Fundamentals of Geographical Information Systems, Oxford University Press.
8. Graeme Bonham-Carter, 1994, Geographic Information Systems for Geoscientists: Modelling with GIS, Elsevier.
9. Κάβουρας, Μ., Δάρρα, Α., Κόκλα, Μ., Κονταξάκη, Σ., Πανόπουλος, Γ., Τομαή, Ε., 2016. *Επιστήμη Γεωγραφικής Πληροφορίας - Ολοκληρωμένη Προσέγγιση και Ειδικά Θέματα*. [ηλεκτρ. βιβλ.] Αθήνα:Σύνδεσμος Ελληνικών Ακαδημαϊκών Βιβλιοθηκών. Διαθέσιμο στο: <http://hdl.handle.net/11419/6381>
10. Νικολακόπουλος, Κ., Κατσάνου, Κ., Λαμπράκης, Ν., 2015. *Υδρολογία με χρήση γεωγραφικών συστημάτων πληροφοριών και δεδομένων τηλεπισκόπησης*. [ηλεκτρ. βιβλ.] Αθήνα:Σύνδεσμος Ελληνικών Ακαδημαϊκών Βιβλιοθηκών. Διαθέσιμο στο: <http://hdl.handle.net/11419/2520>
11. Ντζούφρας, Ι., Καρλής, Δ., 2015. *Εισαγωγή στον προγραμματισμό και στη στατιστική ανάλυση με R*. [ηλεκτρ. βιβλ.] Αθήνα:Σύνδεσμος Ελληνικών Ακαδημαϊκών Βιβλιοθηκών. Διαθέσιμο στο: <http://hdl.handle.net/11419/2601>
12. Βερόκιος, Β., Καγκλής, Β., Σταυρόπουλος, Η., 2015. *Η επιστήμη των δεδομένων μέσα από τη γλώσσα R*. [ηλεκτρ. βιβλ.] Αθήνα:Σύνδεσμος Ελληνικών Ακαδημαϊκών Βιβλιοθηκών. Διαθέσιμο στο: <http://hdl.handle.net/11419/2965>