COURSE OUTLINE

(1) General

School:	Social Sciences		
Academic Unit:	Geography		
Level of studies	Undergraduate		
Course Code:	GEO 414	**Semester:**	F
Course Title:	Spatial and Population Ecology		
Independent Teaching Activities	**Weekly Teaching Hours**	**Credits**	
Lecture	3		
		Course total	5
Course Type:	Required Elective		
Prerequisite Courses:	Environment and Ecology		
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=414		

(2) Learning Outcomes

Learning Outcomes

Upon completion of the course, the student is expected to:

- understand the importance of scale in spatial ecology
- to distinguish the different sciences that have influenced the development of Landscape Ecology, and on which this science is reliant to this day
- analyse case studies, emphasizing the importance of spatial heterogeneity in resource allocation, which in turn influences and shapes the local distribution patterns of organisms
- use selected software and models
- to distinguish important landscape elements and features, such as the various structures, the edges, the boundaries, corridors and the connecting structures that bring about different degrees of landscape fragmentation
- analyse landscape effects on selected species using real-life data

General Competences

1. Search for, analysis and synthesis of data and information, with the use of the necessary technology
2. Team work
3. Project planning and management
4. Respect for the natural environment
5. Production of free, creative and inductive thinking

(3) Syllabus

This course gives an overview of Landscape Ecology from its early development to applications in present-

day science. The theory is intentionally kept at a minimal level and the emphasis is on its applications. The student learns about the different disciplines which influenced the development of the discipline, and which Landscape Ecology still relies on heavily until today. Special emphasis is put on ecology in general and population ecology in particular, especially metapopulation ecology. During the course of the lecture the students learns how different organisms are affected by their environment (biotic and abiotic) at different spatial scales depending on their ecology and biology. The importance of spatial heterogeneity in resource distribution, which in turn affects and shapes the local distribution patterns of organisms is emphasised using case studies. This knowledge is then transferred to the computer lab where the students apply this knowledge by analysing the landscape using selected softwares and models. Important landscape features such as patches, boundaries, edges, corridors and the connectivity of patches in the landscape resulting in different degrees of fragmentation are explored using a hands-on approach in practical classes. The depth of the acquired knowledge is tested by analysing the effect of landscape context on selected species using real data sets.

- Introduction to Landscape Ecology: what is Landscape Ecology, what other disciplines are important contributors?
- The development of Landscape Ecology, past to present
- Special emphasis on population ecology and selected species' biology, case studies
- The notion of scale in Landscape Ecology: terminology and the problem of scale in Landscape Ecology
- Models, softwares and their use
- Small scale species distribution in the landscape taking into account the importance of patches, edges and boundaries, corridors and connectivity of patches, distribution mosaics, networks, fragmentation
- Definitions of distribution patterns: spatial heterogeneity in biological and ecosystemic processes Applied Landscape Ecology – using selected case studies in practical classes (computer lab)

(4) Teaching and Learning Methods - Evaluation

Delivery:	Face-to-face	
Use of Information and Communication Technology:	Use of modern teaching methods (e.g. powerpoint, small videos and other educational material). For the lab exercises the following technologies and softwares are used: NetLogo, Populus, FragStat, R.	
Teaching Methods:	**Activity**	**Semester workload**
Lecture	26	
Laboratory practice	13	
Project	30	
Non-supervised study	62	
	Course total<	131
Student Performance Evaluation	The presentation/essay accounts for 40% and the final written exam for 60% of teh final grade.	

(5) Attached Bibliography

1. ΣΤΑΜΟΥ, Γ. Π. (2009). ΟΙΚΟΛΟΓΙΑ – ΕΙΣΑΓΩΓΗ ΣΤΗΝ ΟΙΚΟΛΟΓΙΑ ΤΩΝ ΠΛΗΘΥΣΜΩΝ. ΖΗΤΗ, ΘΕΣΣΑΛΟΝΙΚΗ.
2. GERGEL, S.E. & TURNER, M.G. (2002). LEARNING LANDSCAPE ECOLOGY. SPRINGER. NEW YORK