

711. Management of Natural Ecosystems

Instructor: Kaloudis Spyridon

1. GENERAL

FACULTY	PLANT SCIENCES		
DEPARTMENT	FORESTRY AND NATURAL ENVIRONMENT MANAGEMENT		
LEVEL OF STUDY	Undergraduate		
COURSE CODE	711	SEMESTER OF STUDY	7 th
COURSE TITLE	MANAGEMENT OF NATURAL ECOSYSTEMS		
INDEPENDENT TEACHING ACTIVITIES		TEACHING WEEKS	CREDITS
Lectures		3	6
Laboratory exercises		2	
Total Course		5	
COURSE TYPE	Qualified		
PREREQUISITE COURSES:	None		
LANGUAGE OF INSTRUCTION AND EXAMINATIONS:	Greek		
THE COURSE IS OFFERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)	Relevant online location of the course in e-class		

2. LEARNING OUTCOMES

Learning Outcomes
<p>The subject of the course is:</p> <p>Basic concepts of Management Science and Operations Research. Process of solving problems related to natural terrestrial ecosystems. Methods of quantitative and qualitative analysis. Temporal and financial project planning, linear planning, decision theory, simulations, dynamic programming.</p> <p>Management Science and natural terrestrial ecosystems. Concepts of time and space in the management of natural terrestrial ecosystems. Purpose of Forestry. Organization of the forestry enterprise. Factors of production in forestry.</p> <p>Aim of the course</p> <p>Theoretical part</p> <p>To acquire the theoretical background in the principles and methodologies of Management Science – Operational Research. In this context, the course teaches the theoretical principles of decision-making methodologies with emphasis on Operations Research and gives examples of application in Natural Ecosystem Management.</p> <p>Laboratory part</p> <p>The development of students' skills in analyzing management problems of Natural Terrestrial Ecosystems and decision making by solving specific exercises and applications of modern</p>

management methods.

Upon successful completion of the course the student will be able to:

- use qualitative and quantitative analysis methods to make decisions related to the optimization of Natural and Forest Ecosystem Management
- organizes forest production with the aim of sustainability (continuous production of maximum quantity and quality without harming the ecosystem)

General skills

- Search, analyze and synthesize data and information, using the necessary technologies.
- Decision-making
- Autonomous work
- Teamwork
- Working in an interdisciplinary environment
- Respect for the natural environment
- Promoting free, creative and inductive thinking
- Utilization of new technologies in decision making.

3. COURSE CONTENT

The material per week of the course - in theory and corresponding laboratory exercises - reads as follows:

Theory:

N/A DE Content

1	WP1	Definition and content of management - the science of management
2	WP2	The role of governors – Personnel management
3	WP3	Problem resolution process
4	WP4	Design and analysis aids
5	WP5	Design and analysis aids
6	WP6	Design and analysis aids-Application examples
7	WP7	Examples of application of design and analysis techniques
8	WP8	Examples of application of design and analysis techniques – Presentation of results.
9	WP9	Forest management and its place in forestry.
10	WP10	Basic concepts in natural ecosystem management – Examples.
11	WP11	Basic concepts in natural ecosystem management – Examples.
12	WP12	Purpose of forestry – Maturity.
13	WP13	Economic organization of forestry – Regularity of forestry, Factors of production in forestry.

Workshop:

N/A DE Content

1	WP1	Project scheduling exercises
2	WP2	Project scheduling exercises
3	WP3	Linear Programming Exercises
4	WP4	Linear Programming Exercises
5	WP5	Linear Programming Exercises
6	WP6	Simulation exercises
7	WP7	Normal peer forest exercises
8	WP8	Exercises of normal horticultural forest
9	WP9	Normal bilingual forest exercises
10	WP10	Exercises Technical-biological maturity

11	WP11	Socio-economic maturity exercises
12	WP12	Normal assessment exercises wood stock
13	WP13	Exercises of normal trunk distribution

4. TEACHING AND LEARNING METHODS – ASSESSMENT

DELIVERY METHOD	In the hall, in the Laboratory and adjacent to the facilities of the Department forests and woodlands.	
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES	Use PowerPoint slides, use physical maps, communicate with students via video conferences, Open eClass, email, and telephone. Meetings with students per person to answer questions and prepare laboratory exercises.	
TEACHING ORGANIZATION		
	Activity	Semester Workload
	Lectures	39
	Laboratory Exercises	24
	Work	15
	Personal study	47
	Total course	125
STUDENT EVALUATION	I. Written final exam in the theory of the course. II. Answering multiple-choice questions. II. Written examination in the laboratory part of the course. III.The exam includes the development of equally graded development questions, or the resolution of exercises announced to students at the beginning of the course.	

5. RECOMMENDED-BIBLIOGRAPHY

- *Suggested Bibliography:*

- Bateman, Thomas S., Snell, Scott, A., 2012. Business Administration. Translated by Sdrolas Lambros, Tziola Publications, 8th edition, Thessaloniki, p.1227.
- Buongiorno, J. and Gilless, J.K. (1987). Forest Management and Economics. MacMillan Publishing Company, N. York, p. 285.
- David D. Reed and Glenn D. Mroz (1997). Resource Assessment in Forested Landscapes. John Wiley & Sons, p. 386
- Davis, L.S. and Johnson, K.N. (1987). Forest Management. McGraw- Hill, Inc., N. York, p. 790.
- Hillier, F. and Lieberman, G.J. (1996). Introduction to Operations Research, 6th Ed. p. 1199.
- Malcolm L. Hunter (1989). Wildlife, Forests, and Forestry: Principles of Managing Forests for Biological Diversity, Prentice Hall College Div p. 400.
- Render, B. and Stair, Jr. R.M. (1997). Quantitative analysis for management, 7th ed. Prentice-Hall, Inc.
- Georgopoulos, A.D. (1979). Forest Management Manual. University Forest Fund, Thessaloniki, p. 303.
- Eleftheriadis, N., 2003. Management of Natural Terrestrial Ecosystems. Art of Text Publications, Thessaloniki, p.435.
- Kazana, B. (1996). Lecture notes on Forest Management I, Drama, p. 119.
- Kaloudis, S., 2020. Management of Natural Ecosystems (Laboratory part). Agricultural University of Athens, Karpenisi, pages 70.

- Makridimitris Antonis and Pravita Maria-Iliana, 2012. Management Science I, Public Administration, Elements of Management Science. Sakkoulas Publications, E' edition, Athens-Thessaloniki, p. 711.
- Pantelis G., Ypsilantis 2015. Operations Research, Decision Making Methods and Techniques. Propompos Publications, Athens, p. 860.

Related scientific journals:

- Canadian Journal of Forest Research (CAN J FOREST RES) <https://www.researchgate.net/journal/Canadian-Journal-of-Forest-Research-1208-6037>
- Computers and Electronics in Agriculture <https://www.journals.elsevier.com/computers-and-electronics-in-agriculture>
- Ecological Informatics <https://www.sciencedirect.com>
- Ecological Modelling <https://www.journals.elsevier.com/ecological-modelling>
- European Journal of Forest Research <https://www.springer.com/journal/10342>
- Forest Ecology and Management <https://www.journals.elsevier.com/forest-ecology-and-management>
- Forest Policy and Economics <https://www.sciencedirect.com/journal/forest-policy-and-economics>
- International Journal of Forestry, Ecology and Environment <https://www.journalbinet.com/ijfee-journal.html>
- Journal of Forest Economics <https://www.nowpublishers.com/JFE>
- Journal of forestry <https://academic.oup.com/jof>
- Open Journal of Forestry https://www.scirp.org/Journal/ojf/?utm_campaign=1416495552_77394438136&utm_source=liuyj&utm_medium=adwords&utm_term=forestry%20journal&utm_content=kwd-312635262420_c___9067719_b&gclid=CjwKCAiAlrSPBhBaEiwAuLSDUE5p2gBjIvmGz9iY9SLK_YW9UdV8486W3S-n4mfmxmcuvclt6637ARoCDh8QAvD_BwE
- Operational Research An International Journal <https://www.springer.com/journal/12351>
- European Journal of Operational Research <https://www.journals.elsevier.com/european-journal-of-operational-research>
- European Journal of Operational Research <https://www.sciencedirect.com/journal/european-journal-of-operational-research>
- Journal of the Operational Research Society <https://www.tandfonline.com/loi/tjor20>
- International Journal of Operational Research <https://www.inderscience.com/jhome.php?jcode=ijor>

Related Web Addresses:

- <https://www.iufro.org/>
- <https://www.fs.usda.gov/managing-land/forest-management>
- <https://www.eo4sd-forest.info/>
- https://single-market-economy.ec.europa.eu/sectors/raw-materials/related-industries/forest-based-industries/sustainable-forest-management_en
- https://earsc.org/sebs/wp-content/uploads/2019/08/SeBS_sweden_flyer_190725.pdf
- <https://www.sgs.com/en/service-groups/forestry-and-crop>
- <https://eustafor.eu/welcome-to-the-forest-service-of-catalonia/>
- https://www.maine.gov/dacf/mfs/policy_management/water_resources/index.html