

## COURSE OUTLINE

### 1. GENERAL

<b>SCHOOL</b>	School of Technology		
<b>DEPARTMENT</b>	Department of Forestry, Wood Sciences and Design (Karditsa)		
<b>LEVEL</b>	<i>Undergraduate</i>		
<b>CODE</b>	ΔΠΕ761	<b>STUDENT SEMESTER</b>	7th
<b>COURSE TITLE</b>	Wetland Ecosystems Management		
<b>ACTIVITIES</b>		<b>WEEKLY HRS</b>	<b>ECTS</b>
	Lectures	2	
	Exercise	1	
	<b>TOTAL</b>	<b>3</b>	<b>6</b>
<b>TYPE OF COURSE</b>	Optional course in the Orientation of Natural Environment Management		
<b>PREREQUISITES:</b>	None		
<b>LANGUAGE TEACHING AND EXAMINATION:</b>	Greek or English		
<b>THE COURSE IS OFFERED TO ERASMUS STUDENTS</b>	Yes		
<b>WEBPAGES COURSE (URL)</b>			

### 2. LEARNING OUTCOMES

<b>Learning Outcomes</b>
<p>The aim of the course is to understand the values and functions of wetland ecosystems and to highlight the great importance of their conservation-management-restoration for humans and biodiversity, at a time when wetlands are still under significant threats and pressures from human activities, as well as climate change. Upon successful completion of the course, the students will be able to:</p> <ul style="list-style-type: none"> <li>• Recognize the categories of wetlands in different ecosystems (e.g. inland waters, riparian ecosystems, coastal areas) and be aware of cases of (a) particularly extensive wetlands in the world and the Mediterranean, and (b) examples of wetland management and restoration in Europe and Greece (e.g. Lake Carla, Thessaly).</li> <li>• Understand basic concepts of national, European and international legislation on wetlands, such as the provisions of the Ramsar Convention and European Directives for the management of Natura 2000 sites, and the responsibilities of Protected Areas Management Agencies in Greece.</li> <li>• Identify the values and functions of wetland ecosystems with emphasis on their importance for the protection of biodiversity, tackling climate change, the water cycle and human economic activities and recreation.</li> <li>• Recognize the threats and pressures that wetlands face, but also to address these problems through the integration of their management in a specific institutionalized framework based on international and national rules.</li> <li>• Know the specifics of wetland management at the level of the catchment area and to identify the points where the wetland manager must connect with other scientific fields, such as Hydrology, Mountain Water Resources Management and Terrestrial Ecosystems Management, as well as stakeholders (farmers, stockbreeders, tourism entrepreneurs, etc.).</li> <li>• Understand the concepts of assessment, mapping, classification and scientific monitoring of wetlands.</li> <li>• Recognize the need to create or restore wetlands and know the usefulness of artificial wetlands for water and wastewater management.</li> </ul>

### General Skills

Upon successful completion of the course, the students will be able to develop and cultivate basic professional and social skills:

- Search, analysis and synthesis of data and information, using the necessary technologies
- Adaptation to new situations
- Decision making
- Autonomous work
- Teamwork
- Demonstration of social, professional and moral responsibility
- Project design and management
- Work in an interdisciplinary environment
- Respect for the natural environment
- Promoting free, creative and inductive thinking
- Production of new research ideas

### 3. COURSE CONTENT

The theoretic part of the course provides the student with knowledge on:

- The categories of wetlands in inland waters and riparian ecosystems of lowland and mountainous areas, but also in brackish waters - coastal areas (e.g. lagoons).
- Examples of particularly extensive wetlands around the world and the Mediterranean.
- The values and functions of wetlands with emphasis on their importance for the protection of biodiversity, economic activities of the primary sector and recreation.
- Threats and pressures to wetlands.
- The special features of wetland management in relation to the general rules of management of protected areas with emphasis on river basin management, which connects wetland management with other scientific fields, such as Hydrology, Mountain Hydrology, technical works and primary sector productive activities.
- Methods of assessment, mapping, classification and monitoring of wetlands.
- Wetland creation, restoration, as well as use of artificial wetlands for sewage treatment.

The **course exercises** take place once a week (1 hour per week) and focus on the presentation, analysis and discussion of exceptional cases of wetland management and restoration in Europe and Greece, with emphasis on the role of various stakeholders in the management of wetlands. One example of the exercise work is to group students in interest groups (stakeholder groups), such as local and regional administration organizations, farmers, fishermen, ecotourism entrepreneurs and environmental NGOs, and argue on wetland management issues taking into account biodiversity conservation targets as well as economic activities. Attendance of the exercises by the students is mandatory by at least 50%, while the course also includes a mandatory excursion to different types of wetland ecosystems in combination or not with excursions of other courses of the Department. Directions and material on the course are posted in the e-class platform.

### 4. TEACHING AND LEARNING METHODS - EVALUATION

<b>DELIVERY METHOD</b>	Combined educational methods and techniques are applied aiming at enhancing the active participation of students and at increasing the effectiveness of "face to face" teaching: enriched presentations, questions - answers, discussion, exercises, working groups, study and demonstration of case studies, educational visit.	
<b>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES</b>	Use of video projector for the lectures as well as the course page on the e-class platform for posting (a) notes, (b) internet links, and (c) announcements.	
<b>MANAGEMENT OF TEACHING</b>	<b>Activity</b>	<b>Semester Workload</b>
	Lectures	30
	Term assignment preparation and presentation	29

	Excursion	20
	Individual and work study for term assignment	71
	<b>Course Total</b>	<b>150</b>
<b>STUDENT EVALUATION</b>	<p>Student assessment takes place at the end of the semester by means of:</p> <p>(a) written examination for the theoretical part of the course (65% of the final grade – right and wrong as well as multiple choice questions) provided that the student has participated to the educational excursions of the course, and</p> <p>(b) grading of the essay – presentation during the stakeholders debate game for the laboratory part of the course (35% of the final grade) provided that the student has participated to the educational excursions and to – at least – 50% of the lab courses.</p>	

## 5. RECOMMENDED-BIBLIOGRAPHY

Books offered to students through the *Eudoxus* platform:

- Tsiouris, S. and P.A. Gerakis. 2010. Wetlands and Agriculture. Ch. and B. Kordali Editions, ISBN: 978-960-357-087-5 (Eudoxus code: 2771, *in Greek*).

Books offered besides the *Eudoxus* platform:

- Acreman, M. 2000. Wetlands and hydrology. Tour du Valat, Arles, France, 109 pp. Publications MedWet / Tour du Valat – number 10.
- Benstead, P., M. Drake, P. José, O. Mountford, C. Newbold and J. Treweek. 1997. The Wet Grassland Guide: Managing floodplain and coastal wet grasslands for wildlife. Royal Society for the Protection of Birds, Institute of Terrestrial Ecology and English Nature. UK. 254 pp.
- Benstead, P.J., P.V. José, C.B. Joyce and P.M. Wade. 1999. European Wet Grassland Guide. Guidelines for management and restoration. Royal Society for the Protection of Birds, Sandy. UK. 169 pp.
- Bonnet, B., S. Aulong, S. Goyet, M. Lutz and R. Mathevet. 2005. Integrated Management of Mediterranean Wetlands. Tour du Valat, Arles, France, 159 pp. Publications MedWet / Tour du Valat – number 13.
- Crivelli, A.J. and G. Catsadorakis (eds). 1997. Lake Prespa, Northwestern Greece: A unique Balkan wetland. Reprinted from *Hydrobiologia*, vol. 351, Kluwer Academic Publishers, 196pp.
- Décamps, H. and O. Décamps. 2001. Mediterranean riparian woodlands. Tour du Valat, Arles, France, 139 pp. Publications MedWet / Tour du Valat – number 12.
- Duncan, P. 1992. Horses and grasses. *Ecological Studies*, vol 87, Springer-Verlag, New York.
- Frazier, S. 1996. An overview of the world's Ramsar sites. *Wetlands International Publ.* 39. 58 pp.
- Gattenlöhner, U., M. Hammerl-Resch and S. Jantschke (eds.). *Reviving Wetlands – Sustainable Management of Wetlands and Shallow Lakes, Guidelines for the Preparation of a Management Plan.* Global Nature Fund, Living Lakes, EU LIFE Programme, DG Environment.
- Gerakis, P. A. (ed). *Conservation and Management of Greek Wetlands.* Proceedings of a Greek Wetlands Workshop, held in Thessaloniki, Greece, 17-21 April, 1989. IUCN, Gland, Switzerland. xii + 493 pp.
- Grillas, P., P. Gauthier, N. Yavercovski and C. Perennou. 2004. *Mediterranean Temporary Ponds – Volume 1: Issues relating to conservation, functioning and management.* Station biologique de la Tour du Valat, France, 119 pp.

- Haslam, S. 2003. *Understanding Wetlands – Fen, Bog and Marsh*. Taylor and Francis Inc. 305 pp.
- Hawke, C. J. & P.V. José. 1996. *Reedbed Management for Commercial and Wildlife Interests*. Royal Society for the Protection of Birds.
- Jones, W., J. Eldridge, J.P. Silva and N. Schiessler. 2007. *LIFE and Europe's rivers – Protecting and improving our water resources*. European Commission, Environment Directorate-General. 50 pp.
- Keddy, P. 2002. *Wetland Ecology, Principles and Conservation*. Cambridge Studies in Ecology. Cambridge University Press.
- Mesléard, F. and C. Perennou. 1996. *Aquatic emergent vegetation, Ecology and Management. Conservation of Mediterranean wetlands*. Tour du Valat, Arles, France, 86 pp. Publications MedWet / Tour du Valat – number 6.
- Mitsch, W. J. and J. G. Gosselink. 1986. *Wetlands*. New York: Van Nostrand Reinhold.
- Papayannis, T. (ed). 2008. *Action for Culture in Mediterranean wetlands*. ISBN 978-960-89972-0-2. Med-INA, Athens, Greece.
- Papayannis, T. and D. Pritchard (eds). 2011. *Culture and wetlands in the Mediterranean: An evolving story*. ISBN 978-960-89972-2-6. Med-INA, Athens, Greece.
- Pearce, F. 1996. *Wetlands and Water resources*. Tour du Valat, Arles, France, 82 pp. Publications MedWet / Tour du Valat – number 5.
- Pearce, F. and A.J. Crivelli. 1994. *Characteristics of Mediterranean Wetlands*. Tour du Valat, Arles, France, 88 pp. Publications MedWet / Tour du Valat – number 1.
- Rosecchi, E. and B. Charpentier. 1995. *Aquaculture in Lagoon and Marine Environments*. Tour du Valat, Arles, France, 94 p. Publications MedWet / Tour du Valat – number 3.
- Sadoul, N., J. Walmsley and B. Charpentier. 1998. *Salinas and nature conservation*. Tour du Valat, Arles, France, 96 p. Publications MedWet / Tour du Valat – number 9.
- Scott, D. A. (ed.). 1992. *Management of wetlands and their birds*. IWRB. Slimbridge.
- Silva, J.P., L. Phillips, W. Jones, J. Eldridge and E. O'Hara. 2007. *LIFE and Europe's wetlands – Restoring a vital ecosystem*. European Commission, Environment Directorate-General. pp 66.
- Skinner, J. and S. Zalewski. 1995. *Functions and values of Mediterranean Wetlands*. Tour du Valat, Arles, France, 80 p. Publications MedWet / Tour du Valat – number 2.
- Task Force on Economic Benefits of Protected Areas of the World Commission on Protected Areas (WCPA) of IUCN, in collaboration with the Economic Service Unit of IUCN. 1998. *Economic Values of Protected Areas: Guidelines for Protected Area Managers*. IUCN, Gland, Switzerland and Cambridge, UK. Xii+52pp.
- Zalidis, G. T.L. Crisman and P.A. Gerakis (editors). 2002. *Restoration of Mediterranean Wetlands*. Ministry of Environment, Land Planning and Public Works, Greek Biotope-Wetland Center.