COURSE OUTLINE

1. GENERAL

SCHOOL	Environment and Agricultural Engineering		
ACADEMIC UNIT	Department of Natural Resources Development & Agricultural Engineering		
LEVEL OF STUDIES	Master		
COURSE CODE	**630002**	**SEMESTER**	2nd
COURSE TITLE	Modernization of Land Reclamation Works and Water Resources Management		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures and laboratory exercises	3	6
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Specialised general knowledge
PREREQUISITE COURSES:	Part of the course concerning land reclamation works: ELEMENTS OF FLUID MECHANICS – APPLIED HYDRAULIC HYDRAULICS OF OPEN AND CLOSED CONDUITS Part of the course concerning Water Resources Management: HYDROLOGY, GROUNDWATER HYDRAULICS, HYDRAULICS OF OPEN AND CLOSED CONDUITS, LAND RECLAMATION WORKS
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (English)
COURSE WEBSITE (URL)	https://oeclass.aua.gr/eclass/courses/2757/ https://oeclass.aua.gr/eclass/modules/user/index.php?course=5954&giveAdmin=pUgtDK

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Modernization of Land Reclamation Works part

The course of Land Reclamation Works is a basic course in the scientific field of Hydraulic Works. Students will learn about land reclamation projects (definition, categories/classification, their development in the modern Greek state). They will become familiar with their basic design methodologies as well as the problems in their management. They will also learn how the institutional framework governing these projects has evolved. At the end of the course, they will be able to participate in the management of such projects, identify problems, and make suggestions for improvement.

Water Resources Management part

The part of the course concerning Water Resources Management has the following objectives:

- A knowledge of the types of water resources and the influences on their quantity and quality in space and

time.

- An understanding of the issues affecting resource development, utilization, protection and water abstraction control.
- An understanding of the context of sustainable management of water resources within the wider aims of watershed management.

Learning outcomes:

On completion of the course, the student should be able to:

- Critically appraise and suggest improvements for existing procedures for water resources management.
- Apply engineering and related scientific principles to develop and undertake the critical evaluation of alternative proposals and designs for water resource development to solve demand or environmental problems.
- Prepare a water resources plan for a river basin in a detail appropriate to the size of the basin.
- Confidently liaise with other professionals, water users and other interested parties on water resource allocation and on measures necessary to achieve water quantity, quality and environmental objectives

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*
	…….

- Team work
- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Working independently
- Decision-making
- Respect for the natural environment
- Project planning and management
- Production of free, creative and inductive thinking

3. SYLLABUS

Modernization of Land Reclamation Works part

Land reclamation works (Pressure irrigation networks, Gravity irrigation networks, Drainage networks). Management of irrigation networks (Land Reclamation Management Organizations, Institutional Framework, Organization, Responsibilities). Network problems. Proposals for improvement and modernization.

Water Resources Management part

The section of the course concerning Water Resources Management has the following content:

i. Water Resource Systems.

ii. Water resources development and use planning.

iii. Water resources management methodology

iv. Water resources and environmental sustainability

v. Social parameters. Public participation in decision-making

vi. Project Schedule Techniques.

vii. Costing and Budgeting of Water Resources Projects. Economic Evaluation

viii. Institutional Framework for Water Resources Management

ix. Systems Analysis, Modeling, Decision Support Systems (DSS)

x. Integrated water resources management

xi. Decision making and management of water resource systems

xii. Design and Management Applications

4. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>Face-to-face & distance learning

• Lecture-Based Learning
• E-Learning
• Internships and Work-Study Programs
• Field Trips
• Guest Lectures
• Group Projects</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>• Basic software (windows, word, excel, power point, web, etc)
• Aua webmail
• AV material
• Powerpoint slides</td></tr>
<tr><td>TEACHING METHODS
The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures</td><td>24</td></tr>
<tr><td>project, essay writing</td><td>6</td></tr>
<tr><td>Waste industry Guest lecturer</td><td></td></tr>
<tr><td>Field visits</td><td></td></tr>
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<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td>Course total</td><td>30</td></tr>
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<tr><td>STUDENT PERFORMANCE EVALUATION
Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically defined evaluation criteria are given, and if and where they are accessible to students.</td><td><u>Modernization of Land Reclamation Works part</u>
Final examination and case study report (50%)

<u>Water Resources Management part</u>
• Homework:
Two Individual works (20%).
• Examination:
Final (30%).</td></tr>
</table>

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

<u>Modernization of Land reclamation works part</u>

- ***Tsakiris G. in Greek. (υπεύθ. Εκδοσης).*** *Υδραυλικά Έργα (Τόμος ΙΙ Εγγειοβελτιωτικά Έργα). Εκδόσεις Συμμετρία.*
- ***Davis C.V, Editor in Chief, K. E. Sorensen, Co-Editor****, 1994, Handbook of Applied Hydraulics, Mc Graw-Hill Book Company, N.Y., USA.*

<u>Water Resources Management part</u>

- **Grigg, N.S.,** 1996. Water Resources Management. McGraw-Hill, N.Y., N.Y. USA.
- **Gleick, P.H.**, 2003. The World's Water. Island Press, Washington, D.C., USA.
- **Global Water Partnership (GWP),** 2000. Integrated Water Resources Management, SE -105 25, Stockholm, Sweden.
- **Europe's Environment,** 2012. European Environmental Agency, Copenhagen

-Related academic journals:

<u>Modernization of Land reclamation works part</u>

- ***Irrigation and Drainage (ICID)***
- ***Journal of Irrigation and Drainage Engineering,*** *ASCE, USA*

- ***Journal of Hydraulic Engineering,*** *ASCE, USA*

<u>Water Resources Management part</u>

- ***Journal of Water Resources Management,*** *Springer., USA.*
- ***Journal of Water Resources Planning and Management,*** *American Society of Civil Engineers. (ASCE), USA.*
- ***Water Policy,*** *Elsevier Science, USA.*
- ***Water,*** *MDPI*