COURSE OUTLINE

1. GENERAL

SCHOOL	Environment and Agricultural Engineering		
ACADEMIC UNIT	Natural Resources Management and Agricultural Engineering		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	2555	**SEMESTER**	7th
COURSE TITLE	Experimental hydraulics		

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**
Theory	1	1
Laboratory	4	4
TOTAL:	5	5

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	special background, skills development
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES (In English)
COURSE WEBSITE (URL)	

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*

This course is an important complement to the fields of General Hydraulics, Agricultural Hydraulics and Hydrology.

The course aims to familiarize students with making measurements and experiments as well as with processing and analyzing data.

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

• Plan experiments and build simple experimental models.

• Take pressure measurements.

• Determine velocity and discharge in open and closed conduits.

• Determine linear and minor loss coefficients of pipes.

• Demonstrate critical flow and hydraulic jump in open channels.

• Processes and analyze the measurement data.

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…*
	…….

- Search, analysis and synthesis of data and information with the use of the required technologies
- Team Work
- Production of new research ideas
- Respect for the natural environment

3. SYLLABUS

Introduction. Pressure Measurement. Speed measurement. Flow measurement. Dimensional analysis. Hydraulic similarity. Data processing (errors, correlation).

Experiments:

Measurements in closed conduits with various instruments. Measurement of linear and minor losses. Flow measurement with weir and other critical flow structures. Rotating and supersonic flow meters. Reliability of hydraulic models.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	The teaching methodology employed in the classroom and in the laboratory
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Flow demonstration structures Measurement instruments Specialized software e-class platform
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*	
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,*	I. Final written theory examination (50%) comprising: - Multiple choice questions - Questions with short answer - Simple problem solving II. Laboratory Grade (50%) - Delivery and presentation of experimental results.

Activity	***Semester workload (hours)***
Lectures	13
Lab experiments	52
Experimental data process and analysis	35
Study at home	25
TOTAL	125

and if and where they are accessible to students.	

5. ATTACHED BIBLIOGRAPHY

- Hydrométrie pratique des cours d'eau, H. André, M. Audinet, G.Mazeran, C.Richer, Eyrolles, Paris.
- Measurement and Computation of Streamflow: Volume 1. Measurement of Stage and Discharge, GEOLOGICAL SURVEY WATER-SUPPLY PAPER 2175, UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON: 1982
- Measurement and Computation of Streamflow: Volume 2. Computation of Discharge, GEOLOGICAL SURVEY WATER-SUPPLY PAPER 2175, UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON: 1982.
- Journal of Irrigation and Drainage Engineering, ASCE
- Journal of Hydraulic Engineering, ASCE
- Flow Measurement and Instrumentation Journal, Elsevier