

ETE 820 - Concrete Technology Laboratory

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF ENGINEERING		
ACADEMIC UNIT	DEPARTMENT OF MATERIALS SCIENCE AND ENGINEERING		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	ETE 820	SEMESTER	10 th
COURSE TITLE	Concrete Technology Laboratory		
INDEPENDENT TEACHING ACTIVITIES <i>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</i>	WEEKLY TEACHING HOURS	CREDITS	
Lectures / Labs / Tutorials	3	3	
<i>Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE <i>general background, special background, specialized general knowledge, skills development</i>	Specialized general knowledge		
PREREQUISITE COURSES:	NO		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO		
COURSE WEBSITE (URL)	http://mss-nde.uoi.gr/greek/434%20-%20ETE%20820/index.html		

(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

The course is in the form of weekly laboratory exercises involving a theoretical introduction to the exercise, conducting the exercise and presentation and analysis of relevant case studies.

Upon the successful completion of the course, the students will:

- Be familiar with the experimental methods of technology, materials behavior and evaluation of the properties of concrete in the context of both Greek and international regulations.
- Familiarize with the development of innovative cement-based materials with improved specifications
- Learn the physicochemical processes and the corrosion and wear mechanisms of concrete and metallic reinforcement
- Be able to evaluate the performance and assess the strength of existing structures.

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...

- Autonomous Work
- Teamwork
- Work in interdisciplinary environment

(3) SYLLABUS

Introduction to Concrete (Cement, Water, Aggregates), Additives: fly ash / silica flour, Admixtures of concrete: Retarder, Plasticizer, Superplasticizer, Air-entraining, Evaluation of aggregate characteristics: Granulometry, Specific Weights / Humidity Absorbance, Study of concrete composition, laboratory concrete admixtures: Measurement of the properties of fresh concrete: Workability (slump test, Vebe test, slump flow), air content, preparation and maintenance of specimens, laboratory mortar admixtures: Preparation and preservation of samples. Mechanical testing (concrete compression - mortar bending), Measurement of the elastic properties of mortar / concrete using ultrasound, case study.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	In class lectures	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>		
TEACHING METHODS <i>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</i>	Activity	Semester workload
	Laboratory exercises	39
	Self-study	18
	Final exam preparation	18
	Course total	75h
STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-</i>	LANGUAGE OF EVALUATION: Greek	

<p><i>answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i></p> <p><i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i></p>	<p>METHOD OF EVALUATION:</p> <p>The presence in the laboratory is mandatory. The final written examination includes:</p> <ul style="list-style-type: none"> - Multiple choice questions, and/or - Comparative evaluation of elements of the theory
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(5) ATTACHED BIBLIOGRAPHY

<p><i>-Suggested bibliography:</i></p> <ul style="list-style-type: none"> - T.E. Matikas, N.-M. Barkoula, Concrete Technology Laboratory (Class Notes), University Printing, 2014. - G. Kaklanis, G. Chatiris, Construction Materials Laboratory, ION Publications, 2005. <p><i>-Related academic journals:</i></p>
