1.1.1 Reinforced Concrete I

GENERAL

SCHOOL	Engineering		
ACADEMIC UNIT	CIVIL ENGINEERING		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	ΔΟΜ010	**SEMESTER**	4th
COURSE TITLE	Reinforced Concrete I		

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**
	4	5
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*	Scientific Field
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	https://elearning.cm.ihu.gr/course/view.php?id=192 http://panagop.civil.ihu.gr/?page_id=29

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*

Upon successful completion of the course, students will be able to:
1. Understand the properties and mechanical behavior of materials (concrete, steel).
2. Identify the limit states used in structural design and apply appropriate combinations of actions.
3. Design linear reinforced concrete members (beams, columns) in the ultimate limit state for normal stress (bending with axial force).
4. Design linear reinforced concrete members (beams, columns) in the ultimate limit state for shear.
5. Apply reinforcement and detailing rules for linear structural elements in accordance with the current regulations.

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* *Respect for difference and multiculturalism*

Adapting to new situations *Decision-making* *Working independently* *Team work* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*Respect for the natural environment* *Showing social, professional and ethical responsibility and sensitivity to gender issues* *Criticism and self-criticism* *Production of free, creative and inductive thinking* *……* *Others…* *…….*

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Adapting to new situations
- Decision-making
- Working independently
- Team work
- Working in an interdisciplinary environment
- Project planning and management
- Criticism and self-criticism
- Production of free, creative and inductive thinking

SYLLABUS

• Historical overview of the use of reinforced concrete (R/C) as a building material and the regulatory provisions that prescribe its application. Introduction to the individual materials of reinforced concrete and their properties
• Design loads. Presentation of the limit state method
• Structural design of building elements (reinforcement covers, anchorages, laps, etc.)
• Introduction to the dimensioning of structural elements for normal stress values
• Dimensioning of reinforced concrete beams in bending and shear
• Dimensioning of reinforced concrete columns in uniaxial and biaxial bending
• Dimensioning of beams in shear

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face.
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	
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*	

Activity	*Semester workload*
Lectures	26
Practice/exercises	26
Project(s)	20
Individual study	58
Course total (26 hours workload per ECTS credit)	***130***

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,*	1. Assignment of tasks aimed at exploring the understanding of the concepts taught (30%). 2. Final written exam (in Greek) at the end of the semester (70%). 3. Each student is given the opportunity to review their written exam and have their mistakes analyzed.

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.*	

ATTACHED BIBLIOGRAPHY

Karavezyroglou-Weber M., Elements of Calculation and Configuration of Solid Structures. 3rd ed, Tziolas publ., 2016 (in Greek)

Tsonos A.D., Design of Reinforced Concrete Structures I, Sofia publ., 2017 (in Greek)

Penelis G., Stylianidis K., Kappos A., Ignatakis Ch., Design of Reinforced Concrete Structures According to the New Concrete and Seismic Codes, AUTh publ., 1995 (in Greek)

Georgopoulos Th., Reinforced Concrete I, Georgopoulos publ., 2015 (in Greek)