1.2 CE0120 – Rigid Body Mechanics

(1) **GENERAL**

SCHOOL	ENGINEERING SCHOOL				
ACADEMIC UNIT	CIVIL ENGINEERING DEPARTMENT				
LEVEL OF STUDIES	UNDERGRADUATE				
COURSE CODE	CE0120 SEMESTER 1				
COURSE TITLE	Rigid Body Me	echanics			
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	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	Special Backgr	ound Course			
PREREQUISITE COURSES:	No				
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek				
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No				
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/CIV325/				

(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

Upon completion of the course, students will be able to :

- 1. Deeply understand the theory of Structural Mechanics.
- 2. Study and suggest solutions in problems of Structural Mechanics.
- 3. Develop personal responsibility and offer scientific opinion.
- 4. Manage time in an appropriate manner.
- 5. Develop analytical and synthetic abilities as well as critical evaluation.

Specifically, students will be able to:

- 1. Understand and utilize the basic principles of Mechanics.
- 2. Evaluate the centroid of gravity of plane shapes.

- 3. Apply equilibrium equations in structures.
- 4. Analyze simple isostatic structures (cantilevers, simply supported beams) as well as truss structures.
- 5. Construct axial force, shear force, and bending moment diagrams.

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,	Project planning and management
with the use of the necessary technology	Respect for difference and multiculturalism
Adapting to new situations	Respect for the natural environment
Decision-making	Showing social, professional and ethical responsibility and
Working independently	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

Specifically, students will be able to perform:

- Search, analysis and synthesis of data and information, using the necessary technologies.
- Decision Making.
- Autonomous work
- Working independently

(3) SYLLABUS

- 1. Basic concepts of Mechanics. Force. Moment.
- 2. Systems of solid bodies.
- 3. Force composition and static equilibrium in two dimension.
- 4. Centroid of gravity of solid bodies and plane shapes.
- 5. Introduction to Sructural analysis.
- 6. Types of structures, supports, internal and external forces.
- 7. Statically determinate structures.
- 8. Analysis of truss structures
- 9. Analysis of simply supported beams.
- 10. Diagrams of internal forces.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY Face-to-face, Distance learning, etc.	Fac	ce-to-face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY Use of ICT in teaching, laboratory education, communication with students	Теа	aching using ICT, Communication ar	nd Electronic Submission.
TEACHING METHODS		A -15-16-	Comparison and the set
in detail.		Activity	Semester workload
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.		Lectures	50
		Classwork	15
		Personal Study	80
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		Course total	145
STUDENT PERFORMANCE EVALUATION			
Description of the evaluation procedure	Lar	nguage of evaluation: Greek	

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	Final written examination: 100%
Specifically-defined evaluation criteria are given, and if and where they are accessible to students.	

(5) ATTACHED BIBLIOGRAPHY

Greek Bibliography:

- 1. Vouthounis panagiotis, Structural Analysis, Ed. Vouthouni Andromachi, 2020 (in Greek).
- 2. Meriam J.L. και Kraige L.G., Technical Mechanics Introduction to Structural Analysis, Ed. Foudas Grigorios, 2013 (in Greek).
- 3. Sotiropoulou Anastasia, Structural Analysis I, Ed. Tziola A. \$ Sons, 2011 (in Greek).
- 4. Hibbeler R.C., Structural Analysis (Technical Mechanics Vol. I), Ed. Foudas Grigorios, 2010 (in Greek).
- 5. Vardoulakis I. and Giannopoulos A., Technical Mechanics Vol. I, Ed. Athanasopoulos S. and Sons, 2008 (in Greek).
- 6. Marketos Euaggelos, Technical Mechanics I Structural Analysis, Ed. Athanasopoulos S. and Sons, 2001 (in Greek).

Foreign Bibliography:

- 1. Hibbeler Russell, Engineering Mechanics: Statics, 14th Edition, 2016.
- 2. Beer F., Johnston E., Mazurek D., Vector Mechanics for Engineers: Statics, 11th Edition, McGraw Hill, 2020.

Related academic journals:

- 1. International Journal of Structural Engineering
- 2. Engineering Structures
- 3. Technical Chronicles