University POLITEHNICA of Bucharest
Faculty of Industrial Engineering & Robotics
Study programme: Industrial Engineering
Form of study: Bachelor

COURSE SPECIFICATION

Course title	MECHANICS OF MATERIALS 1	Semester	2
Course code	UPB.06.D.02.O.001	ECTS	6

Course structure	Lecture	Seminar	Laboratory	Project	Total hours
No. of hours/ week	2	2	1	0	5
No. of hours/ semester	28	28	14	0	70

Lecturer	Lecture	Seminar	Laboratory	Project
Name, academic degree	Gabriel JIGA Prof. Ph.D.	Gabriel JIGA Prof. Ph.D.	Nicoleta CRISAN Lecturer Ph.D.	
Contact (E-mail, location)	gabriel.jiga@upb.ro	gabriel.jiga@upb.ro	nicoleta.crisan@upb.ro	

Course description (max: 200 words) The study of deformable bodies involves force equilibrium, material behavior and specimen geometry. The students must determine the strength, stiffness, and stability of a body. Understanding and applying the topics of Mechanics of Materials requires the integration of physics, statics, mathematics, computer skills, laboratory analyses, and written communication skills. This course explores the topic of solid objects subjected to stress and strain. The methods taught in the course are used to predict the response of engineering structures to various types of loading, and to analyze the vulnerability of these structures to various failure modes.

Seminar description (max: 200 words) During the seminar, the students will be able to plot shear and bending moments diagrams, statically determined and undetermined problems of tension, compression, torsion and bending. They will study the geometrical characteristics of plane surfaces (moments of inertia, flexural modulus, radii of inertia) as well as some specific chapters of bending (oblique bending, eccentric loadings etc.) as well as the calculus of deformations in bending.

Laboratory description (max. 200 words) The purpose of these laboratory experiments is to introduce you to various aspects of Mechanics of Materials through laboratory analysis. Experiments include tension tests, compression tests, torsion tests, beam bending, and column buckling. In each experiment, you will find material that relates to both the theory and the practical application of the laboratory in the study of mechanics of materials. In addition to material that you typically find in laboratory manuals, such as methods and materials, you will have access to video clips, photographs, and sample data sets further illustrating key concepts of the laboratory.

Project decsription (max. 200 words)

Assessment methods	Percentage of the final grade	Minimal requirements for award of credits
Written exam	40%	20%
Report/ Project	30%	15%
Homework	10%	5%
Laboratory	20%	10%

References
1. Jiga, G. *Mechanics of Materials 1*, Ed. Printech, 2010
2. Vable, M., *Mechanics of Materials*, 2011

Prerequisites	Co-requisites (courses to be taken in parallel as a condition for enrolment)
Mechanics, Mathematics 1	

Additional relevant information:

Date: 23.05.2022: