UNIVERSITETI /UNIVERSITY
"ISA BOLETINI"
MITROVICË

Course Curriculum Model (Syllabus)		
Faculty:	**FACULTY OF MECHANICAL AND COMPUTER ENGINEERING**	
Department:	Economics Engineering	
Level:	Bachelor	
Code of the course:	104 EE	
Course:	**Technical Mechanics**	
Course Status:	**Mandatory**	**Mandatory**/Elective
Semester:	(I)	**Winter**/Summer
Number of hours per week:	2+2	
ECTS:	5	
Time / location:	Wednesday, 9^{00}-10^{30}, K5	
Year of studies:	2024/2025	
Lecturer:	Prof. Dr Ahmet Latifi	
Assistant:		
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Course description	General principles and basic definitions and axioms of statics. Force vectors. Equilibrium of a particle. Force system resultants. Equilibrium of a rigid body. Structural analysis. Internal forces. Friction. Centre of gravity and Centroids. Stress and strain, stress-strain relationship and elastic constants, Mohr's circle for plane stress and plane strain, thin cylinders; shear force and bending moment diagrams; bending and shear stresses; deflection of beams; torsion of circular shafts; Euler's theory of columns; strain energy methods; thermal stresses.
Purpose (Goals)	At the end of the course, students will learn the principles that govern the behavior of rigid-body mechanical engineering systems in static equilibrium, calculation of stresses and design for different cases of loads.

Learning outcomes	Upon completion of this course (subject), students will be able to: - Identify an engineering problem appropriate for engineering mechanics analysis;. - Draw a free-body diagram and identify all forces and moments acting on an object at rest. - Represent force and moment systems with equivalent systems. - Perform an analysis to identify all forces and moments acting internally or externally on an object. - Determine geometric properties of one, two- and three-dimensional objects. - Calculate stresses (normal and shear) in a loaded structure or a machine component. - Use stress concentration factors to find stresses in, or allowable loads on, axially loaded members. - Calculate normal and shearing strains/deformations for bodies subjected to loads and/or temperature change - Solve statically indeterminate problems subjected to one or a combination of axial, torsion and bending loads, - Apply Hooke's Law in one, two and three dimensions. - Determine stresses and/or deformations in a circular member subjected to a torsion load. - Solve problems using stress transformation equations and Mohr's circle. - Draw shear and moment diagrams for beams subjected to a combination of concentrated loads, distributed loads and concentrated moments. - Calculate normal and shearing stresses in beams. - Determine the deflections of statically determinate and indeterminate beams using double integration and superposition. - Apply Euler's equation to solve column-buckling problems for different end condition.

	Weeks	**Lecture**
Program (content)	***First week:***	Introduction in mechanics and mechanics of materials.
	Second week:	Theory and General principles and basic definitions and axioms of statics.
	***Third week*:**	Force vectors and application force in mechanics.
	Fourth week:	Equilibrium of a particle analysis.
	Fifth week:	Force system resultants.
	***Sixth week*:**	Equilibrium of a rigid body.
	Seventh week:	Structural analysis. Internal forces.
	Eighth week:	Friction in mechanical elements
	***Ninth week*:**	Centre of gravity and Centroids.
	***Tenth week*:**	Introduction in stress and strain,
	***Eleventh week*:**	Stress-strain relationship and elastic constants.
	Twelfth week:	Mohr's circle for plane stress and plane strain, thin cylinders;
	***Thirteenth week*:**	shear force and bending moment diagrams; bending and shear stresses;
	Fourteenth week:	deflection of beams; torsion of circular shafts;
	Fifteenth week :	Euler's theory of columns; strain energy methods; thermal stresses

Literature	
Literature	1. Hibbler R. C., Engineering Mechanics-Statics, 13th edition. 2. Hibbler R. C., Mechanics of Materials, 2004. 3. Xh. Perjuci, Mekanika Teknike I (Statika), Prishtinë, 2011. 4. Xh. Perjuci, Sh. Buza, H. Demolli, Mekanika Teknike I-Përmbledhje detyrash, Prishtinë,2011. 5. Xh. Perjuci, Rezistenca e Materialeve I, Prishtinë, 1994. 6. Xh. Perjuci, Rezistenca e Materialeve I-Përmbledhje detyrash të zgjidhura, Prishtinë, 1998. Xh. Perjuci, R. Likaj, Rezistenca e Materialeve -Manual, Prishti-në, 2002.

Teaching methodology

The teaching methodology for the Technical mechanics course may involve a combination of the following:

- Lectures: In-class lectures can be used to introduce new concepts and techniques, as well as to provide an overview of the course material.
- Hands-on exercises: Students can be provided with hands-on exercises to practice using the software and tools covered in the course. These exercises can be done individually or in groups, depending on the class size and available resources.
- Case studies: Case studies can be used to illustrate real-world applications of CAD techniques in various industries, such as aerospace, automotive, and consumer products.
- Guest lectures: Inviting guest speakers from industry or academia can provide students with additional perspectives on the applications and challenges of CAD in various fields.
- Projects: Assigning projects to students can help them apply the concepts and techniques covered in the course to real-world problems. These projects can be done individually or in groups and can be tailored to the interests and skills of the students.
- Discussions and critiques: Engaging students in class discussions and critiques can help them develop their communication and critical thinking skills, as well as provide valuable feedback on their work.

Contribution to student workload (which should correspond to student learning outcomes - 1 ECTS credit = 25 hours)

Activity	Hours	Days/weeks	Total
Lectures	2	15	30
Exercise sessions (with TA)	2	15	30
Practical work	3	3	9
Office hours	1	15	15
Fieldwork	1	2	2
Midterms, seminars	2	2	4
Homework	3	2	6
Self-study	4	3	12
Final exam preparation	3	3	9
Time spent in exams	2	2	4
Projects, presentations, etc.	2	2	4
Total			**125**

Evaluation

Assessment methodology:

- Homework assignments: Students can be given regular homework assignments to practice using the Technical mechanics and to reinforce the concepts taught in class.
- Quizzes and exams: Short quizzes or exams can be given periodically to test students' understanding of the material covered in class.
- Presentations: Students can be asked to give presentations on a topic related to Technical mechanics. This can help them develop their communication skills and deepen their understanding of the subject matter.
- Lab assignments: Students can be given lab assignments that require them to use the Technical mechanics software to design and manufacture physical parts or prototypes.
- Class participation: Students can be assessed based on their active participation in class discussions, group work, and other class activities.
- Final project: Students can be asked to complete a final project that demonstrates their mastery of the Technical mechanics skills and knowledge acquired throughout the course. The project can be a design project or a manufacturing project, and can be done individually or in teams.

(according to the Statute and Regulation for studies of UMIB)

Tests / Colloquia (First Test) (Second test)	15% 15%
Practical test during exercises (Essay)	
Workshop seminar	
Interpretation and presentation of artistic creativity and other works.	
Assignments and courses during the semester	15%
Professional practice	
Other,(Specify) Participation	10%
Final exam	45%
Total	100%
Final grade	Points (%) Mark
	91 – 100 10
	81 - 90 9
	71 - 80 8
	61 - 70 7
	51 - 60 6

Academic policies	**Criteria for regular attendance and rules of etiquette during the organization of the lesson are set.** **Computer work:** Graphic works, I have to draw and write with a computer. In the works it is obligatory to respect the criteria for both the visual and the content aspect of the required works. **Ethics in teaching:** Graphic works should be personal works of each student. There will be no tolerance for copying, "borrowing" from the Internet or any other material. The same or similar works will have negative evaluations in the final evaluation of the student. **Time:** In agreement with the students, the deadlines for submitting works will be determined. There will be no tolerance for delays in the submission of works. Failure to arrive at the time when the assignment is explained does not justify the student for not submitting the paper. The deadline will be given earlier. If you are going to travel abroad, then you need to submit the paperwork in advance. The student has the right to request a consultation with the professor whenever he / she deems it reasonable and necessary for the performance of his / her work. **Rules of conduct and academic policies:** ● active participation of students in lectures o participation in discussion, comments and free expression of opinion, opinion and academic position (with arguments) ● Mandatory independent work and use of additional sources of information (various scientific websites, scientific journals, conference proceedings, etc.) ● Respecting lecture schedules without compromising academic freedom (silent cell phones) of respecting the word, thoughts and ideas of colleagues, ● It is not allowed to arrive late and leave without a valid reason from the lecture, test or exam o preparation and holding of relevant lectures, (obligation of the teacher). ● if the student is absent more than four times without reason in lectures and exercises, does not receive the signature for attendance. o the student cannot take the exam without an official document, ● if the student is dissatisfied with the grade obtained, has the right to complain in writing to the dean, within two working days after the announcement of the results, UMIB Statute o if the student does not follow the rules, in the exam uses tools that are not allowed, it is evaluated with a negative grade.

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Mitrovica; 29/04/2023 Prof. Dr. Ahmet Latifi