



HASAN KALYONCU UNIVERSITY
Faculty of Engineering
Course Description Form

COURSE: Strength of Materials					
CODE: CE223		SEMESTER: FALL			
LANGUAGE: ENGLISH		TYPE: COMPULSORY			
PRE-REQUISITES: - CO-REQUISITES: -		THEORY	PRACTICAL	CREDIT	ECTS
WEEKLY HOURS: 4		4	0	4	5

CONTENT OF THE COURSE:

Mechanical properties of materials, Stress, Strain, Stress-strain diagrams, Linear elasticity, Hooke's Law. Plasticity. Axial load, thermal stresses. Torsion, Bending, Transverse shear, Shear stresses, shear center. Stress transformation,, Mohr Circle. Strain transformation. Normal force with bending, Bending with shear, Bending with torsion. Study of elastic curve by various methods.

OBJECTIVE OF THE COURSE:

To prepare a qualified civil engineer to deal with the engineering materials (Concrete – steel...etc) and use these materials in design of steel and concrete structures- The module also educates the student as to how the strength of material used in civil engineering is evaluated. Along with the behaviors of these materials under different types of stresses and strains undergone during such loading.

WEEKLY SCHEDULE AND PRE-STUDY PAGES

Week	Topics
1	Class Introduction, review, stress
2	Strain
3	Mechanical properties of materials
4	Axial load
5	Axial load
6	Torsion
7	Torsion
8	Midterm exam
9	Bending
10	Bending
11	Transverse shear
12	Combined loadings
13	Stress transformation
14	Stress transformation

TEXTBOOK: "Mechanics of Materials" By R. C. Hibbeler – Pearson Prentice Hall, Upper Saddle River, New Jersey 07458, 8th Edition, 2011.

EVALUATION SYSTEM:		
IN-TERM STUDIES	QUANTITY	PERCENTAGE (%)
Midterm Exam	1	40
Homework		
Laboratory works		
Quiz		
Final Exam	1	60
TOTAL		100
CONTRIBUTION OF INTERM STUDIES TO OVERALL GRADE		40
CONTRIBUTION OF FINAL EXAMINATION TO OVERALL GRADE		60
TOTAL		100

COURSE CATEGORY:	PERCENTAGE (%)
Mathematics and Basic Sciences	40
Engineering	60
Engineering Design	
Social Sciences	

TABLE OF ECTS / WORKLOAD:			
Activities	QUANTITY	Duration (Hour)	Total Workload
Course Duration	13	4	52
Hours for off-the-classroom study (Pre-study, practice)	14	6	84
Laboratory works	0	0	0
Mid-term	1	2	2
Final examination	1	2	2
Homework	0	0	0
Quiz			
Total Work Load			140
Total Work Load / 30			4,7
ECTS Credit of the Course			5

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
LO1	3	2	0	1	0	0	0	0	0	0	0
LO2	3	2	0	1	0	0	0	0	0	0	0
LO3	3	2	0	1	0	0	0	0	0	0	0
LO4	3	2	0	1	0	0	0	0	0	0	0
LO5	3	2	0	1	0	0	0	0	0	0	0
	PO: Program Outcomes LO: Learning Outcomes Values: 0: None 1: Low 2: Medium 3: High										

INSTRUCTOR(S):	Asst.Prof.Dr. D1a Eddin NASSANI
FORM PREPARATION DATE:	22.05.2019

LEARNING OUTCOMES OF THE COURSE:	PROGRAM OUTCOMES:
<p>LO1: Determine the normal and shear stress/strain</p> <p>LO2: Find the elastic deformation of axially loaded member</p> <p>LO3: Determine the shear stresses in a circular shaft due to torsion</p> <p>LO4: Determine the stress in a beam member caused by bending</p> <p>LO5: Find the principal stresses/strains and maximum in-plane shear stress/strain</p>	<p>PO1: Adequate knowledge in mathematics, science and engineering subjects pertaining to the relevant discipline; ability to use theoretical and applied knowledge in these areas in complex engineering problems.</p> <p>PO2: Ability to identify, formulate, and solve complex engineering problems; ability to select and apply proper analysis and modeling methods for this purpose.</p> <p>PO3: Ability to design a complex system, process, device or product under realistic constraints and conditions, in such a way as to meet the desired result; ability to apply modern design methods for this purpose.</p> <p>PO4: Ability to devise, select, and use modern techniques and tools needed for analyzing and solving complex problems encountered in engineering practice; ability to employ information technologies effectively.</p> <p>PO5: Ability to design and conduct experiments, gather data, analyze and interpret results for investigating complex engineering problems or discipline specific research questions.</p> <p>PO6: Ability to work efficiently in intra-disciplinary and multi-disciplinary teams; ability to work individually.</p> <p>PO7: Ability to communicate effectively in Turkish, both orally and in writing; knowledge of a minimum of one foreign language; ability to write effective reports and comprehend written reports, prepare design and production reports, make effective presentations, and give and receive clear and intelligible instructions.</p> <p>PO8: Recognition of the need for lifelong learning; ability to access information, to follow developments in science and technology, and to continue to educate him/herself.</p> <p>PO9: Consciousness to behave according to ethical principles and professional and ethical responsibility; knowledge on standards used in engineering practice.</p> <p>PO10: Knowledge about business life practices such as project management, risk management, and change management; awareness in entrepreneurship, innovation; knowledge about sustainable development.</p> <p>PO11: Knowledge about the global and social effects of engineering practices on health, environment, and safety, and contemporary issues of the century reflected into the field of engineering; awareness of the legal consequences of engineering solutions.</p>