THE HASHEMITE UNIVERSITY

FACULTY OF ENGINEERING

COURSE SYLLABUS – SPRING 2026

DEPARTMENT OF MECHANICAL ENGINEERING

COURSE TITLE - CH:	**Strength of Materials Lab - (Sec 3)**	COURSE NUMBER:	110402330
DESIGNATION:	Compulsory	PREREQUISITE(S):	110402212
INSTRUCTOR:	Mohammad A Gharaibeh	INSTRUCTOR'S E-MAIL:	mohammada_fa@hu.edu.jo

Office Hours: Monday, Wednesday 10:00am -11:30am

LAB. SUPERVISOR: Eng. Hamzeh Mashagbeh

Course Description (catalog):

Conduct experiments in teams, analyse data, and communicate experimental results in written technical reports in order to improve student knowledge and understand of basic concepts of how to characterize the elastic and inelastic deformation and fracture behavior of common materials. Particularly, to calculate stress and strain, reduce data obtained from computer data acquisition systems, communicate via technical writing, use spreadsheets, word processors, and statistical analysis software. Understand the deformation and fracture characteristics of common materials. Conduct ramp and creep tension tests and fracture tests.

Textbook(s) and/or Other Supplementary Materials:

Strength of Materials Lab Manual

References:

1. Mechanics of Materials, 7th edition, R. C. Hibbeler, Prentice Hall, USA, 2008, ISBN: 13-9780132209915.

Major Topics Covered:

Topic	# Weeks	# Contact hours*
Introduction to the lab [Lab policy, Equipment, Experiments, and safety]	1	3
Experiment 1: Tensile and Compression Tests (Lab1)	1	3
Experiment 2: Fatigue Test (Lab1)	1	3
Experiment 3: Impact Test (Lab1)	1	3
Experiment 4: Deflection of Beams (Lab2)	1	3
Experiment 5: Strain Measurement with Strain Gages (Lab2)	1	3
Experiment 6: Torsion Tests (Lab2)	1	3
MID EXAM (TBA)		
Experiment 7: Creep Test (Lab1)	1	3
Experiment 8: Stability of Columns (Lab 1)	1	3
Experiment 9: Thin-walled cylinders (Lab 2)	1	3
Experiment 10: Hardness Test (Lab2)	1	3
FINAL EXAM (TBA)		
Total	12	36

*Contact hours include lectures, quizzes and exams

Specific Outcomes of Instruction (Course Learning Outcomes):

A student who successfully fulfills the course requirements will be able to:

CLO1. Perform various material testing using following material testing machines: **[a,b,d,g,k]**

1) Universal Testing Machine
2) Torsion Testing Machine
3) Hardness Testing Machine
4) Fatigue Testing Machine
5) Impact Testing Machine
6) Buckling Testing Machine
7) Deflection of Beams Apparatus
8) Thin-Walled Pressure Vessel Apparatus.
9) Creep Measurement Apparatus

CLO2. Analyse data Writ technical reports**. [a, b, d, k]**

CLO3. Work in a team and building up communication skills. **[d,g,k]**

CLO4. Design and build a device to run an experiment in material testing field. **[a,b, d,e,g,k]**

Student Outcomes (SO) Addressed by the Course:

#	Outcome Description	Contribution
	General Engineering Student Outcomes	
(a)	Ability to apply mathematics, science and engineering principles.	M
(b)	Ability to design and conduct experiments, analyze and interpret data.	H
(c)	Ability to design a system, component, or process to meet desired needs.	
(d)	Ability to function on multidisciplinary teams.	L
(e)	Ability to identify, formulate and solve engineering problems.	M
(f)	Understanding of professional and ethical responsibility.	
(g)	Ability to communicate effectively.	L
(h)	The broad education necessary to understand the impact of engineering solutions in a global and societal context.	
(i)	Recognition of the need for and an ability to engage in life-long learning.	
(j)	Knowledge of contemporary issues.	
(k)	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice.	L

H=High, **M**= Medium, **L**=Low

Grading Plan:	Reports + Quizzes	30 Points	
	Midterm	30 Points (**TBA**)	
	Final exam	40 Points	TBA

Prepared by: Dr. Mohammad A Gharaibeh **Date:** 28th Feb., 2026