



University of Jordan
School of Engineering

Civil Engineering Department

STRENGTH OF MATERIALS (0901242)

Syllabus

Spring 2016/2017

Instructor:

Dr. Rabab Allouzi (r.louzi@ju.edu.jo)

Personal Websites: <http://eacademic.ju.edu.jo/R.Louzi/default.aspx>

Office Hours: Monday and Wednesday 11:00AM-12:30PM

PREREQUISITES:

- Calculus (1) (ID:0301101)
- Statics (ID: 0901241)

TEXT BOOKS:

- Mechanics of Materials
James Gere and Barry Goodno
8th Ed.

REFERENCES:

- Mechanics of Materials
R.C. Hibbeler
Prentice Hall
8th edition, 2011

GRADING SYSTEM:

First Exam (20%)

Second Exam (25%)

Homework (5%)

Final Exam (50%)

HOME WORKS:

- Any solution that does not look professional will not be reviewed and will receive automatically a zero.
- Do not crowd your solutions; start each solution on a separate page.
- Draw your illustrations neatly; use straight edge/ruler/French curves.
- Indicate your sign convention, and relevant parameters, labels, and coordinates on your illustrations.
- Your final answer should be identifiable; underline or draw a box around your final answer. No multiple answers.
- Provide full solutions. If it is not possible to follow your solution logic easily, you may get zero for your solution even if your “final” answer has the right value or expression.

POLICIES:

- **MAKE UP exam policy:** for students who cannot attend regular exams due to serious illness, or family emergency (all with written proof approved from the University of Jordan regulations), a makeup exam may be arranged **AFTER** the regular exam. The instructor must be notified prior to the exam, and no exceptions will be made.
- You are **NOT ALLOWED** to use **CELL PHONE**. Close your phone before you get to class unless you are expecting an emergency call then please let your instructor know before class.
- If you have a course-related question, please see the instructor during office hours or set an appointment by email.
- All cheating in the course will be referred to the Office of the Dean of Students
- You are expected to arrive in class and be seated on time and not leave the classroom before the instructor dismisses class. If you will not be arriving on time or have to leave early then let the instructor know beforehand.
- Individuals engaged in any activity that disturbs the attention of the class will be asked to leave the classroom immediately.

LEARNING OUTCOMES:

When this course has been completed the student should be able to

- Get familiar and understand the basic concepts and principles of strength of materials.
- Define the characteristics and calculate the magnitude of selected mechanical properties of materials.
- Analyze the effect of different support conditions and loading distributions on various members with regard to the strength and stability of structures.
- Calculate stresses and deformations of objects under external loadings.
- Apply the knowledge of strength of materials on engineering applications and design problems.

CONTENT:

week	Topics
1-2	Introduction to Strength of Materials
3-5	Tension, compression, and shear: Normal Stress and Strain Shear Stress and Strain Mechanical Properties of Materials Elasticity and Plasticity
6-8	Bending Moment: Introduction Pure bending and non-uniform bending Normal Stresses in beams Longitudinal strains in beams Curvature in beams Design of beams for bending stresses Nonprismatic Beams
9-11	Shear: Introduction Shear Stress of rectangular cross section Shear Stress of circular cross section Shear Stress in the webs of beams with flanges Built-up beams and shear flow Shear strain
12	Torsion: Introduction Stresses and strains Relationship Between Moduli of Elasticity E and G
13-14	Analysis of stress and strain: Plane stress Principle stress and Maximum shear stress Mohr's circle for plane stress Hook's law for plane stress Triaxial Stress Plane Strain
15	Applications of Plane Stress: Pressure Vessels, Beams, and Combined Loadings
16	Final exams week