



University of Jordan
School of Engineering
Civil Engineering Department

STRUCTURES I (0901341)
Syllabus
Spring 2016/2017

Instructors:

Dr. Ahmed Ashteyat (a.ashteyat@ju.edu.jo)

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

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

PREREQUISITES:

- Calculus (1) (ID:0301101)
- Statics (ID: 0901241)
- Strength of Materials (ID:0901242)

TEXT BOOKS:

- Structural Analysis
R.C. Hibbeler
Prentice Hall
9th edition (July 27, 2014)

REFERENCES:

- Analytical Estimates of Structural Behavior
C.L. Dym and H.E. Williams
CRC Press
2012
- Fundamentals of Structural Analysis
K.M. Leet, C.-M. Uang, A.M. Gilbert
McGraw Hill
4th ed., 2011
- Fundamentals of Structural Analysis
H.H. West and L. Geschwindner
J. Wiley & Sons
2nd ed., 2002

- Introductory Structural Analysis
C.K. Wang and C.G. Salmon
Prentice-Hall
1984
- Understanding Structures: An Introduction to Structural Analysis
M. A. Sozen and T. Ichinose,
CRC
2008

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.

CONTENT:

week	Topics
1	Introduction to Structural Analysis: Types of Structures Types of Loading Types of Supports
2	Idealized Structures, Superposition, Equations of Equilibrium Determinacy and Stability Determinate structures
3	Plane Trusses: Simple, Compound and Complex Trusses Method of Joints Method of Section Space Trusses
4	Beams and frames: Shear equation and diagram Moment equation and diagram
5-7	Moving concentrated and distributed loads Influence lines for beams and trusses
8-9	Cables and Arches
10-12	Deflections: Direct integration Moment area theorems Conjugate beams
13-14	Deflections using energy methods: Real and virtual work Castigliano Theorem
15	Deflections: Composite Structures
16	Final exams week

LEARNING OUTCOMES

Successful completion of this course should lead to the following learning outcomes:

A- Knowledge and Understanding:

1) Understand the definitions and idealizations of support reactions and become familiar with the different types of determinate structures. 2) Demonstrate ability to analyze different determinate structures (beams, trusses and frames) for internal forces and

support reactions. 3) Understand how to construct shear force and bending moment diagrams of different frame members. 4) Demonstrate ability to draw the influence lines of statically determinate beams and trusses. 5) Understand how to calculate deflections in beams, trusses, and frames using conventional and energy methods.

B- Intellectual Skills:

1) Distinguish between different structural components/systems and the forces they carry as well as the methods applied to their analysis. 2) Develop that ability of choosing the best method of solution to a given structural problem.

C- Subject Specific Skills:

Integrate and implement the basic knowledge of static force equilibrium, support reactions, internal forces, along with determinate deformation analysis to analyze real life engineering structures/components.

D- Transferable skills:

1) Homeworks. 2) Quizzes and class drills. 3) Assignments.