



**The Hashemite University
Faculty of Engineering
Civil Engineering Program
Course Syllabus**



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| Course Title: Structural Analysis | Course Number: 110401315 |
| Designation: Compulsory | Prerequisite(s): 110402212 |
| Instructor: Dr. Husam Qablan | Instructor's e-mail: hqablan@hu.edu.o |
| Office Hours: 10:00 – 11:00; 11:00-12:00: Sun., Tue.& Thurs. | |

Course Description (catalog): Structural forms, reactions, determinate structures, degree of determinacy, shear and moment diagrams for beams and frames, influence lines for beams, deflections (double integration method, principle of virtual work and conjugate-beam methods), Analysis of indeterminate structures by approximate methods (force method, moment distribution method, stiffness method (trusses, beams, and frames)).

Textbook(s) and/or Other Supplementary Materials:
Hibbeler, R. C. “Structural Analysis.” Prentice-Hall, latest edition.

References:

Major Topics Covered:

| Topics | No. of Weeks | Contact hours* |
|--|--------------|----------------|
| Types of Structures and loads | 0.33 | 1 |
| Analysis of Statically Determinate Structures (Beams and Frames). | 3 | 9 |
| Analysis of statically Determinate Trusses. | 1 | 3 |
| Deflections: principle of virtual work and conjugate-beam methods. | 2 | 6 |
| Analysis of statically indeterminate structures by force method | 1.67 | 5 |
| Displacement method of analysis (Moment Distribution) | 3 | 9 |
| Truss analysis using stiffness method | 2 | 6 |
| Beam analysis using stiffness method | 2 | 6 |
| Total | 15 | 45 |

*Contact hours include lectures and exams

Specific Outcomes of Instruction (Course Learning Outcomes):

After completing the course, the student will be able to:

1. *Physics based models developed throughout the course, are generally solvable using matrix algebra. Use of the properties of derivatives for understanding of shear, moment diagrams and deflections.* (a)
2. *An ability to identify, formulate, and solve engineering problems dealing with determinate and indeterminate structures (Trusses, beams, and Frames).* (e)

Student Outcomes (SO) Addressed by the Course:

| # | Outcome Description | Contribution |
|---|---|--------------|
| General Engineering Student Outcomes | | |
| (a) | an ability to apply knowledge of mathematics, science, and engineering | M (40%) |
| (b) | an ability to design and conduct experiments, as well as to analyze and interpret data | |
| (c) | an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability | |
| (d) | an ability to function on multidisciplinary teams | |
| (e) | an ability to identify, formulate, and solve engineering problems | H (60%) |
| (f) | an understanding of professional and ethical responsibility | |
| (g) | an ability to communicate effectively | |



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| (h) | the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context | |
| (i) | a recognition of the need for, and an ability to engage in life-long learning | |
| (j) | a knowledge of contemporary issues | |
| (k) | an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice. | |
| H=High, M= Medium, L=Low | | |

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|----------------------|------------|-----------|-----------------------------------|
| Grading Plan: | 1st Exam | 30 Points | 8/3/2018 [10:00 ~ 11:00] |
| | 2nd Exam | 30 Points | 10/4/2018 [11:00 ~ 12:00] |
| | Final exam | 40 points | |

General Notes: Beware of Plagiarism: copying and handing in for credit someone else's work
Any plagiarism case will result in an automatic 'F' for the course

Prepared by: Dr. Husam Qablan **Date:** 21th Dec. 2017