



The Hashemite University  
Faculty of Engineering  
Civil Engineering Program  
Course Syllabus



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<b>Course Title:</b>	Computer Applications in Structural engineering	<b>Course Number:</b>	110401513
<b>Department:</b>	Civil Engineering	<b>Designation:</b>	Elective
<b>Prerequisite(s):</b>	110401315	<b>Instructor's Office:</b>	You are welcome at any time
<b>Instructor:</b>	Dr. Abdullah Alghossoon		
<b>Instructor's e-mail:</b>			
<b>Office Hours:</b>	To be announced later		
<b>Time:</b>	Sun, Tue, Thu (6:30 pm–7:30 pm)	<b>Class Rooms:</b>	E 1008

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<b>Course Description:</b>	This course reviews the fundamentals of the stiffness and finite element methods and introduces the analysis and design of different elements in different types of structures .using the available computer-aided design package(s)		
<b>Textbook(s):</b>	-		
<b>Other required materials:</b>	-		
<b>Class/laboratory schedule:</b>	3 class sessions each week; 60 minutes each		

**Topics covered:**

1. History of computer-aided software
2. Review of the Finite Element Method
3. Exploring software interface and GUI
4. Modeling of Beams, Trusses in 2D and 3D Frames
5. Section and member properties
6. Assign static loading
7. Assign seismic and special loading
8. Member Specifications
9. Dealing with design code parameters (ACI and AISC)
10. Preparing design report
11. Shell elements (slabs and wall system)
12. Buckling analysis, P-Delta Analysis
13. Interaction between different software (Import/Export)
14. Special topics (Software tips)

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**Specific Outcomes of Instruction (Course Learning Outcomes):**

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

1. Model any type of structure, such as Beams, Frames, Trusses, Tanks, Dams, Slabs, and foundations; (1,2,6)
2. Model and idealize the structural boundary conditions and loadings; (1,2,6)
3. Perform different types of analysis such as Static, Dynamic, Response spectrum, Time-History analysis, Buckling analysis, P-Delta Analysis, and Direct Analysis Method; (1,2)
4. Learn some modeling tips and programming techniques; (1,2,6)
5. Distinguish between different levels of structural system idealization; (1,2,6)
6. Preparing a professional design report; (2)



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**Student Outcomes (SO) Addressed by the Course:**

#	Outcome Description	Contribution
<b>General Engineering Student Outcomes</b>		
.1	an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	H
.2	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	H
.3	an ability to communicate effectively with a range of audiences	
.4	an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	
.5	an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	
.6	an ability to develop and conduct appropriate experimentation, analyze and interpret data and use engineering judgment to draw a conclusion.	M
.7	an ability to acquire and apply new knowledge as needed, using appropriate learning strategies	
() Low, grades are in=L ,Medium =M ,High=H		

**Grading**

<b>Plan:</b>	<b>Mid-term Exam (30 Points) TBA</b>
	<b>HW (10 Points) During the semester</b>
	<b>Project (20 Points) During the semester</b>
	<b>Final Exam (40 Points) Will be announced by the registrar</b>

**General Notes:**

Homework assignments will be assigned; however, will not be graded. You may work together on your homework, but your final product should be your individual work. Homework must be done on high-quality paper with neat sketches. Neatness will count, and messy unorganized problems will reduce credit and may require rework. When more than one page, homework should be stapled.