The Hashemite University
Faculty of Engineering
Civil Engineering Program
Course Syllabus

Course Title:	**Introduction to Earthquake Engineering**	**Course Number:**	110401525
Department:	Civil Engineering	**Designation:**	Elective
Prerequisite(s):	110401422		
Instructor:	Dr. Hazim Dwairi	**Instructor's Office:**	E 3009
Instructor's e-mail:	hmdwairi@hu.edu.jo		
Office Hours:	Mon.; Wed. (13:00-14:00). At all times through Email & MS-Teams		
Time:	Mon.; Wed. (8:30-10:00)	**Classroom:**	E 2002

Course description: Effects of earthquakes on structures and design of structures to resist earthquake motions; earthquake mechanisms and ground motions; response of structures to earthquake motions; behavior of materials, structural elements and assemblages subjected to earthquakes; principles of earthquake-resistant design practice; soil-structure interaction; and special topics.

Textbook(s):
1- Paulay, T. and Priestley, M.J.N. "Seismic Design of Reinforced Concrete and Masonry Buildings." John Wiley & Sons, Inc., 1992.
2- Armouti, N.S. "Earthquake Engineering – Theory and Implementation." Armouti, 2nd Edition, 2006.

Other required material: Jordan Seismic Code, First Edition, Amman 2005.

Course objectives:

Objective	ABET Student Outcome
1. Develop analytical models and conduct analysis of structures under the influence of seismic actions.	[1], [2], [7]
2. Develop an understanding for the effects that earthquakes have on structural systems	[1], [2]
3. Develop an understanding of basic aspects critical for seismic design, assessment, and retrofit.	[1], [2]
4. Apply the principals of seismic design to a selected building.	[1], [2], [5], [7]

Topics covered:
1. Introduction to earthquake engineering
2. Introduction to earthquake seismology
3. Dynamics of structures – linear analysis
4. Dynamics of structures – nonlinear analysis
5. Ductility and nonlinear behavior
6. Design response spectra
7. Method of analysis – Force based (equivalent lateral force)
8. Beam, column, and joint design issues

Class/laboratory schedule: 2 class sessions each week; 75 minutes each

Grading Plan:

Midterm Exam	**(30 Points)**	**17-04-2023 (class time)**
Project	**(30 Points)**	**15-05-2023**
Final Exam	**(40 Points)**	**Check registration dept.**

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Grades Scale:

Letter	Grade
A+	90 –100.00
A	86 – 89.99
A-	82 – 85.99
B+	78 – 81.99
B	74 – 77.99
B-	70 – 73.99
C+	66 – 69.99

Letter	Grade
C	62 – 65.99
C-	58 – 61.99
D+	54 – 57.99
D	50 – 53.99
F	< 50

General Notes:

- No student is allowed to be absent for more than **4 lectures** per semester.

Student Outcomes

ABET 1-7	√	Outcomes	Assessment Measures
1	√	an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	Exams & Project
2	√	an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.	Exams & Project
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	Project
7	√	an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.	Project

Prepared by: Dr. Hazi Dwairi **Date:** 23/2/2023