



Jordan University of Science and Technology
Faculty of Engineering
Civil Engineering Department

CE532 Pre-Stressed Concrete - JNQF Level: 7

First Semester 2024-2025

Course Catalog

3 Credit Hours. Basic principles, short- and long-term properties of constituent materials, partial prestressing. Flexural behavior, analysis and design of prestressed concrete beams, classes, cracking, pretensioning, post-tensioning, service load design, load balancing, strength design, strain limits, flexural efficiency. Bond, transfer and development lengths, anchorage zone design. Shear and diagonal tension. Evaluation of immediate and long-term losses. Composite construction and design, shear-friction theory. Deflection calculation using approximate single time step approach.

Teaching Method: On Campus

Text Book

Title	Prestressed Concrete A Fundamental Approach,
Author(s)	Nawy, E. G.
Edition	6th Edition
Short Name	Ref#1
Other Information	

Instructor

Name	Prof. Rajai Al rousan
Office Location	C2L3
Office Hours	Sun : 10:00 - 12:00 Mon : 10:00 - 11:30 Wed : 10:00 - 11:30 Thu : 10:00 - 12:00
Email	rzalrousan@just.edu.jo

Class Schedule & Room

Section 1:

Lecture Time: Mon, Wed : 11:30 - 13:00

Room: C3016

Prerequisites

Line Number	Course Name	Prerequisite Type
234321	CE432 Reinforced Concrete (1)	Prerequisite / Study

Tentative List of Topics Covered

Weeks	Topic	References
Week 1	Principles and methods of prestressing	From Ref#1
Week 2	Prestressing materials: steel and concrete	From Ref#1
Weeks 3, 4	Estimation of losses	From Ref#1
Weeks 5, 6, 7, 8, 9	Flexure: working stress analysis and design	From Ref#1
Weeks 10, 11, 12	Flexure: ultimate strength analysis and design	From Ref#1
Weeks 13, 14	Design for shear	From Ref#1
Weeks 14, 15	Deflection computation and control	From Ref#1

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes

	Course Outcome Weight (Out of 100%)	Assessment method
Identify the principles and methods of prestressing, prestressing materials: steel and concrete, and estimation of losses. [1PI-1a] [1L7K1]	30%	First Exam
Develop understanding in the design and analysis of prestress members using working stress analysis and design [1PI-2a] [1L7S1]	30%	Second Exam
Develop understanding in the design and analysis of prestress members using ultimate strength analysis and design, design for shear, deflection computation and control as well as analysis and design of composite cast in place slabs with precast prestressed girders. [1PI-2a] [1L7S1]	40%	Final Exam

Relationship to Program Student Outcomes (Out of 100%)

PI-1a	PI-2a	PI-2b	PI-2c	PI-2d	PI-3a	PI-4a	PI-4b	PI-5a	PI-6a	PI-6b	PI-7a
30	70										

Relationship to NQF Outcomes (Out of 100%)	
L7K1	L7S1
30	70

Evaluation	
Assessment Tool	Weight
First Exam	30%
Second Exam	30%
Final Exam	40%

Policy	
Plagiarism	<p>Plagiarism is a serious academic offense. Plagiarism is the use of someone else's ideas, words, projects, artwork, phrasing, sentence structure or other work without properly acknowledging the ownership (source) of the property (item). Plagiarism is dishonest because it misrepresents the work of someone else as one's own. It is intellectual theft as it robs others of credit for their work. Plagiarism takes many forms including:</p> <p>? Using someone else's words without putting those words in quotation marks and providing full information about their source, sufficient information so that another person could easily locate the words that are being quoted, whether it is in an article, a book, or on the web.</p> <p>? Using unique, original ideas, phrases, sentences, paragraphs, or other materials, etc. from a single source or a variety of sources such as a text, journal, web page, electronic source, design, artwork, etc. in one's work without citing all sources. For a student found plagiarizing, the punishment will be a failing grade in the assignment without the right to redo the assignment up to a failing grade in the course.</p>
Assignments	University policy is that assignments are due on the date assigned. Instructors may refuse to accept late assignments or lower the grade that would be otherwise given
Attendance	<p>University policy is that students are to attend all classes and to arrive on time. Verified emergencies may require an absence or delay, but habitual tardiness or absence affects your learning and disrupts the class. Your presence is important since student contributions are a significant part of classroom activity and absence deprives others of your contributions.</p> <p>According to current University Regulations for attendance, Student with 2 absences: receives 5% warning Student with 3 absences: receives 10% warning Student with 5 absences: receives 20% and fails the course</p>
Mobile Phones	All mobile phones, pagers and/or other communication devices should be turned off before entering the classroom
Diversity and the Use of English	English is the common language of the JUST campus, the use of which includes everyone. It is the only language to be used in the classroom. JUST brings together students and faculty from diverse cultural and linguistic backgrounds, which is one of the strengths of the university. This diversity provides an opportunity to share our different experiences and enlarge our understanding of the world.