

**The University of Jordan  
School of Engineering  
Department of Civil Engineering**



**Course Syllabus: Spring 2018/2019**

<b>1. Course Name:</b>	<b>Bridge Engineering</b>	<b>Course Number:</b>	0941739	<b>Credits:</b>	3
<b>2. Class schedule:</b>	<b>Time and place</b>	Section #1: Wednesday: 3:30 pm – 6:30 pm (at Civil 105)			
	<b>Office Hours:</b>	Monday and Wednesday: 2:00 pm – 3:30 pm, or by appointment			
<b>3. Instructor:</b>	<b>Name:</b>	Dr. Maha Alqam			
	<b>E-mail address:</b>	m.alqam@ju.edu.jo			
	<b>Office Phone:</b>	+9625355000 Ext.: 22778			

**4. Text Book:**

Naaman, A. E., *“Prestressed Concrete Analysis and Design: Fundamentals”*, 3<sup>rd</sup> edition, Techno Press 3000, 2012.

**Note:** All lecture notes are taken in part or in whole from *Ref. 1* – Naaman, A. E., *“Prestressed Concrete Analysis and Design (Fundamentals)”*, 3<sup>rd</sup> edition, Techno Press 3000, 2012. Specific figures, charts, tables, text, examples, etc...

**5. Design Code:**

American Association of State Highway and Transportation Officials (AASHTO), AASHTO LRDF 2010.

**6. Manual:** Precast/Prestressed Concrete Institute (PCI), 2011.

**7. Contents:**

- INTRODUCTION: Scope, Special Design Characteristics of Bridge Members, Types of Bridges.
- BRIDGE COMPONENTS, DEFINITIONS, AND NOMENCLATURE: Introduction, Nomenclature and Definitions.
- DESIGN SPECIFICATIONS AND LRFD DESIGN PHILOSOPHY: Introduction, Limit States, Load Combinations, Load Factors, and Resistance Factors, Bridge Loads, Distribution of Live Loads and Beam Distribution Factors, Aids for Live Load Moments and shears for One Loading Lane, Moments and Shears in Typical Girders.
- DESIGN OF PRESTRESSED CONCRETE BRIDGES: Introduction, Definition of Composite Construction and its Use, Shored vs. Unshored Construction, Cross-Sectional Properties and Transformed Flange Width, Interface Shear, Flexure – Working Stress Analysis and Design, Flexure – Ultimate Strength Analysis and Design, Shear – Ultimate Strength Design in Accordance with AASHTO, Deflections.

**8. Minimum student materials:** Class handouts and engineering calculator.

**9. Instructional methods:**

- a. PowerPoint Presentations.
- b. Lecture/Problem solving sessions.
- c. Case studies.
- d. Quizzes.
- e. Reading assignments.

**10. Assessment Scheme:**

Evaluation	Weight of 100%
Midterm Exam	30%
Coursework	30%
Final Exam	40%
<b>Total</b>	<b>100%</b>

**11. Attendance:** Students are expected to attend EVERY CLASS SESSION and they are responsible for all material, announcements, schedule changes, etc., discussed in class. The university policy regarding the attendance will be strictly adhered to.