Course Title: Bridge Engineering  
Course Number: 0901555  
Department: Civil Engineering  
Designation: Elective  
Prerequisite(s): Reinforced Concrete II and Steel Structures  
Instructor: Dr. Nasim Shatarat  
Instructor's Office:  
Instructor's e-mail: n.shatarat@ju.edu.jo  
Office Hours: S, Tu, Th (10:00-11:00), M, W(11:00-12:00)  
Time: M, W (8:00-9:30)  
Class Room: CE104  

Course description: This is an introductory course to design of Highway Bridges in accordance with AASHTO LRFD Bridge design specifications. Topics covered include classification of bridges, structural components, Bridge loading, analysis and design of the different Bridge components.  

Washington State Department of Transportation Bridge Design Manual  
Caltrans Bridge Manuals  

Course objectives:  
1. Students will gain a basic understanding of the planning for a highway bridge.  
2. Students will learn the types of loads on highway bridges, how to determine these loads and their combinations.  
3. Students will learn how to analyze and design bridge components including deck superstructure, deck girders, piers, abutments and bearings.  
4. Students will learn how to utilize commercial software in the analysis of highway bridges.  

Topics covered:  
1. Introduction to Highway Bridges : Planning and types of Bridges  
2. Specifications, Loads and Load Combinations  
3. Deck Superstructures Analysis and Design  
4. Piers  
5. Abutments  
6. Bearings  

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

- Short Exam: (20 Points) Wednesday 16- March - 2016
- Mid-term Exam: (30 Points) Wednesday 20- April - 2016
- Final Exam: (50 Points) Will be announced by the registrar
- Others: (10 Points) Homework and Attendance
- Bonus

General Notes:

Attendance is required. Students will be administratively dropped from the course for more than 15% unexcused absences. Homework is to be done neatly. Late homework will not be accepted and a grade of zero will be assigned. Students must answer all questions. Marks will be deducted for not answering all questions. Homework must be placed on the instructor’s table on the due date. Students are expected to do their own work individually. Students are expected not to share their homeworks with others.

Course contribution:

<table>
<thead>
<tr>
<th>Professional Component</th>
<th>Course Contribution</th>
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</thead>
<tbody>
<tr>
<td>General Education</td>
<td>None</td>
</tr>
<tr>
<td>Basic Science and Mathematics</td>
<td>Students will use the methods of solving differential equations in deriving the critical buckling load in columns.</td>
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<tr>
<td>Engineering Science</td>
<td>Students will demonstrate the ability to apply concepts of engineering mechanics, including basic principles of elasticity, beam theory, and column buckling.</td>
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<tr>
<td>Engineering Design</td>
<td>Students will demonstrate the ability to size structural steel components for applicable strength and serviceability limit states according to the current AISC LRFD Specifications.</td>
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Prepared by: Dr. Nasim Shatarat    Date: 26/12/2017