

CVLE 424 Steel Design (II)

Course Syllabus – Spring 2015-2016

Curricular Area	Civil Engineering – Structural Sequence	
Type of Course	Mandatory - Major	
Catalogue Description	Beam-Column Members -Built-up Columns - Eccentrically Loaded Connections – High Tensile Bolts - Frame Connections – Column Bases - Simply Supported Slab-Girder Roadway Bridges - Built-up Plate Girders. Specifications & Detailing.	
Prerequisites by Courses	CVLE 423 – Steel Design I	
Prerequisites by Topics	Design of tension members, compression members, beams, bolted and welded connections.	
Instructors	Hassan Ghanem (h.ghanem@bau.edu.lb) Block D Building Office xxx (Phone Ext 4308)	
Course schedule/rooms	Section 1 Tuesday 09:30 - 11:00 am (BT110) Thursday 09:30 - 11:00 am (BT110)	Section 2 Tuesday 11:00 – 12:30 pm (BT110) Thursday 11:00 – 12:30 pm (BT110)
Office Hours	Monday 11:00 – 12:00 pm, Tuesday: 08:30 - 09:30 am, Wednesday: 09:00 – 11:00 am; Thursday: 08-09:30 am & 12:30 – 13:30, By appointment.	
Load	3 credits; 2 Lecture-sessions/week – 75 min per session	
Textbook	W.T. Segui, “Steel Design”, Fifth Edition, Thomson, 2013 or J.C. McCORMAC, <i>Structural Steel Design</i> , 5 th Edition, Pearson Education Int., 2011	
Reference Books	1. Manual of Steel Construction, American Institute of Steel Construction (AISC), 2005 & 2011	
Topics	Week [2-4]	<ol style="list-style-type: none"> 1. Design of beam-column members <ul style="list-style-type: none"> • 2nd order moments due to P-Δ effect • Stress interaction equations • Effective buckling length for various members • Design problems
	Week [5]	<ol style="list-style-type: none"> 2. Design of built-up columns <ul style="list-style-type: none"> • Battened columns • Latticed columns
	Week [6-8]	<ol style="list-style-type: none"> 3. Design of frame connections <ul style="list-style-type: none"> • High tensile bolts. • Slip-critical connections • Connections subjected to eccentric shear • Connections subjected to shear & bending
	Week [9]	<ol style="list-style-type: none"> 4. Column bases <ul style="list-style-type: none"> • Hinged column bases • Fixed column bases
	Week [10-12]	<ol style="list-style-type: none"> 5. Design of plate girders <ul style="list-style-type: none"> • Flexural strength • Shear strength • Stiffeners • Splices

	Week [13-15]	6. Slab-steel girder roadway bridges <ul style="list-style-type: none"> • AASHTO design provisions • Analysis & design of RC slab • Analysis & design of simply supported steel girders (non-composite behavior) • Design of simply supported steel girders (composite behavior)
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Learning Outcomes Correlation with	Program Outcomes	Program Objectives
Make analysis and design of beam-column members.	a-b	1-2
Design of battened and latticed built-up columns.	a-b	1-2
Design and detailing of various frame connections using high tensile bolts.	b-d	1-2
Design and detailing of hinged and fixed column bases.	b-d	1-2
Design and detailing of built-up plate girders.	b-d	1-2
Perform complete analysis, design and detailing of slab-girder roadway bridges for non-composite and composite construction.	a-b-d-k	1-2-4

Learning Outcomes Assessment Tools	Exams	HW s	Lab Reports	Project Report	Course Survey
Make analysis and design of beam-column members.	✓	✓			✓
Design of battened and latticed built-up columns.	✓	✓			✓
Design and detailing of various frame connections using high tensile bolts.	✓	✓			✓
Design and detailing of hinged and fixed column bases.	✓	✓			✓
Design and detailing of built-up plate girders.	✓	✓			✓
Perform complete analysis, design and detailing of slab-girder roadway bridges for non-composite and composite construction.	✓	✓			✓

Assessment:

1. Homework assignments and/or quizzes (5%)
2. Two 1.0-hour tests (55%)
3. 2-hours final exam. (40%)
4. **ZERO-TOLERANCE** policy on cheating and plagiarism.

Attendance: Attendance is **mandatory**. Class attendance will be taken and students will be penalized for absences according to the rules set by BAU regulations, and specified in the CE Student Manual; i.e. students who miss more than one-fifth of the sessions of any course in the first ten weeks of the semester will be required to withdraw from the course with a grade of “W”.

Assessment Dates:

Quiz 1: March x, 2016 (Block C Basement)
Quiz 2: April x, 2016 (Block C Basement)
Final Exam: May x, 2016 (Block B)

Course Coordinator	Dr. Adnan Masri
Date	January, 2015