KOMAR UNIVERSITY OF SCIENCE AND TECHNOLOGY
(KUST)

Structural Analysis and Design Syllabus			
Course Title	**Structural Analysis and Design**		
Course Code	**CVE3330**	**No. of Credits**	**3 CH**
Department	**Civil Engineering**	**Faculty**	**Engineering**
Pre-requisites Course Code	**Strength of Materials (CVE 2315)**	**Co-requisites Course Code**	
Course Coordinator(s)	**Dr. Sabah Saadi Fayaed**		
Email	**sabah.saadi@komar.edu.iq**	**IP No.**	**116**
Other Course Teacher(s)/Tutor(s)	**Non**		
Learning Hours	**Sunday And Tuesday (12.00pm - 1.30pm)**		
Contact Hours	**Wednesday and Thursday (8:00 am- 10:00 am)**		
Course Type	**Departmental Requirement**		
Offer in Academic Year	**Fall 2015**		

COURSE DESCRIPTION

This course provides an introduction to the structural analysis procedures that will be the foundation for other structural analysis and design courses. Various topics were described like Types of Structures and Loads, Analysis of Statically Determinate Structures, Influence Lines for Statically Determinate Structures, Deflections, Displacement Method of Analysis, Internal Loadings Developed in Structural Member, Cables and Arches. The style of this syllabus is adopted from Texas University.

COURSE OBJECTIVES

This course is intended to provide students with a fundamental understanding of structural analysis concepts and develop ability to make engineering judgment about structural behavior.

COURSE LEARNING OUTCOME

After participating in the course, students would be able to:

1. Understand the shear force, bending moment, and axial force diagram for beams and plane frames through hand computation. **(ABET Outcome A)**
2. Solve the qualitative deformed shape of beams and plane frames under the action of loads. **(ABET Outcome E)**
3. Analyze statically simple indeterminate beams and plane frames using slope deflection method. **(ABET Outcome E)**
4. Calculate the influence line for the member force of a truss. **(ABET Outcome E)**
5. Apply the force method for analyzing statically indeterminate beams and plane frame. **(ABET Outcome E)**

Grading Scale:

Points	Percentage Scores
A	95-100
A-	90-94
B+	87-89
B	83-86
B-	80-82
C+	75-79
C	70-74
C-	65-69
D+	60-64
D	55-59
D-	50-54
F	0-49
W	Withdrawal
I	Incomplete

Note: The minimum passing grade to pass this course is C-which is equivalent to 65% and above.

COURSE CONTENT

Course topics include:
Chapter 1: Types of Structures and Loads
Chapter 2: Analysis of Statically Determinate Structures
Chapter 3: Analysis of Statically Determinate Trusses
Chapter 4: Internal Loadings Developed in Structural Members
Chapter 5: Cables and Arches
Chapter 6: Influence Lines for Statically Determinate Structures
Chapter 8: Deflections
Chapter 10: Analysis of Statically Indeterminate Structures by the Force Method
Chapter 11: Displacement Method of Analysis: Slope-Deflection Equations

COURSE TEACHING AND LEARNING ACTIVITIES

Course Teaching and Learning Activities:

1. Interactive class discussion
2. Hands- on Exercises
3. Home work
4. Tests and Quizzes

COURSE ASSESSMENT Tools

Assessment Tool	Description	Weight
Quizzes (5)	Quizzes are scheduled as shown in the semester schedule. Students will take 5 quizzes, the highest 4 quizzes will be counted towards the final grade.	10%
Midterm Exam	The Mid-term exam will be conducted after week 7 of the semester.	25%
Homework (2)	The H.W will be conducted during the semester.	5%
Contribution	Students will be evaluated by the instructor based on their participation in the class, commitment, pop quizzes and other activities.	5%
Test	The Test will be conducted in week 13 of the semester.	15%
Project	The project will be conducted in week 12 of the semester	10%
Final Exam	The final exam will be conducted in week 16 of the semester schedule	30%

ESSENTIAL READINGS: (Journals, textbooks, website addresses etc.)

Textbooks:
Structural Analysis, Hibbeler, R. C. (2012), 8 th Edition, Pearson. ISBN- 13: 978-0-13-257053-4

References:

 1- Fundamentals of Structural Analysis, 3rd Edition; Leet, Uang, & Gilbert; McGraw-Hill
 2- Structural Analysis, Kassimali, A., Fifth Edition, Cengage Learning, 2014

COURSE POLICY *(including plagiarism, academic honesty, attendance etc)*

Attendance Policy:
Students are expected to attend each class for the entire semester. Students are responsible for material present in lectures. Only students with official KUST absence, family crises, and illness are excused from class. Three occasions of lateness count as one absence. The student who misses 10 percent of the classes will be placed on probation.

Make up Policy:
Since all examination are announced in advance, zero grade will be given to any missed examination unless a student's has an acceptable reason, such as illness, for not being able to take the examination during all those days when the examination was announced.

Academic Dishonesty:
Any type of dishonesty (Plagiarism, Copying another's test or home-work, etc) will Not be tolerated. Students found guilty of any type of academic dishonesty are subject to failure in this course, plus further punishment by the University Consul.

Course calendar: Please check the academic calendar for 2015/2016

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Note: Supplementary problems will be given either as homework in the text book and which are posted in the google classroom and during the class.

Week	Beg/End Dates	Topics (Chapters)	Course Assignments per chapter
1	(28-9 to 1-10) / 2015	**Chapter 1: Types of Structures and Loads** • Introduction • Classification of Structures • Loads	
2	(4-10 to 8-10) / 2015	**Chapter 2: Analysis of Statically Determinate Structures** • Idealized Structure • Principle of Superposition • Equations of Equilibrium • Determinacy and Stability	
3	(11-10 to 15-10) / 2015	**Chapter 3: Analysis of Statically Determinate Trusses** • Common Types of Trusses • Classification of Coplanar Trusses	**Quiz 1 Ch.1 and Ch.2**
4	(18-10 to 22-10) / 2015	**Chapter 3: Continued** • The Method of Sections Compound Trusses • Complex Trusses	
5	(25-10 to 29-10) / 2015	**Chapter 4: Internal Loadings Developed in Structural Members** • Internal Loadings at a Specified Point	**Quiz 2 Ch.3**
6	(1-11 to 5-11) / 2015	**Chapter 4: Continued** • Shear and Moment Diagrams for a Frame	
7	(8-11 to 12-11) / 2015	**Chapter 5: Cables and Arches** • Cable Subjected to Concentrated Loads • Cable Subjected to a Uniform Distributed Load	**Quiz 3 Ch. 4** **Submitting "H.W1"**
	15-11 to 19-11	**Mid Term Exam**	**Ch 1,2,3,4 and 5**
8	(22-11 to 26-11) / 2015	**Chapter 6: Influence Lines for Statically Determinate Structures** • Influence Lines for Beams • Qualitative Influence Lines	

9	(29-11 to 3-12) / 2015	**Chapter 6: Continued** • Influence Lines for Floor Girders • Influence Lines for Trusses	
10	(6-12 to 10-12) / 2015	**Chapter 8: Deflections** • Deflection Diagrams and the Elastic Curve • Elastic-Beam Theory	**Quiz 4 Ch. 6**
11	(13-12 to 17-12) / 2015	**Chapter 8: Continued** • The Double Integration Method • Moment-Area Theorems	
12	(20-12 to 24-12) / 2015	**Chapter 10: Analysis of Statically Indeterminate Structures by the Force Method** • Statically Indeterminate Structures • Force Method of Analysis: General Procedure • Force Method of Analysis: Beams	**Quiz 5 Ch.8** **Submitting "H.W2"**
	(27-12 to 31-12) / 2015	**New Year Holiday**	
13	(3-1 to 7-1) / 2016	**Chapter 10: Continued** • Force Method of Analysis: Frames • Force Method of Analysis: Trusses	
14	(10-1 to 14-1) / 2016	**Chapter 11: Displacement Method of Analysis: Slope-Deflection Equations** • Displacement Method of Analysis: General Procedures • Slope-Deflection Equations	**TEST Ch. 8 and Ch. 10**
15	(17-1 to 21-1) / 2016	**Review Week for Academic Courses**	
16	(24-1 to 28-1) / 2016	**Final Examination for Academic Courses**	**All The Chapters**