Course Specifications (2011 - 2012)

A. Basic Information

Course Title	Structural Analysis (2-A)				Course Code:	CVE 211	
Lecture:	3	Tutorial:	3	Practical	0	Total	6
Programme (s) on which this course is given:				B.Sc. Civil Engineering (General)			
Major or minor element of program:			Major				
Department offering the program:			Civil Engineering				
Department offering the course:			Civil Engineering				
Academic Year of program:	Second			Level of program:		First Semester	
Date of specifications approval:				16/3/2010			

B. Professional Information

1. Overall aims of course

By the end of the course the students will be able to:

To have enough knowledge on the fundamentals of analysis and theory of structures, and to help the students to be familiar with the principles of the design of the structures including safety requirements and economical design.

2. Intended Learning outcomes of Course (ILOs)

a. Knowledge and Understanding:

a.3) Understand characteristics of engineering materials related to discipline.
a.4) Understand principles of design including elements design, process and/or a system related to specific disciplines.
a.13) Apply Engineering principles in the fields of reinforced concrete and metallic structures analysis and design, geo-techniques, and foundations, hydraulics and hydrology, water resources, environmental and sanitary engineering, roadways and traffic systems, surveying and photogrametry.

b. Intellectual Skills

b.2) Select appropriate solutions for engineering problems based on analytical thinking.
b.3) Think in a creative and innovative way in problem solving and design.
b.4) Combine, exchange, and assess different ideas, views, and knowledge from a range of sources.
b.7) Solve engineering problems, often on the basis of limited and possibly contradicting information.

c. Professional and Practical Skills

c.1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice to
c.2) Professionally merge the engineering knowledge, understanding, and feedback to improve design, product and/or services.
c.4) Practice the neatness and aesthetics in design and approach.

d. General and Transferable Skills

d.6) Effectively manage tasks, time, and resources.
d.7) Search for information and engage in life-long self learning discipline.
d.9) Refer to relevant literatures.

3. Contents

Week #	Topics	No. of Hours	ILOS	Teaching / learning methods and	Assessment method
1	Introduction, shear stress caused by torsion for circular	3	a3, a4, a13 b2, b3, b4, b7	Lectures Case study	Assignments Quiz

1	caused by torsion for circular shafts	3	c1, c2, c4	Class activity	Mid-term exam
			d6, d7, d9	Tutorial	Final exam
2	Statically indeterminate shafts	3	a3, a4, a13	Lectures	Assignments
			b2, b3, b4, b7	Case study	Quiz
			c1, c2, c4	Class activity	Mid-term exam
			d6, d7, d9	Tutorial	Final exam
3	torsion of non circular shafts, thin walled sections	3	a3, a4, a13	Lectures	Assignments
			b2, b3, b4, b7	Case study	Quiz
			c1, c2, c4	Class activity	Mid-term exam
			d6, d7, d9	Tutorial	Final exam
4	Shear stress in beams, Shear stress distribution of in common types of beams	3	a3, a4, a13	Lectures	Assignments
			b2, b3, b4, b7	Case study	Quiz
			c1, c2, c4	Class activity	Mid-term exam
			d6, d7, d9	Tutorial	Final exam
5	shear flow, built up sections, shear stress in thin walled section.	3	a3, a4, a13	Lectures	Assignments
			b2, b3, b4, b7	Case study	Quiz
			c1, c2, c4	Class activity	Mid-term exam
			d6, d7, d9	Tutorial	Final exam
6	shear stress for unsymmetrical loading, shear centre	3	a3, a4, a13	Lectures	Assignments
			b2, b3, b4, b7	Case study	Quiz
			c1, c2, c4	Class activity	Mid-term exam
			d6, d7, d9	Tutorial	Final exam
7	applications on normal and shear stresses due to combined loading.	3	a3, a4, a13	Lectures	Assignments
			b2, b3, b4, b7	Case study	Quiz
			c1, c2, c4	Class activity	Mid-term exam
			d6, d7, d9	Tutorial	Final exam
8	Midterm Exam		a3, a4, a13		
			b2, b3, b4, b7		
			d6, d7, d9		
9	Components of plan stresses, transformations of plan stresses	3	a3, a4, a13	Lectures	Assignments
			b2, b3, b4, b7	Case study	Quiz
			c1, c2, c4	Class activity	Mid-term exam

	stresses.		d6, d7, d9	Tutorial	Final exam
10	Principle stresses and there plans max shear stress and its plans, Mohr's circle.	3	a3, a4, a13	Lectures	Assignments
			b2, b3, b4, b7	Case study	Quiz
			c1, c2, c4	Class activity	Mid-term exam
			d6, d7, d9	Tutorial	Final exam
11	Deflection of beams, relation between deflection and bending moments, double integration methods.	3	a3, a4, a13	Lectures	Assignments
			b2, b3, b4, b7	Case study	Quiz
			c1, c2, c4	Class activity	Mid-term exam
			d6, d7, d9	Tutorial	Final exam
12	singularity function of the moment and its applications	3	a3, a4, a13	Lectures	Assignments
			b2, b3, b4, b7	Case study	Quiz
			c1, c2, c4	Class activity	Mid-term exam
			d6, d7, d9	Tutorial	Final exam
13	Moment area method, elastic weight methods	3	a3, a4, a13	Lectures	Assignments
			b2, b3, b4, b7	Case study	Quiz
			c1, c2, c4	Class activity	Mid-term exam
			d6, d7, d9	Tutorial	Final exam
14	Conjugate beam methods.	3	a3, a4, a13	Lectures	Assignments
			b2, b3, b4, b7	Case study	Quiz
			c1, c2, c4	Class activity	Mid-term exam
			d6, d7, d9	Tutorial	Final exam
15	Final Exam		a3, a4, a13		
			b2, b3, b4, b7		
			c1, c2, c4		
			d6, d7, d9		
Total		**39**			

4- Teaching and Learning Methods:

Check using the symbol √

√	Lectures
	Practical training / laboratory
	Seminar / workshop
√	Class activity
√	Case study

	Project work
√	Tutorial
	Computer based work
	Other :

5- Student Assessment Methods:

Check using the symbol √

√	Assignments	to assess	a3, a4, a13	b2, b3, b4, b7		d6, d7, d9
√	Quiz	to assess	a3, a4, a13	b2, b3, b4, b7		d6, d7, d9
√	Mid-term exam	to assess	a3, a4, a13	b2, b3, b4, b7		d6, d7, d9
√	Oral exam	to assess	a3, a4, a13	b2, b3, b4, b7	c1, c2, c4	d6, d7, d9
√	Final exam	to assess	a3, a4, a13	b2, b3, b4, b7	c1, c2, c4	d6, d7, d9
	Design Project	to assess				
	Report	to assess				
	Experimental write up	to assess				
	Informally assessment	to assess				
	Other	to assess				

6. Assessment schedule

Assessment 1 Assignments on weeks	2 to 14
Assessment 2 Quizzes on weeks	4, 6, 10, 12
Assessment 3 Mid-term exam on week	8
Assessment 4 Oral Exam on week	14
Assessment 5 Final exam on week	15
Assessment 6 Design Project on weeks	
Assessment 7 Report on weeks	
Assessment 8 Experimental write up on weeks	
Assessment 9 Informally assessment	

7. Weighting of Assessments

Assignments	5%
Quiz	5%
Mid-term exam	10%
Oral exam	20%
Final exam	60%
Design Project	
Report	
Experimental write up	

Informally assessment	
Other	
Total	100%

8. List of References

8.1 Course Notes

Lecture notes and handouts prepared by instructor

8.2 Essential Books (Text Books)

8.3 Recommended Books

Theory of structures: part I and part II by Eldakhakhni
Mechanics of Materials by Beer and Johnson
Visual Mechanics by Miller.

8.4 Periodicals Web sites, etc

9. Facilities Required for Teaching and learning

Lecture room equipped with overhead projector
Presentation board, computer and data show
Laboratory

Course Coordinator:	Prof. Osama Ahmed Kamal Mahmoud	
Course instructor:	Dr. Ibrahim Mohamed Mahdi Bazan	
Head of department:	Prof. Ahmed AdbulFattah Mahmoud Ahmed	

Signature:

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Date:	4	1	2012