

King Fahd University of Petroleum & Minerals  
DEPARTMENT OF CIVIL & ENVIRONMENTAL ENGINEERING

**CE 203 STRUCTURAL MECHANICS I**

(Section 2)

**COURSE OUTLINE & SCHEDULE  
Second Semester 1435 / 2014 (132)**

**Text: Mechanics of Materials (8<sup>th</sup> SI Ed.) by R.C. Hibbeler (2011)**

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<b>homepage</b> : <a href="http://faculty.kfupm.edu.sa/ce/hghamdi">http://faculty.kfupm.edu.sa/ce/hghamdi</a>	<b>Thu: 9 - 11 A.M.</b> <i>You are welcome any other time; you can also make an appointment &amp; ask by phone or e-mail.</i>

Lect #	Date Hej	Date G	Subject	Section
1	Su 25-3 - 1435	26 Jan 2014	General introduction to Mechanics & Definitions of Stress in Deformable Bodies	1.1, 1.2
2	Tu 27-3	28	Normal Stress	1.3 (partial)
3	Th 29-3	30	Average Normal Stress	1.4
4	Su 2-4	2 Feb	Shear Stress	1.5
5	Tu 4-4	4	Allowable Stress; Factor of Safety Bearing Stress; Structural <i>Design</i>	1.6 1.7 + Handout
6	Th 6-4	6	Definition of Strain, Stress-Strain Diagrams	2.1,2,2,3,1,3,2
7	Su 9-4	9	Hooke's Law; Material Behavior; Poisson's Ratio; Shear Stress-Strain	3.3 - 3.7
8	Tu 11-4	11	Deformation of Axially Loaded Members	4.1- 4.3
9	Th 13-4	13	Statically Indeterminate Problems; Design Applications	4.4, 4.5
10	Su 16-4	16	Thermal Strain and Thermal Stress	4.6
11	Tu 18-4	18	Thermal Stress (cont'd)	4.6
12	Th 20-4	20	Stress Concentrations	4.7, Handout
13	Su 23-4	23	Stress Components Under General Loading; Generalized Hooke's Law	1.3 (partial); 10.6
14	Tu 25-4	25	Generalized Hooke's Law (cont'd)	10.6; Handout
15	Th 27-4	27	Torsion of Circular Shafts (Deformation & Torsion Formula)	5.1, 5.2
16	Su 1-5	2 Mar	Transmission Shafts and Gears	5.3
17	Tu 3-5	4	Angle of Twist	5.4
18	Th 5-5	6	Statically Indeterminate Shafts	5.5
19	Su 8-5	9	Torsion of Solid Non-Circular Sections	5.6
20	Tu 10-5	11	Thin-walled Open Sections; Narrow Rectangular Sect.	Handout
21	We 11-5	12	<b>First Exam Wed 11-5-1435 / 12-3-2014 @ evening</b>	
22	Su 15-5	16	Twisting of Thin-Walled Closed Sections (TWCS)	5.7
23	Tu 17-5	18	Twisting of TWCS (cont'd); <i>Design</i> Applications	5.7; 11.4
24	Th 19-5	20	Shear Force & Bending Moment Diagrams - Method of Summations (Semi-Graphical Method)	6.1, 6.2
<b>Have a Nice Mid-Term Break</b>				
25	Su 29-5	30	Shear Force & Bending Moment Diagrams - Method of Summations (Semi-Graphical Method) (cont'd)	6.2
26	Tu 1-6	1 Apr	Bending Stresses in Straight Beams	6.3
27	Th 3-6	3	The Flexure Formula	6.4
28	Su 6-6	6	The Flexure Formula (cont'd)	6.4
29	Tu 8-6	8	Shear in Straight Beams, Shear Formula	7.1, 7.2
30	Th 10-6	10	Shear Flow & Shear Stress in Beams	7.2
31	Su 13-6	13	Shear Flow in Beams; Design of Beams	7.3; 11.1; 11.2

Lect #	Date Hej	Date G	Subject	Section
32	Tu 15-6	15	Thin-Walled Pressure Vessels	8.1, Handout
33	Th 17-6	17	Introduction to Compound Stresses	8.2
34	Su 20-6	20	Compound Shear Stress	8.2 (cont'd)
35	Tu 22-6	22	Compound Normal Stress	8.2 (cont'd)
36	Tu 22-6	22	<b>Second Exam Tu 22-6-1435 / 22-4-2014 @ Evening</b>	
37	Su 27-6	27	Applications of Compound Stresses	8.2 (cont'd)
38	Tu 29-6	29	Transformation of Plane Stress	9.1, 9.2
39	Th 2-7	1 May	Principal Normal Stresses & Maximum Shear Stresses	9.3, Handout
40	Su 5-7	4	Mohr's Circle	9.4
41	Tu 7-7	6	Mohr's Circle (cont'd); Design Applications	9.4, Handout
42	Th 9-7	8	Beam Deflection; Moment – Curvature Equation The Elastic Curve	12.1, 12.2 Handout
43	Su 12-7	11	Beam Deflections by Singularity (Discontinuity) Functions	12.3
44	Tu 14-7	13	Statically Indeterminate Beams (Definition)	12.6
45	Th 16-7	15	Statically Indeterminate Beams (Analysis)	12.7

\*Course materials (e.g. class notes, handouts, homework, key solutions, outline/syllabus, etc.) can be found on my home page/ (CE 203 STRUCTURAL MECHANICS).

#### Course Supplements:

- i. WebCT: <http://webcourses.kfupm.edu.sa>
- ii. Best Mechanics: <http://web.mst.edu/~mecmovie/index.html>
- iii. Hibbeler: <http://www.pearsoned-asia.com/hibbeler/>

Grade Distribution	
Class Work [Attendance & Participation* (2.25%); Quizzes <sup>\$</sup> and/or Homework <sup>#</sup> (12.75%)]	= 15%
First Exam [Wednesday 11-5-1435 / 12-3-2014 @ Evening]	= 25%
Second Exam [Tuesday 22-6-1435 / 22-4-2014 @ Evening]	= 25%
Final Exam [Saturday 18-7-1435 / 17-5-2014 @ 7:00 P.M.]	= 35%
<b>Total</b>	<b>= 100%</b>

\* For each absence, 0.25 point will be deducted from the total course score. The University regulations regarding excessive absences will be strictly adhered to in this course. See pages 66, 67 [Arabic] & 38, 39 [English] of the Undergraduate Bulletin and article nine of The Undergraduate Study and Examinations Regulations. Remember that if you have an official excuse, you must bring it no later than the second class meeting after resumption of the study. DN grade will be given to the student if the absences exceed one fifth of the scheduled meetings (9 classes).

<sup>\$</sup> If quizzes are given (to replace the HW submission or in addition to it), they will be from the HW on the day it is due. They are meant to test who did the HW by himself. You will have time to just REWRITE the HW solution, not to think about it. Partial credit may not be given. You need to have the solution ready and complete BEFORE the quiz. The official excuse for any absence is not acceptable for a make-up quiz unless it is marked "exam included".

<sup>#</sup> Homework is due as indicated on each assignment. You must respect and abide with the deadline. You must follow the HW guidelines given to you in the handout, especially cheating, copying, etc.

*Ethical practice is expected from all students. Any misconduct in the course (in the exams, quizzes, HW, attendance check, etc.) will be severely dealt with in accordance with the university rules and regulations, which are to be strictly adhered to; an F grade in the course and dismissal from the university are possible options.*