**MECH 3: FUNDAMENTALS of ENGINEERING MECHANICS** – *Fall 2010*

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| Lesson | Date | Topic | Reading | Homework Problems |
| 1 | 8/30 | Introduction to Forces | (S) 1.1-6; 2.1-8 | 2.7, 19, 28, 36 |
| 2 | 9/01 | Particle Equilibrium in 2D | (S) 2.9-11 | 2.47, 54, 67 |
| 3 | 9/03 | Forces in 3D | (S) 2.12-14 | 2.74, 86, 92, 95 |
| 4 | 9/06 | Particle Equilibrium in 3D | (S) 2.15 | 2.105, 114, 120, 126 |
| 5 | 9/08 | Moment about a Point | (S) 3.1-8 | 3.6, 8, 21, 25 |
| 6 | 9/10 | Moment about a Line; Couples | (S) 3.9-16 | 3.50, 60, 72, 95 |
| 7 | 9/13 | Equivalent Force Systems | (S) 3.17-20 | 3.98a, b, 102, 124 |
| 8 | 9/15 | Rigid Body Equilibrium in 2D | (S) 4.1-5 | 4.7, 14, 19, 21 |
| 9 | 9/17 | Two/Three - Force Bodies | (S) 4.6-7 | 4.52, 75, 83 |
| 10 | 9/20 | Laws of Friction | (S) 8.1-4 | 8.3, 4, 5, 41 |
| 11 | 9/22 | Rigid Body Equilibrium in 3D | (S) 4.8-9 | 4.98, 107, 112, 125 |
| 12 | 9/24 | Rigid Body Equilibrium in 3D | (S) 4.8-9 | 4.135, 141, 148 |
| 13 | 9/27 | Centroids of Areas | (S) 5.1-5 | 5.4, 18, 19 |
| 14 | 9/29 | Distributed Loads on Beams | (S) 5.8 | 5.69, 70, 79 |
| 15 | 10/01 | Pressure Distributions | (S) 5.9 | 5.82, 85 |
|  | 10/04 | Review |  |  |
|  | 10/05 | **4 o’clock Quiz No. 1** |  |  |
|  | 10/06 | **No class** |  |  |
| 16 | 10/08 | Trusses: By Joints | (S) 6.1-5 | 6.2, 10, 23, 30 |
|  |  | **Pacing Break October 11 & 12** |  |  |
| 17 | 10/13 | Trusses: By Sections | (S) 6.7-8 |  |
| 18 | 10/15 | Frames | (S) 6.9-11 |  |
| 19 | 10/18 | Machines | (S)6.12 |  |
| 20 | 10/20 | Internal Forces | (S) 7.1-2 |  |
| 21 | 10/22 | Normal & Shear Stress | (M) 1.1-6, 13 |  |
| 22 | 10/25 | Normal Strain; Hooke's Law | (M) 2.1-8 |  |
| 23 | 10/27 | Statically Indeterminate Rods | (M) 2.9-10 |  |
| 24 | 10/29 | Poisson’s ratio, Hooke’s Law in 3D | (M) 2.11-13 |  |
| 25 | 11/01 | Stress Concentrations | (M) 2.17-18 |  |
| 26 | 11/03 | Plastic Deformations | (M) 2.19 |  |
| 27 | 11/05 | Residual Stress | (M) 2.20 |  |
|  | 11/08 | **Review** |  |  |
|  | 11/09 | **4 o’clock Quiz No. 2** |  |  |
|  | 11/10 | **No class** |  |  |
| 28 | 11/12 | Deformation in Torsion | (M) 2.14, 3.1-3 |  |
| 29 | 11/15 | Shear Stress in Torsion | (M) 3.1-4 |  |
| 30 | 11/17 | Statically Indeterminate Shafts | (M) 3.5, 6 |  |
| 31 | 11/19 | Design of Transmission Shafts | (M) 3.7, 8 |  |
| 32 | 11/22 | Area Moments of Inertia | (S) 9.1-5 |  |
|  |  | **Thanksgiving Break** |  |  |
| 33 | 11/29 | Composite Areas | (S) 9.6-7 |  |
| 34 | 12/01 | Deformations in Bending | (M) 4.1, 3 |  |
| 35 | 12/03 | Normal Stress in Bending | (M) 4.1-4 |  |
| 36 | 12/06 | Internal Forces in Beams | (S) 7.3-5 |  |
| 37 | 12/08 | Internal Forces in Beams | (S) 7.6 |  |
|  | 12/10 | Review |  |  |

Reading assignments and homework problems are from the texts:

(S) Beer, Johnston & Eisenberg, *Vector Mechanics for Engineers: Statics*, 9th Ed., McGraw-Hill, 2010.

1. Beer, Johnston, DeWolf & Mazurek, *Mechanics of Materials*, 5th Ed., McGraw-Hill, 2009.