ENGR 230 – Kinematics and Dynamics

Spring 2009

Instructors: Professor Per Reinhall
307 Mechanical Engineering Building
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543-5628
OH: 2:30 – 3:30 MWF

TAs:

Brandon Smith
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OH: 10 am – 1 pm Wednesdays

Chuan Luo
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OH: 8:30 am – 11:30 Fridays

Jeffrey Epler
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OH: 2:30 - 4:30 Monday
1:00 – 2:00 Tuesday

All TA office hours will be in MEB 236

Homework: Assigned Fridays together with the reading assignment and due the following Friday at the beginning of the lecture. Late homework by permission of TAs only. Homework solutions posted on the web Mondays (http://faculty.washington.edu/reinhall/teaching.htm.) Graded homework will be returned within one week.

Grading:

Two midterms	22.5% each (preliminary dates: April 29 and May 22)
Final	45% (Monday, June 08, 2:30 – 4:30 pm)
Homework	10%

Textbook: Engineering Mechanics – Dynamics, 11th Edition, R.C. Hibbeler, Pearson Prentice Hall

Prerequisite: Engineering Statics (ENGR 210)

Objectives: After completing this course you should be able to determine the response of structures and objects subjected to forces and displacements. The goal is that you should be able to answer questions about the motion and forces in engineering systems such as linkages, mechanisms, rotating systems, robots, impacting objects, machine elements, vehicles, and power systems. Dynamics is the study of "change" so what you learn in this course will also be applicable to other areas such as fluid mechanics, economics, computer modeling and graphics, economics, biology and medicine.

Topics: We will cover Chapters 12-19 and some of 20 and 21 if time allows:

Kinematics of a Particle
Kinetics of a Particle: Force and Acceleration
Kinetics of a Particle: Work and Energy
Kinetics of a Particle: Impulse and Momentum

Planar Kinematics and a Rigid Body
Planar Kinetics of a Rigid Body: Force and Acceleration
Planar Kinetics of a Rigid Body: Work and Energy
Planar Kinetics of a Rigid Body: Impulse and Momentum

Three-Dimensional Kinematics of a Rigid Body
Three-Dimensional Kinetics of a Rigid Body