ME521, Dynamics, CRN 13239, Winter 2012, TR 7:30 ~ 9:17 PM, DHE 203

Instructor : Yin-ping (Daniel) Chang
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TA : N/A

Textbook : "Advanced Engineering Dynamics," by Jerry H. Ginsberg, 2nd ed., 1995/1998, Cambridge.
"Engineering Dynamics," by Jerry Ginsberg, 2008, Cambridge. (Almost the same thing)

References : "Vector Mechanics for Engineers, Dynamics," Beer and Johnston, 1-8 ed., McGraw-Hill.
"Engineering Mechanics – Statics & Dynamics," Hibbeler, 11th ed. Prentice Hall.
Any engineering mechanics books of statics & dynamics.

Prerequisites : Engineering Statics & Dynamics equivalent courses. (ME221/321, EGR280/ME322 at OU)

HW Policy : The HW is due at the beginning of the class on the due date. HW solutions will be provided after due dates. **NO LATE HW WILL BE ACCEPTED!!** Any questions about the grading should be addressed to the instructor, not the TA, within one week after it's been returned.

Exam and Grading Policy : The final course grade will be a weighted average of :

4 ~ 6 HW	33.3 %
Mid-terms	33.3 % (open one sheet)
Final Exam	33.3 % (open one sheet)

>90--4, >80--3, >70--2, >60--1, <50--0. Again, any questions about the grading of exams should also be addressed to the instructor, not the TA, within one week after it's been returned.

Objectives : To develop an understanding of the fundamental of vectorial and variational approaches to dynamics. Mathematical modeling and dynamic analysis of mechanical systems.

- Newtonian mechanics - Kinematics and kinetics of particles (systems)
- Newtonian mechanics - Kinematics and kinetics of rigid bodies
- Analytical mechanics – Hamilton Principle / Lagrange's Equation
- Introduction to continuum system mechanics

CLASS ATTENDANCE IS STRONGLY RECOMMENDED

TENTATIVE LECTURE SCHEDULE

Week	Date	Lecture Materials
1	1/5	Introduction
2	1/10, 1/12	Particle Kinematics
3	1/17, 1/19	Particle Dynamics
4	1/24, 1/26	Kinematics & Dynamics of Systems of Particles
5	1/31, 2/2	Rigid Body Kinematics
6	2/7, 2/9	Rigid Body Dynamics
7	2/14, 2/16	Multi-Body Dynamics
8	**2/21,2/23**	**No CLASS, Winter Recess**
9	2/28, 3/1	Concept of Analytical Dynamics, Generalized Coordinates and Constraints
10	3/6	Principles of Virtual Work, D'Alembert's Principle
10	**3/8**	**Mid-Term (tentative schedule)**
11	3/13, 3/15	Calculus of Variation, Hamilton's Principle
12	3/20, 3/22	Lagrange's Equation & Lagrange's Momentum Equation
13	3/27, 3/29	Lagrange's Multiplier, Rayleigh's dissipation Function
14	4/3, 4/5	Continuous Structures
15	4/10, 4/12	Model via Hamilton's Principle
16	4/17	Wrap-up, Review
17	**4/24 (T)**	**Final Exam (7 ~ 10 PM)**

Academic Conduct : Students are expected to read, understand, and comply with the "Academic Conduct Policy" as explained in Oakland University Undergraduate and Graduate catalogs. Violations will be taken before the Academic Conduct Committee. Students found guilty of academic misconduct in this course will receive a grade of 0.0 in addition to any penalties imposed by the Academic Conduct Committee.

HELP ME HELP YOU!!