ME 208-03 DYNAMICS
Spring 2013

Course Hours
Section 03: Tuesday 9:40-11:30, Thursday 9:40-10:30, G-102

Course Instructor
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Course Grading
2 midterms (25% each), homework assignments and attendance (15%), final exam (35%). You will not be allowed to attend final exam unless your midterm average is 40/100 or 50% of the class average for the midterm exams (whichever is lower) and your attendance to lectures is at least 50%.

Textbooks

References

Course Web Site
http://www.me.metu.edu.tr/courses/me208/

Examinations
The dates, times and places of all examinations will be arranged and announced by the Department. Examinations will be closed book and closed notes type. Some necessary formulae may be supplied. You need to have your own scientific calculator in addition to your own pencil and eraser for the exam.

Make-up Examinations
Make-up examinations may be given to those with valid excuses approved by the Department. If you are eligible to take any of the make-up examinations, you must report to your course instructor within one week after the regular exam date.

Homework Assignments
Unfortunately, there is no shortcut to learn dynamics (similar to many other engineering courses) other than solving problems on your own. You are strongly recommended to learn the topics during class hours. What is left for non-class hours should be (at most) reviewing the topics, going over the solved examples in the textbook and in lecture notes. You need to devote a considerable time interval for solving problems on your own. The textbook contains many good problems for you to practice.
Homework assignments will help (and force) you to solve problems on your own. They will be graded and returned to you. However the number of problems in the homework assignments is far below the number you need to solve, to learn the topics thoroughly. The main tools you will be using while doing your homework assignments will be a piece of paper and a pencil. Please work very neatly and in a self-explanatory manner. This will help you develop the skills to convey your ideas to others (which will be necessary during your professional engineering life, especially in teamwork). After you formulate the problem you may need to use a calculator or computer to obtain the numerical result. Please do not forget, without correct formulation and necessary sketches (e.g. a free body diagram) a calculator or a computer will not help you.

You may be asked to solve some of the problems using a computer. Computer will be used very much like a calculator in this course. However, you will be asked to change one parameter in a range (say the projectile angle) and see the effect of this change (say the target point of the projectile). Computer also will help you present numerical results in a visual way (like graphs or plots). In dynamics, you are asked to use a scientific tool, like the Matlab® software. METU has Matlab® site license and the software is available in the student computer laboratory B-105 of Mechanical Engineering Department. There will be an optional tutorial for a start-up and necessary hints on the course website regarding the use of Matlab®.

Ethics
You are expected to solve the homework problems yourselves, unless stated otherwise. In case you face a difficulty in homework assignments, you may ask help of a friend, the course assistant or your instructor. However, this help should not exceed understanding the source of difficulty and cross-checking the results obtained. In case of cheating, if discovered, you will lose the whole 15 % for homework assignments, and attendance, and face all the consequences. You are also expected to follow the Mechanical Engineering Department’s academic code of ethics (available at the website http://www.me.metu.edu.tr/main/en/people/code.asp).

Tentative Course Outline
Chapter 1 Introduction ½ weeks
Chapter 2 Kinematics of Particles 2 weeks
Chapter 3 Kinetics of Particles 3½ weeks
Chapter 5 Plane Kinematics of Rigid Bodies 3½ weeks
Chapter 6 Plane Kinetics of Rigid Bodies 3½ weeks
Appendix B Mass Moments of Inertia ½ weeks

Course Objectives
• You will appreciate the advantages of using different coordinate systems for the description of planar motion of particles.
• You will comprehend the basic principles underlying the kinematics of a mechanical system consisting of particles and rigid bodies.
• You will comprehend the basic principles underlying the kinetics of a mechanical system consisting of particles and rigid bodies.
• You will be able to apply the work-energy principles to identify, formulate and solve engineering problems in particle and rigid body dynamics.
• You will be able to apply the impulse-momentum principles to identify, formulate and solve engineering problems in particle and rigid body dynamics.

Please keep this document for further reference!