

MAE 3318 Kinematics and Dynamics

TTH 5:30PM~6:50PM at CH 101

INSTRUCTOR

Daejong Kim, Ph.D., Assistant Professor

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Instructor office hours: TTh 3:00-5:00pm and by appointment

Teaching assistant: TBD

Email: TBD

TA office hours: TBD

Location: TBD

Tel: TBD

COURSE DESCRIPTION

The motion and interaction of machine elements. Fundamental concepts of kinematics and dynamics applied to the determination of forces acting on the parts of machines.

COURSE OBJECTIVES

Synthesize mechanisms for specified performance. Analyze given mechanisms for position, velocity, and acceleration. Learn principles of cam design. Analyze static and dynamic forces at the joints

STUDENT'S LEARNING OUTCOMES

1. Basic concepts and principles of kinematics.
2. Ability to synthesize and analyze mechanism and kinematic linkages
3. Ability to identify, formulate and solve engineering dynamics problems

TEXTBOOKS

Design of Machinery (4th Edition)-An Introduction to the Synthesis and Analysis of Mechanisms and Machines by Robert L. Norton

CLASS SCHEDULE (Tentative, subject to change over semester)

Weeks	Topics	Assignments & Exams
Week 1 Aug 22~	Chapter 1: Introduction Ch 2: Kinematics Fundamentals (D.O.F.)	
Week 2 Aug 29~	Ch 2: Kinematics Fundamentals; cont.	HW 1 (Ch.2)
Week 3 Sep 5~	Ch.4 Position analysis	
Week 4 Sep 12~	Ch.5 Analytical linkage synthesis	HW 2 (Ch.4)
Week 5 Sep 19~	Ch.5 Analytical linkage synthesis; cont.	
Week 6	Ch.5 Analytical linkage synthesis; cont.	HW 3 (Ch.5)

Sep 26~		
Week 7 Oct 3~	Ch. 6 Velocity analysis	
Week 8 Oct 10~	Ch. 6 Velocity analysis; cont. Ch. 7 Acceleration analysis	HW 4 (Ch.6) Exam 1 (Weeks 1~6)
Week 9 Oct 17~	Ch. 7 Acceleration analysis; cont.	
Week 10 Oct 24~	Ch. 8 Cam design	HW 5 (Ch.7)
Week 11 Oct 31~	Ch. 8 Cam design; cont.	
Week 12 Nov 7~	Ch. 10 Dynamics fundamental	HW 6 (Ch.8)
Week 13 Nov 14~	Ch. 11 Force analysis	HW 7(Ch.10)
Week 14 Nov 21~	Ch. 11 Force analysis; cont.	Exam 2 (Weeks 7~11)
Week 15 Nov 28~	Ch. 12 Balancing	HW 8 (Ch.11)
Week 16 Dec 5~	Course review Dec 9: Last day of class (Final exam review) Final exam: Comprehensive Dec 13 th : 5:30~8:00pm	HW 9 (Ch.12)

GRADING

- 5% - Class participation (attendance, etc)
- 10% - Homework
- 20% - First exam
- 30% - Second exam
- 35% - Final exam

Course grading will be based on the following scale:

A (100-90%), B (89-80%), C (79-70%), D (69-60%) and F (below 59%)

COURSE REQUIREMENTS

1. Attendance - Students are expected to be on time, attend class sessions, complete reading assignments and be prepared to participate in class discussions. If a student misses a class, it is his/her responsibility to make up the missed class (i.e. get the course notes, assignments or announcement from other students). 5% of total course grade is from class participation, of which class attendance will be significant portion.

2. Homework assignments - Students should submit their homework assignments by 4:00pm on due dates in the classroom. **Late submission will not be graded.** The due dates will be announced during the class. If HW due date does not fall on lecture date, due is at 5:30pm at the instructor's office at WH213 or mailbox at WH 211

3. Exams - There will be two in-class exams and final exam given during this course. You must take all tests at their scheduled times.

4. Course website - Course website is available at <http://www-woolf.uta.edu/>. The login is "mae3318" and the password is "TBD".

6. Academic honesty - It is the philosophy of The University of Texas at Arlington that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspension or expulsion from the University.

"Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts." (Regents' Rules and Regulations, Series 50101, Section 2.2)

7. Students with disability - The University of Texas at Arlington is on record as being committed to both the spirit and letter of federal equal opportunity legislation; reference Public Law 92-112 - The Rehabilitation Act of 1973 as amended. With the passage of federal legislation entitled Americans with Disabilities Act (ADA), pursuant to section 504 of the Rehabilitation Act, there is renewed focus on providing this population with the same opportunities enjoyed by all citizens.

As a faculty member, I am required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Student responsibility primarily rests with informing faculty of their need for accommodation and in providing authorized documentation through designated administrative channels. Information regarding specific diagnostic criteria and policies for obtaining academic accommodations can be found at www.uta.edu/disability. Also, you may visit the Office for Students with Disabilities in room 102 of University Hall or call them at (817) 272-3364.