

MAE 3318 Kinematics and Dynamics of Machines
TTH 5:30PM~7:20PM at WH208

INSTRUCTOR

Jeongpill Ki, Ph.D., Adjunct Lecturer

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Instructor office hours: TTh 3:00~5:00 and by appointment

Teaching Assistant: Mr. Ashley Chase Guy

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TA office hours: MW 10:00~12:00

Location: WH323B

Tel: 985-859-0585

COURSE DESCRIPTION

This course teaches how to analyze motions (position, velocity, acceleration) of machine components within kinematic linkage using vector algebra and modern engineering tool. The course also teaches how to synthesize specific kinematic linkage to achieve certain prescribed motion. The course also covers cam design principle and force analysis on the kinematic joints within a linkage when the linkage is under certain motion.

STUDENT'S LEARNING OUTCOMES

1. Students will be able to identify degree of freedom of linkage system
2. Students will be able to synthesize mechanism to perform certain prescribed task/motion
3. Students will be able to apply math to analyze motion of mechanism
4. Students will be able to identify, formulate and solve engineering dynamics to find joint forces, and external forces/moments
5. Students will be able to apply computing software to reach the outcomes listed above

TEXTBOOKS

Design of Machinery (4th/5th 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 June 3 ~	Chapter 1: Introduction Ch 2: Kinematics Fundamentals (Degree of Freedom)	HW1 (Ch.2)
Week 2 June 10 ~	Ch 4 Position analysis	HW2 (Ch.4)

Week 3 June 17 ~	Ch 5 Analytical linkage systems	
Week 4 June 24 ~	Ch 5 Analytical linkage systems; cont.	HW3 (Ch.5)
Week 5 July 1 ~	Ch 6 Velocity analysis	HW4 (Ch.6)
Week 6 July 8 ~	Ch 6 Velocity analysis; cont.	Midterm (Ch 1~6)
Week 7 July 15 ~	Ch 7 Acceleration analysis	HW5 (Ch.7)
Week 8 July 22 ~	Ch 8 Cam design	HW6 (Ch.8)
Week 9 July 29 ~	Ch 10 Dynamics fundamental Ch 11 Force analysis	HW7 (Ch.11)
Week 10 Aug 05 ~	Ch 11 Force analysis; cont. Aug 8: Last day of class (Final exam review)	
Week 11 Aug 12 ~	Final exam	Comprehensive

GRADING

5% - Class participation (attendance, etc)

15% - Homework

35% - Midterm exam

45% - Final exam

Course grading will be based on the following scale:

A (100-85%), B (84-75%), C (74-65%), D (64-50%) and F (below 50%)

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 5:30pm 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 WH323J or mailbox at WH 204

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

4. Course website - TBD

5. 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)

6. 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.