MAE 3318 Kinematics and Dynamics
TTh 5:30PM~6:50PM at NH 106

INSTRUCTOR
Daejong Kim, Ph.D., Assistant Professor
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Instructor office hours: TTh 3-5pm and by appointment

Teaching assistant: TBD
Email: TBD
TA office hours: 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. Introduction to Lagrangian equation

COURSE OBJECTIVES
Synthesize mechanisms for specified performance. Analyze given mechanisms for position, velocity, and acceleration. Analyze static and dynamic forces at the joints. Learn to derive equation of motion of dynamic system using Lagrangian method

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
4. Ability to use Lagrangian equation to derive equation of motion

TEXTBOOKS
Design of Machinery (3rd 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 Jan 18~	Chapter 1: Introduction Ch 2: Kinematics Fundamentals (D.O.F.)	
Week 2 Jan 24~	Ch 2: Kinematics Fundamentals; cont.	HW 1 (Ch.2)
Week 3 Feb 1~	Ch.4 Position analysis	HW 2 (Ch.4)
Week 4 Feb 8~	Ch.5 Analytical linkage synthesis	
Week 5 Feb 15~	Ch.5 Analytical linkage synthesis; cont.	HW 3 (Ch.5)

Week 6 Mar 1~	Ch. 6 Velocity analysis (analytical method)	HW 4 (Ch.6)
Week 7 Mar 8~	Ch. 7 Acceleration analysis (analytical method)	HW 5 (Ch.7) Exam 1 (Weeks 1~6)
Week 8 Mar 15~	Spring breaks	
Week 9 Mar 22~	Ch. 11 Force analysis	
Week 10 Mar 29~	Ch. 11 Force analysis; cont. April 2: Last day to drop the course	HW 6 (Ch.11)
Week 11 Apr 5~	Work and energy (Lecture note) Generalized coordinates (Lecture note)	HW 7
Week 12 Apr 12~	Introduction to Variational Principle (Lecture note) Hamiltonian Principle (Lecture note)	Exam 2 (Weeks 7~10)
Week 13 Apr 19~	Lagrangian Equation (Lecture note)	
Week 14 Apr 26~	Lagrangian Equation; cont.	HW 8
Week 15 May 3~	Final Review Week May 07: Last day of classes	
Week 16	Final exam: May 11 (Tuesday) 5:30pm~8pm	

GRADING

15% - 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).

2. Homework assignments - Students should submit their homework assignments by 5:00pm on due dates at the instructor's mailbox at WH211. **Late submission will not be graded.** The due dates will be announced during the class.

3. Exams - There will be two in-class exams and a 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 "3318kim" and the password is "engineerials9179".

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.