MAE 3318-001: KINEMATICS AND DYNAMICS OF MACHINES
Summer 2015

Instructor: Dr. Hakki Erhan Sevil

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Office Hours: MW 5:00 - 6:00pm

Teaching Assistant: TBA

Office: TBA

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Office Hours: TBA

Section Information: MAE 3318-001

Time and Place of Class Meetings: Woolf Hall (WH) 308, MW 6:00-7:50pm

Course Website: UTA Blackboard - http://elearn.uta.edu/

Description of Course Content: This course teaches how to analyze motion (position, velocity, acceleration) of kinematic mechanisms using vector algebra and modern engineering tools. The course also teaches how to synthesize specific kinematic mechanisms to achieve certain prescribed motion. The course also covers cam design principle and force analysis on the kinematic joints when the linkage is under certain motion.

Prerequisites: C or better in MAE 2323.

Student 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

Required Textbooks and Other Course Materials: Design of Machinery - An Introduction to the Synthesis and Analysis of Mechanisms and Machines, 5th Edition, Robert L. Norton, McGraw-Hill

Descriptions of major assignments and examinations:

1. Homework
   There will be approximately weekly homework assignments. Homework is due at the beginning of class on the due date. No late homework will be accepted.
2. Midterm Exam
   There will be two in-class midterm exams. Exams will be closed book, closed notes. There are no make-up exams (Unless the instructor is notified in advance and approve of it, and reasons for absence must be documented).
3. Final Exam
   The final exam will be comprehensive, and closed book, closed notes. The exam will be held at the time given in the course shedule. There is no make-up final exam (Unless the instructor is notified in advance and approve of it, and reasons for absence must be documented).

Attendance: Attendance is required and strongly recommended.

Grading:

Homework	10%
Midterm Exam 1	25%
Midterm Exam 2	25%
Final Exam	40%

A = 100-90%, B = 89-80%, C = 79-70%, D = 69-60%, F = below 60%.

Drop Policy: Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance**. Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (http://wweb.uta.edu/aao/fao/). Last day to drop classes is July 23, 2015; submit requests to advisor prior to 4:00 pm.

Americans with Disabilities Act: The University of Texas at Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including the *Americans with Disabilities Act (ADA)*. All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

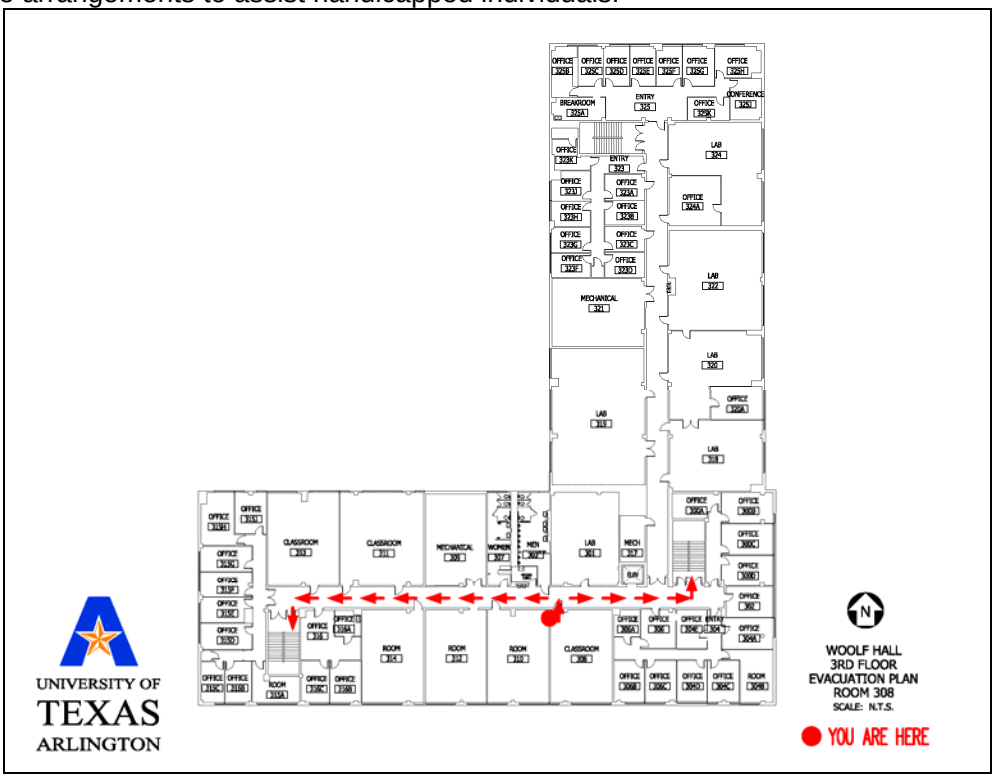
Academic Integrity: Students enrolled in this course are expected to adhere to the UT Arlington Honor Code:

> *I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.*
>
> *I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.*

UT Arlington faculty members may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents' Rule* 50101, §2.2, suspected violations of university's standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student's suspension or expulsion from the University.

Student Support Services: UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at www.uta.edu/resources.

Emergency Exit Procedures: Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit (see figure below). When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist handicapped individuals.



Course Schedule: *(tentative)*

Week 1 ~ Jun 08	Ch 1: Introduction Ch 2: Kinematics Fundamentals	HW-1
Week 2 ~ Jun 15	Ch 4: Position Analysis	HW-2
Week 3 ~ Jun 22	Ch 5: Analytical Linkage Synthesis	HW-3
Week 4 ~ Jun 29	Ch 6: Velocity Analysis	Exam 1 (Wed, July 1)
Week 5 ~ Jul 6	Ch 6: Velocity Analysis	HW-4
Week 6 ~ Jul 13	Ch 7: Acceleration Analysis	HW-5
Week 7 ~ Jul 20	Ch 8: Cam Design Ch 9: Gear Trains	HW-6 HW-7
Week 8 ~ Jul 27	Ch 10: Dynamics Fundamental	Exam 2 (Mon, Jul 27)
Week 9 ~ Aug 3	Ch 11: Force Analysis	
Week 10 ~ Aug 10	Final Exam Monday, Aug 10, 6:00-8:30 pm	