

MECH 3350 – Kinematics and Dynamics of Mechanical Systems

Professor Contact Information

Dr. Oziel Rios

Office: ECSW 2.150 D
Office Hours: **Virtual** on Microsoft Teams and **In-Person** by appointment
Phone: (972) 883-4690
Email: oziel.rios@utdallas.edu

Prof. Rios is available for any course-related questions. When sending an email, make sure to include the class and section number (e.g., MECH 3350.001). Grades will only be discussed in person. It is your responsibility to schedule an appointment that is convenient for both you and the professor.

Course Pre-Reqs, Co-Reqs and Other Restrictions

Pre-requisite(s): ENGR 2300 – Linear Algebra for Engineers
MATH 2420 – Differential Equations with Applications
MECH 2330 – Dynamics
ENGR 3300 – Advanced Engineering Mathematics
Co-requisite: None
Other Restrictions: None

Course Description and Learning Outcomes

Description: Motion and interaction of machine elements and mechanisms. Kinematics, statics, and dynamics are applied for analysis and design of the parts of machines such as planar mechanisms, cams, and gears.

Learning Outcomes:

1. Be able to formulate problems that describe the state of position, velocity, and acceleration in mechanisms.
2. Be able to formulate problems that describe the state of static and dynamic forces and torques in mechanisms.
3. Be able to solve problems that describe the state of position, velocity, and acceleration in mechanisms.
4. Be able to solve problems that describe the state of static and dynamic forces and torques in mechanisms.
5. Identify and quantify the requirements, constraints, and trade-offs for selected components such as cams and gears.

Topics Covered:

1. Kinematic joints, skeleton diagrams, and mobility analysis

2. Kinematic analysis of mechanisms (position, velocity, and acceleration) including linkages, cams and gear trains
3. Dynamic analysis of mechanisms
4. Kinematic synthesis of linkages

Required Textbooks and Materials

Mechanisms and Machines: Kinematics, Dynamics, and Synthesis
 By Michael M. Stanisic
 Cengage Learning, ISBN: 978-1-133-94391-4

Grading Policy

Final grades will be evaluated as follows:

Assignments and Quizzes	25%
Exam 1	25%
Exam 2	25%
Group Project	25%

Quizzes, assignments, or other activities will be given throughout the semester (see schedule in eLearning). Lecture attendance is required.

You have one (1) week (7 calendar days) days to appeal any grade (contact the professor or TA). The days will be counted starting from the day the item in question is returned or the grade has been provided in eLearning.

Final letter grades will be assigned according to the following ranges. This guideline is subject to change at the discretion of the instructor.

A+ $97 \leq x$	C+ $77 \leq x < 80$
A $93 \leq x < 97$	C $73 \leq x < 77$
A- $90 \leq x < 93$	C- $70 \leq x < 73$
B+ $87 \leq x < 90$	D+ $67 \leq x < 70$
B $83 \leq x < 87$	D $63 \leq x < 67$
B- $80 \leq x < 83$	D- $60 \leq x < 63$
	F $60 > x$

Course Policies

Comet Creed

“As a Comet I pledge honesty, integrity and service in all that I do.”

Email

Email must be sent from your UTD email account to UTD email address of the professor or TA. Include the class and section number (e.g., MECH 3350.001).

Assignments

Assignments **must be submitted in eLearning** on date and time indicated by the professor. Late work will be accepted with the following penalties:

- 1 calendar day (24 hrs) or less late will result in a **15% deduction** of total grade.
- 2 calendar days (48 hrs) or less late will result in a **30% deduction** of total grade.
- 3 calendar days (72 hrs) or less late will result in a **45% deduction** of total grade.
- Deliverables more than 3 days late will receive a grade of **zero (0)**.

Important notes:

- Handwritten work needs to be scanned into PDF format and must be legible in eLearning to receive full credit.
- Points deducted due to incorrect work will be in addition to any late point deductions.
- The late times are counted during weekdays and weekends.
- Submissions of late work should be made using the deliverable links in eLearning. Do not email late work.

In case you miss a deadline and have a proper excuse, it is your responsibility to provide the instructor with proper documentation (university sponsored event, doctor's notice, etc.). Issues with your WIFI or personal computer can't be verified.

Exams

The content of exams may not be published, reproduced, or shared with anyone other than the instructor or TA, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

In case you miss an exam and have a proper excuse, it is your responsibility to provide the instructor with proper documentation (university sponsored event, doctor's notice, etc.). Make-up exams must be scheduled within one (1) week (7 calendar days) of original exam date.

Rules for Exams

1. The exams will be taken during class time.
2. You will be allowed to use your notes, the textbook, a calculator, and your laptop/ipad/tablet during the exams.
3. Do not use online resources (videos, websites, etc.) during the exam.
4. **You must work individually (don't communicate with your peers, no texting, no social media, etc.).**
5. Address any questions to the professor or TA.
6. Being late is not acceptable and not a valid reason to request an extension or make-up exam. Be prepared to arrive early to campus on exam days to give yourself enough time for parking and walking to class.
7. The exams must be completed within class time and submitted when professor or TA requests it.

Academic Dishonesty

Academic dishonesty will not be tolerated and will result in a grade of **F** in this course.

University Policies

Academic Integrity: The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrates a high standard of individual honor in his or her scholastic work.

Academic Dishonesty: Academic dishonesty can occur in relation to any type of work submitted for academic credit or as a requirement for a class. It can include individual work or a group project. Academic dishonesty includes plagiarism, cheating, fabrication, and collaboration/collusion. In order to avoid academic dishonesty, it is important for students to fully understand the expectations of their professors. This is best accomplished through asking clarifying questions if an individual does not completely understand the requirements of an assignment.

Academic dishonesty will not be tolerated. All suspected cases of academic dishonesty will be sent to the Dean of Students (see <http://www.utdallas.edu/deanofstudents/managing/>). If it is determined that academic dishonesty occurred you will receive a grade of **F** in this course.

Sharing Confidential Information: Students considering sharing personal information in email, in person, or within assignments or exams should be aware that faculty members and teaching/research assistants are required by UT Dallas policy to report information about sexual misconduct to the UT Dallas Title IX Coordinator. Per university policy, faculty have been informed that they must identify the student to the UT Dallas Title IX Coordinator. Students who wish to have confidential discussions of incidents related to sexual harassment or sexual misconduct should contact the Student Counseling Center (972-883-2527 or after hours 972-UTD-TALK or 972-883-8255), the Women's Center (972-883-8255), a health care provider in the Student Health Center (972-883-2747), the clergyperson (or other legally recognized religious advisor) of their choice, or an off-campus resource (i.e., rape crisis center, doctor, psychologist). Students who are sexually assaulted, harassed, or victims of sexual misconduct, domestic violence, or stalking, are encouraged to directly report these incidents to the UT Dallas Police Department at 972-883-2222 or to the Title IX Coordinator at 972-883-2218. Additional information and resources may be found at <http://www.utdallas.edu/oiec/title-ix/resources>.

Student Accessibility: It is the policy and practice of The University of Texas at Dallas to make reasonable accommodations for students with properly documented disabilities. However, written notification from the Office of Student AccessAbility (OSA) is required. If you are eligible to receive an accommodation and would like to request it for this course, please discuss it with me and allow one week advance notice. Students who have questions about receiving accommodations, or those who have, or think they may have, a disability (mobility, sensory, health, psychological, learning, etc.) are invited to contact the Office of Student AccessAbility for a confidential discussion. OSA is located in the Student Services Building, suite 3.200. They can be reached by phone at (972) 883-2098, or by email at studentaccess@utdallas.edu.

Technical Support: If you experience any issues with your UT Dallas account, contact the UT Dallas Office of Information Technology Help Desk: assist@utdallas.edu or call 972-883-2911. UT Dallas provides eLearning technical support 24 hours a day/7 days a week. The services include a toll free telephone number for immediate assistance (1-866-588-3192), email request service, and an online chat service. Please use this link to access the UTD eLearning Helpdesk: <http://www.utdallas.edu/elearning/eLearningHelpdesk.html>.

Student Conduct and Discipline: The University of Texas System (Regents' Rule 50101) and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of their business. It is the responsibility of each student and each student organization to be knowledgeable about the rules and regulations which govern student conduct and activities. General information on student conduct and discipline is contained in the UT Dallas online catalogs (<http://catalog.utdallas.edu>).

For a full list of university policies, please visit <http://go.utdallas.edu/syllabus-policies>.

THE INFORMATION IN THIS DOCUMENT IS SUBJECT TO CHANGE AT THE DISCRETION OF THE PROFESSOR.