

Mechanical Engineering Analysis I

TR 3:05 - 4:20 PM ACSB 2.146

TR 4:30 - 5:45 PM ACSB 2.146

TR 5:55 - 7:10 PM ACSB 2.146

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EPOB 1.104 C TR 2:00 - 3:00 PM

Textbook

Kreyszig, E., Advanced Engineering Mathematics, 10th Ed., Wiley, 2011.

Course Description

The course equips engineering students to be able to solve problems in the following topics: complex numbers and calculus of complex functions; matrix and vector algebra, linear systems of equations and matrix eigenvalue problems; vector differential and integral calculus, including integral theorems and their uses in engineering applications; unconstrained and constrained optimization, including linear and quadratic programming.

Prerequisites

Credit with a minimum grade of a **C** in Calculus II, MATH 2414, and/or concurrent enrollment in Numerical Methods, MECE 2350.

Learning Objectives/Outcomes

1) Use linear algebra to solve problems of engineering systems that can be represented using linear systems of equations. 2) Solve eigenvalue problems including but not limited to vibration systems. 3) Utilize vector differential calculus to solve engineering problems like in thermo-fluid systems. 4) Make use of vector integral calculus including surface and volume integrals as applied in fluid and solid mechanics. 5) Employ complex numbers and functions as commonly used in the frequency domain analysis of dynamic responses. 6) Understand basic probability and its use in analysis of experimental data. 7) Understand basic statistics and its use in analyzing experimental data. 8) Use MATLAB or similar numerical software to aid in solving engineering problems using the Mathematical methods presented herein.

Grading Policy

Labs are a portion of the overall grade for Mechanical Engineering Analysis I Lecture (MECE 3449 - 01,02). Labs will NOT be graded if submitted late or submitted in advance. The instructor will be charge of any and all labs; administering, grading, etc.

Lab Policy

Students can only attend the lab session in which they are registered. Do not use cell phones or the internet during the lab session or you will be asked to leave and will be unable to submit the lab. Take the lecture notes and examples to the lab as they will be helpful for solving any problems. Be on time to the lab; open Blackboard, MS Word, and MATLAB. Students need to leave the lab right after the lab session is over.

Departmental Attendance

Attendance will be taken every time the class meets. Any student arriving to class 5 minutes after the class has started will not be allowed in class. Students will be allowed a maximum of three absences for the whole semester for classes meeting twice a week, two absences for classes meeting once a week, and one absence for laboratory courses. Five points will be deducted from the total (100%) for each absence exceeding the maximum allowable unless documentation justifying that absence is provided. Students will not be permitted to leave the classroom during lectures and exams except for extreme emergencies.

Calender

The UTRGV academic calendar and final exam schedule can be found at <https://my.utrgv.edu/home> at the bottom of the screen, prior to login. Some important dates for Spring 2017 include:

Jan 16	First day of class for full semester
Jan 19	Last day to add a class for fall 2017 semester
Mar 12	Spring Break, No Classes
Apr 12	Last day to drop (DR grade) a class or withdraw (grade of W)
May 2	Last day of classes for full semester
May 3	Study Day, No classes
May 4	Final Exams (Schedule)

Drop Policy

January 12th, 2018, Last day to drop a class before it appears on the transcript and counts toward the 6-drop limit. Last day to receive a 100% refund for dropped classes (other policies apply when a student is withdrawing from all classes).

April 13th, 2017, Drop/Withdrawal Deadline; last day for students to drop the course and receive a DR grade. After this date, students will be assigned a letter grade for the course that will count on the GPA.

Students with Disabilities

If you have a documented disability (physical, psychological, learning, or other disability which affects your academic performance) and would like to receive academic accommodations, please inform your instructor and contact Student Accessibility Services to schedule an appointment to initiate services. It is recommended that you schedule an appointment with Student Accessibility Services before classes start. However, accommodations can be provided at any time. **Brownsville Campus:** Student Accessibility Services is located in Cortez Hall Room 129 and can be contacted by phone at (956) 882-7374 (Voice) or via email at ability@utrgv.edu . **Edinburg Campus:** Student Accessibility Services is located in 108 University Center and can be contacted by phone at (956) 665-7005 (Voice), (956) 665-3840 (Fax), or via email at ability@utrgv.edu .

Mandatory Course Evaluation Period

Students are required to complete an ONLINE evaluation of this course, accessed through

your UTRGV account (<https://my.utrgv.edu/home>); you will be contacted through email with further instructions. Students who complete their evaluations will have priority access to their grades. Online evaluations will be available:

Feb 14 - 20 for Module 1 courses

Apr 11 - 17 for Module 2 courses

Apr 11 - May 2 for full spring semester courses

Attendance

Students are expected to attend all scheduled classes and may be dropped from the course for excessive absences. UTRGVs attendance policy excuses students from attending class if they are participating in officially sponsored university activities, such as athletics; for observance of religious holy days; or for military service. Students should contact the instructor in advance of the excused absence and arrange to make up missed work or examinations.

Scholarstic Integrity

As members of a community dedicated to Honesty, Integrity and Respect, students are reminded that those who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and expulsion from the University. Scholastic dishonesty includes but is not limited to: cheating, plagiarism, and collusion; 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. Since scholastic dishonesty harms the individual, all students and the integrity of the University, policies on scholastic dishonesty will be strictly enforced (Board of Regents Rules and Regulations and UTRGV Academic Integrity Guidelines). All scholastic dishonesty incidents will be reported to the Dean of Students.

Sexual Harassment, Discrimination, and Violence

In accordance with UT System regulations, your instructor is a **responsible employee** for reporting purposes under Title IX regulations and so must report any instance, occurring during a students time in college, of sexual assault, stalking, dating violence, domestic violence, or sexual harassment about which she/he becomes aware during this course through writing, discussion, or personal disclosure. More information can be found at www.utrgv.edu/equity, including confidential resources available on campus. The faculty and staff of UTRGV actively strive to provide a learning, working, and living environment that promotes personal integrity, civility, and mutual respect in an environment free from sexual misconduct and discrimination.

Course Drops

According to UTRGV policy, students may drop any class without penalty earning a grade of DR until the official drop date. Following that date, students must be assigned a letter grade and can no longer drop the class. Students considering dropping the class should be aware of the 3-peat rule and the 6-drop rule so they can recognize how dropped classes may affect their academic success. The 6-drop rule refers to Texas law that dictates that under-

graduate students may not drop more than six courses during their undergraduate career. Courses dropped at other Texas public higher education institutions will count toward the six-course drop limit. The 3-peat rule refers to additional fees charged to students who take the same class for the third time.