



MECE 6384 | Methods of Applied Mathematics I

Section: 15618 | Synchronous Online

Cr: 3. (3-0). Prerequisites: Successful completion of a math placement test to be given on first day of class or consent of department. The theory and application of mathematical methods of partial differential equations arising in analytical engineering models.

General Course Information

Course Meeting Time: MoWe 2:30PM - 4:00PM

Course Meeting Location: CBB108

Instructor Information

Theocharis Baxevanis

Department: Mechanical & Aerospace Engineering

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Phone: (713) 743-9165

Office Hours

N232, Engng Bldg 1, 1st floor: MoWe 4:00–5:30pm

Course Objectives and Student Learning Outcomes

To gain a solid background in applied mathematics as related to various research areas of science and engineering.

Required Instructional Materials

Erwin Kreyszig, Advanced Engineering Mathematics, 10th edition. John Wiley & Sons, 2011.

ISBN: 9780470458365

Course Schedule, Assignments, and Assessments

HWs	10%
Exam I – Wednesday, September 23, 2:30 pm–4:00 pm	30%
Exam II – Wednesday, October 28, 2:30 pm–4:00 pm	30%
Exam III – Wednesday, December 2, 2:30 pm–4:00 pm	30%

Discussion and Lecture Topics

- Matrices and Vector spaces
- Vector calculus
- Line, Surface, and Volume Integrals
- Integral Transforms
- Ordinary Differential Equations
- Partial Differential Equations

Grading Rubrics and Weights

At the end of the semester, the total scores for all students will be arranged in numerical order, the score that corresponds to either the 97th (S97) will be determined, and then letter grades will be assigned based on this percentile score as follows:

A: $0.94 \times S97 < \text{Total Score}$

A-: $0.90 \times S97 < \text{Total Score} < 0.94 \times S97$

B+: $0.87 \times S97 < \text{Total Score} < 0.90 \times S97$

B: $0.84 \times S97 < \text{Total Score} < 0.87 \times S97$

B-: $0.80 \times S97 < \text{Total Score} < 0.84 \times S97$

C+: $0.77 \times S97 < \text{Total Score} < 0.80 \times S97$

C: $0.74 \times S97 < \text{Total Score} < 0.77 \times S97$

C-: $0.70 \times S97 < \text{Total Score} < 0.74 \times S97$

D+: $0.67 \times S97 < \text{Total Score} < 0.70 \times S97$

D: $0.64 \times S97 < \text{Total Score} < 0.67 \times S97$

D-: $0.60 \times S97 < \text{Total Score} < 0.64 \times S97$

F: $\text{Total Score} < 0.60 \times S97$

This system has several advantages because

- unlike an absolute scale, it tends to neutralize the effects of differences from one semester to another and thereby ensures that the same criteria are used to assign grades from one semester to another, and
- unlike a curved scale, it encourages cooperation among students because NO student is penalized when another is successful

This approach to grading means that the grade you earn in this course depends primarily on your own effort and performance. It also ensures that all students who do well in the course will get good grades. Periodically during the semester, your total points and the 97th (S97) will be calculated and posted so that you can determine your tentative letter grade and see how well you are doing in the course.

Course Policies and Procedures

Amnesty Policy

If it helps improve the final letter grade for a student, the lower exam score will be dropped, and the weightage will be redistributed over the other exams. This will be applied to all students.

HWs

Homework assignments are to be taken very seriously. They will be uploaded on Canvas every week and will be **self-graded** (see FAQs at the end). Solutions will be posted on Canvas one week after the assignment is given out. Homework assignments and the graded homeworks are to be submitted through Canvas by the respective due dates. Technology failures will not be accepted as reason for late homework submissions, so do not wait until the last minute to submit your homework.

Exams

- Absolutely no communication in any form is allowed between students during examinations.
- All exams will be open books and notes. No electronic devices will be allowed except a scientific calculator.
- Questions regarding grading of the exam and quizzes should be discussed within 5 days of the time the tests are returned.

Missed Exams.— If you miss taking an exam, you will receive a zero on the exam unless you do

the following:

1. Immediately—as soon as possible but no later than 12 hours after the scheduled exam—notify your instructor.
2. As soon as possible, e-mail to your instructor a written explanation describing the event beyond your control that prevented you from taking the exam.

For those students having a legitimate, acceptable excuse for missing an exam, a makeup exam, ORAL or WRITTEN at the instructor's discretion, will be scheduled. It is your responsibility to arrange that with your instructor. Remember

the 12-hour deadline. The time and place of the ORAL or WRITTEN EXAM will be worked out among those involved.

Syllabus Changes

Please, note that the instructor may need to make modifications to the course syllabus. Notice of such changes will be announced as quickly as possible.

Frequently Asked Questions

- *How do I adequately study for the course?*

Slides/videos of the lectures will be uploaded at appropriate times. Students are expected to review their notes to keep up with the class. As we complete each topic, a question bank will be provided to students for self-practice. Only final answers will be provided to these questions from the question bank. Some assignments will be created out of these question banks, for which full solutions will be provided. Students are expected to study all this material to adequately prepare for the quizzes and exams.

- *How do I grade my own homework?*

Let's say a question carries 10 point. Looking at the solution provided, you can use the following rubric for grading:

Completely correct: 10

Minor mistakes: 7.5

Major mistakes: 5.0

Incorrect approach or lack of understanding: 2.5

No attempt: 0

I will use a similar rubric to grade the exams except for multiple-choice questions that will not have partial credits.

- *Can I submit a late homework?*

No. Homework assignments are a very important part of this class. Doing homework assignments sincerely and on time, will help you be prepared for the exams.

- *Can you move the exam or quiz date since I will miss it due to travel etc?*

No. The exam or quiz date cannot be moved. If you think you have a valid reason for not being able to give an exam or quiz, you need to discuss it with me prior to the exam.

- *I did not do well in the exams. Can I do a project to earn extra credits?*

No. The focus of this class is to develop a background in mechanics and relevant mathematical skills and to learn to use these tools in various areas of engineering. This can only be achieved through sufficient practice and evaluated through exams.

- *Can I ask questions?*

Absolutely! I strongly encourage questions and discussion in class. You are also encouraged to make use of my office hours if you have any questions regarding the course material or assignments.

- *Do I have to attend all the classes?*

I strongly encourage you not to miss any classes. I however don't take attendance. You are responsible for your own actions. I do take attendance during exam and quiz days.

- *I think you were too strict in the grading of this exam and I feel I deserve extra 2 points on this question. Would you please re-consider it?*

No. Grading standard is uniform throughout the class. Only under special cases (i.e., incorrect tallying of the scores) will I alter the exam scores. Please remember that if my grading has been harsh or easy on your exam it has also been so for your peers.

University Policies and Student Support Resources

Mental Health and Wellness Resources

The University of Houston has a number of resources to support students' mental health and overall wellness, including [CoogsCARE](#) and the [UH Go App](#). [UH Counseling and Psychological Services \(CAPS\)](#) offers 24/7 mental health support for all students, addressing various concerns like stress, college adjustment and sadness. CAPS provides individual and couples counseling, group therapy, workshops and connections to other support services on and off- campus. For assistance visit uh.edu/caps, call 713-743-5454, or visit a [Let's Talk](#) location in-person or virtually. Let's Talk are daily, informal confidential consultations with CAPS therapists where no appointment or paperwork is needed.

Need Support Now? If you or someone you know is struggling or in crisis, help is available. Call CAPS crisis support 24/7 at 713-743-5454, or the National Suicide and Crisis Lifeline: call or text 988, or chat 988lifeline.org.

Title IX/Sexual Misconduct

Per the UHS Sexual Misconduct Policy, your instructor is a "responsible employee" for reporting purposes under Title IX regulations and state law and must report incidents of sexual misconduct (sexual harassment, non-consensual sexual contact, sexual assault, sexual exploitation, sexual intimidation, intimate partner violence, or stalking) about which they become aware to the Title IX office (known at UH as the Equal Opportunity Services office or "EOS"). Please know there are places on campus where you can make a report in confidence. You can find more information about resources on the UH [Title IX/Sexual Misconduct Resources page](#). Please note that you may also report concerns of discrimination based on your protected class identity to EOS.

Reasonable Academic Adjustments/Auxiliary Aids

The University of Houston is committed to providing an academic environment and educational programs that are accessible for its students. Any student with a disability who is experiencing barriers to learning, assessment or participation is

encouraged to contact the Justin Dart, Jr. Student Accessibility Center (Dart Center) to learn more about academic accommodations and support that may be available to them. Students seeking academic accommodations will need to register with the Dart Center as soon as possible to ensure timely implementation of approved accommodations. Please contact the Dart Center by visiting the website: <https://uh.edu/accessibility/> calling (713) 743-5400, or emailing jdcenter@Central.UH.EDU.

The [Student Health Center](#) offers a Psychiatry Clinic for enrolled UH students. Call 713-743-5149 during clinic hours, Monday through Friday 8 a.m. - 4:30 p.m. to schedule an appointment.

The [A.D. Bruce Religion Center](#) offers spiritual support and a variety of programs centered on well-being.

The [Center for Student Advocacy and Community \(CSAC\)](#) is where you can go if you need help but don't know where to start. CSAC is a "home away from home" and serves as a [resource hub](#) to help you get the resources needed to support academic and personal success. Through our [Cougar Cupboard](#), all students can get up to 30 lbs of FREE groceries a week. Additionally, we provide 1:1 appointments to get you connected to on- and off-campus resources related to essential needs, safety and advocacy, and more. The [Cougar Closet](#) is a registered student organization advised by our office and offers free clothes to students so that all Coogs can feel good in their fit. We also host a series of cultural and community-based events that foster social connection and helps the cougar community come closer together. Visit the CSAC homepage or follow us on Instagram: @uh_CSAC and @uhcupbrd. YOU belong here.

Cougar Parent and Family Engagement Office

This office, under the Dean of Students Office (<https://www.uh.edu/dos/>), coordinates resources for Pregnant and Parenting Students (<https://www.uh.edu/dos/parenting-students/>), Parents and Family members of UH students (<https://www.uh.edu/dos/parents/>), and Sexual Misconduct Support Services (<https://www.uh.edu/dos/sexual-misconduct-support-services/>). A description of available support and resources are provided on the respective web

pages. The Cougar Parent and Family Engagement Office is located in Student Center South, room B12.

Academic Honesty Policy

High ethical standards are critical to the integrity of any institution, and bear directly on the ultimate value of conferred degrees. All UH community members are expected to contribute to an atmosphere of the highest possible ethical standards. Maintaining such an atmosphere requires that any instances of academic dishonesty be recognized and addressed. The [UH Academic Honesty Policy](#) is designed to handle those instances with fairness to all parties involved: the students, the instructors, and the University itself. All students and faculty of the University of Houston are responsible for being familiar with this policy.

Excused Absence Policy

Regular class attendance, participation, and engagement in coursework are important contributors to student success. Absences may be excused as provided in the University of Houston [Undergraduate Excused Absence Policy](#) and [Graduate Excused Absence Policy](#) for reasons including medical illness of student or close relative, death of a close family member, legal or government proceeding that a student is obligated to attend, recognized professional and educational activities where the student is presenting, and University-sponsored activity or athletic competition. Under these policies, students with excused absences will be provided with an opportunity to make up any quiz, exam or other work that contributes to the course grade or a satisfactory alternative. Please read the full policy for details regarding reasons for excused absences, the approval process, and extended absences. Additional policies address absences related to [military service](#), [religious holy days](#), [pregnancy and related conditions](#), and [disability](#).

Recording of Class

Students may not record all or part of class, livestream all or part of class, or make/distribute screen captures, without advanced written consent of the instructor. If you have or think you may have a disability such that you need to record class-related activities, please contact the [Justin Dart, Jr. Student Accessibility Center](#). If you have an accommodation to record class-related

activities, those recordings may not be shared with any other student, whether in this course or not, or with any other person or on any other platform. Classes may be recorded by the instructor. Students may use instructor's recordings for their own studying and notetaking. Instructor's recordings are not authorized to be shared with anyone without the prior written approval of the instructor. Failure to comply with requirements regarding recordings will result in a disciplinary referral to the Dean of Students Office and may result in disciplinary action.