TEXAS A&M UNIVERSITY

Fall 2020 Engineering Mathematics III

SYLLABUS

COURSE INFORMATION

Course Number:	MATH 251
Course Title:	Engineering Mathematics III
Section:	502
Time:	MWF 9:20am-10:10am
Location:	Remote Online Teaching Only via ZOOM
Zoom ID:	The ZOOM ID will be posted in **Canvas**.
Credit Hours:	3

INSTRUCTOR DETAILS

Instructor:	Samuel Harris
Office:	See ZOOM link on **Canvas**
Phone:	Math Department: 979-845-3261 *(There is no phone in my office; email is the best method of correspondence.)*
E-Mail:	sharris <at> tamu.edu
Office Hours:	On ZOOM, MW 2:00pm-4:00pm

COURSE DESCRIPTION

MATH 251 Vector algebra, calculus of functions of several variables, partial derivatives, directional derivatives, gradient, multiple integration, line and surface integrals, Green's and Stokes' theorems.

COURSE PREREQUISITES

Prerequisite: MATH 148/152/172, or equivalent

TEXTBOOK AND/OR RESOURCE MATERIALS

TEXTBOOK: Calculus: Early Transcendentals (Custom Edition) by Stewart; Cengage Learning.

Note: You will be required to purchase access to the online homework system, WebAssign, but doing so will automatically give you access to the eBook. There are a variety of purchasing options available (course specific access or Cengage Unlimited). This access can be purchased through the local bookstores or on WebAssign. Starting on the first day of classes, you will be granted access for a trial period while you determine the appropriate purchasing option for you.

WEBASSIGN ACCESS: WebAssign will be used for homework in this class. In order to use WebAssign, you must purchase access. For access purchasing information and options, please visit

http://www.math.tamu.edu/courses/eHomework/

CALCULATOR: Calculators are not allowed on quizzes or tests.

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Mode of Delivery

Lectures will be delivered **synchronously** during the scheduled class time and recorded via ZOOM. All course-related materials will be posted on Canvas. There will be in-class quizzes, which will be posted and submitted on **Gradescope.** (Gradescope is free, and all instructions for accessing and using Gradescope will be on Canvas.) The quizzes will be done in the last 20 minutes of class on most Fridays. Students MUST attend lecture to take the quiz.

Course Learning Outcomes

We will cover Chapter 12 to Chapter 16 of the book. We will generalize notations already seen in two-dimensional calculus to three dimensional space as vectors and we will cover different concepts used in physics, engineering, and electronics. At the end of this course, students should be able to manipulate these concepts correctly in order to apply techniques seen in this course to engineering applications. In particular, students should be able to:

- Perform Calculus operations on vector-valued functions, including derivatives, integrals, curvature, displacement, velocity, acceleration, and torsion.
- Perform calculus operations on functions of several variables, including partial derivatives, directional derivatives, and multiple integrals.
- Find extrema and tangent planes.
- Solve problems using the Fundamental Theorem of Line Integrals, Green's Theorem, The Divergence Theorem, and Stokes' Theorem
- Apply the computational and conceptual principles of calculus to the solutions of real-world problems.

Grading Policy

The course grading will be based on the tables below. At the end of the semester, you will receive the grade you *earned*, according to the scale given below. Due to FERPA privacy issues, I cannot discuss grades over email or phone. If you have a question about your grade, please schedule a one-on-one zoom meeting with me.

Grade breakdown

The grade will be determined by **Homework** (Webassign), **Quizzes** (in lecture), and **Exams**, as follows:

Homework	Weekly	10%
Quizzes	Most Fridays	10%
Exam I	Friday, Sept 11	20%
Exam II	Friday, Oct 9	20%
Exam III	Friday, **Nov 6**	20%
Final Exam	Wednesday, Dec 2, 8am-10:30am	20%
TOTAL		100%

$90 \leq$ Average ≤ 100	**A**
$80 \leq$ Average < 90	**B**
$70 \leq$ Average < 80	**C**
$60 \leq$ Average < 70	**D**
Average < 60	**F**

Amy Austin

Appeal Policy

Students have one week upon the return quizzes and exams to notify the instructor (me) of any inaccuracies in their graded work. After 1 week, the grade will stand. Students have 1 week from the day grades are posted in the Canvas gradebook to bring any inaccuracies to my attention. Students should bring all grade disputes to me in a one-on-one Zoom meeting. Due to FERPA privacy issues, grade disputes will not be discussed over email or in the classroom.

Online Homework

Online homework will be done in WebAssign. Important information such as how to log in, how to access and take assignments, and the Student Help Request Form can be found here:

http://www.math.tamu.edu/courses/eHomework/

WebAssign accounts have an access fee and you will need to "purchase access online" during the first two weeks of school. After that, you risk being locked out of the system and missing important assignments.
Do not wait until the last minute to complete your WebAssign homework as technical difficulties will not be an excuse for missing a WebAssign deadline. The homework for a section will be due approximately 2 days after the lecture over that material is completed. At the end of the term, the lowest three homework scores will be dropped and therefore no extensions will be allowed. You do NOT have to do the practice assignments.

Exams

There will be three online proctored exams administered during published class times. The exams will be a combination of multiple choice and partial credit. No calculators, cellphones, or other electronic devices are allowed. These exams will be accessed and submitted on **Gradescope.** Please have your ID available at each exam. The tentative exam schedule is as follows:
Exam I: Friday, Sept 11, 2020 **Exam II:** Friday, Oct 9, 2020 **Exam III:** Friday, **Nov 6**, 2020

Final Exam

While the final exam covers chapter 16 only, it is comprehensive in nature in the sense that the final exam tests concepts introduced for the entire course. Taking the final exam is required for all students. If your final exam grade is higher than your lowest test grade, the grade on your final will replace that test grade in the final grade calculation. The final exam will be held on Wednesday, December 2, 8:00am-10:30am.

Attendance and Make-up Policies

Attendance is essential to complete this course successfully.

- **Excused Absences:** University student rules concerning excused and unexcused absences, as well as makeups, can be found at **http://student-rules.tamu.edu/rule07**. In particular, make-up exams and quizzes or late homework will NOT be allowed unless a **University approved reason is given to me in writing**. Notification *before* the absence is **required** when possible. Otherwise (e.g. accident, or

emergency), you must notify me **within two business days** of the missed exam, quiz, or assignment to arrange a makeup.

- **For Fall 2020 only, students may use the Explanatory Statement for Absence from Class form in lieu of a medical confirmation. Students must submit the Explanatory Statement for Absence from Class within two business days after the last date of absence.**
- **Working with friends:** In this course, students can discuss homework and their solutions. Students can use notes on quizzes. However, it is NOT permissible to copy homework solutions from another student. It is NOT permissible to discuss any aspect of any quiz or test or examination until ALL students have completed the exam. It is NOT permissible to use any online solver (such as wolfram alpha, symbolab, etc) on quizzes or exams. The penalties for violating this policy will range from an F on an assignment or test, to failing in the course.
- **Internet Problems:** If you experience internet connection issues during class time, please contact me as soon as possible to make sure you have access to content or activities you missed.
- **Makeup exams** will only be allowed due to excused absences and the makeup must be taken as soon as possible after the missed exam. You will need to schedule to make up your exam within 3 business days of the originally scheduled time to allow for grades to be returned in a timely manner. If you know ahead of time you will be absent during an exam, you must notify me by email in advance.
- **Missed quizzes**: As stated above, students must be present during the posted lecture times in order to be eligible to take the quiz. If you have an excused absence, you must notify me within 2 working days to schedule a make up.

LATE WORK POLICY

Late work will NOT be accepted unless you have a University approved reason and contact me within 2 working days of the missed assignment.

TENTATIVE COURSE TOPICS AND CALENDAR OF ACTIVITIES

Week	Topic	Sections
Week 1: Week of 8/17	Three-Dimensional Coordinate Systems; Vectors; The Dot Product; The Cross Product	12.1, 12.2, 12.3
Week 2: Week of 8/24	Cross Product, Equations of Lines and Planes; Cylinders and Quadric Surfaces (briefly)	12.4, 12.5, 12.6
Week 3: Week of 8/31	Vector Functions and Space Curves, Derivatives and Integrals of Vector Functions; Arc Length and Curvature	13.1, 13.2, 13.3
Week 4: Week of 9/7	Motion in Space: Velocity and Acceleration; **EXAM I (12.1 through 13.4)**	13.4
Week 5: Week of 9/14	Functions of Several Variables; Limits and Continuity (**optional**); Partial Derivatives; Tangent Planes and Linear Approximations;	14.1, 14.2, 14.3, 14.4
Week 6: Week of 9/21	The Chain Rule; Directional Derivatives and the Gradient Vector;	14.5, 14.6
Week 7: Week of 9/28	Maximum and Minimum Values; Lagrange Multipliers Lagrange Multipliers	14.7, 14.8
Week 8: Week of 10/5	Double Integrals over Rectangles**; EXAM II (14.1 through 14.8)**	15.1
Week 9: Week of 10/12	Double Integrals over General Regions; Double Integrals in Polar Coordinates; Applications of Double Integrals (**optional**); Surface Area	15.2, 15.3, 15.5
Week 10: Week of 10/19	Triple Integrals; Triple Integrals in Cylindrical Coordinates; Triple Integrals in Spherical Coordinates	15.6, 15.7, 15.8
Week 11: Week of 10/26	Triple Integrals in Spherical Coordinates (continued); Changes of Variables in Multiple Integrals	15.8, 15.9
Week 12: Week of 11/2	Vector Fields; Line Integrals; **EXAM III (15.1 through 15.9)**	16.1, 16.2
Week 13: Week of 11/9	Line Integrals (continued); The Fundamental Theorem for Line Integrals; Green's Theorem	16.2, 16.3, 16.4
Week 14: Week of 11/16	Curl and Divergence; Parametric Surfaces and Their Areas; Surface Integrals	16.5, 16.6, 16.7
Week 15: Week of 11/23	Stokes' Theorem; The Divergence Theorem	16.8, 16.9
Week 16: Week of 11/30	**FINAL EXAMS (16.1 through 16.9)**	

Other Course Information

Technology Support

As much of our learning experience relies on technology, many students can get overwhelmed when something goes wrong or things get overwhelming. If you're looking for a curation of online learning resources, consider checking out https://keeplearning.tamu.edu/

If your need is specific to a course-related technology issue, consider seeking help from the 24/7 TAMU IT Help Desk. https://it.tamu.edu/help/

Learning Resources

Week-in-Review (WIR)

There will be Week-in-Review sessions conducted by Amy Austin each week, starting the second week of classes. Each review is open to all Math 251 students to review the topics of the previous week and to provide additional examples. The schedule and problem sets that will be worked during these sessions can be found at

http://mlc.tamu.edu/Online-Help-Services/mlc-week-in-review

Help Sessions

Help sessions are an opportunity for you to ask questions and get help with your homework. These sessions are led by students, where you may come and go, as your schedule allows. Once determined, the schedule will be announced in class, posted on our course webpage, and additionally posted at

http://www.math.tamu.edu/courses/helpsessions.html.

University Policies

Attendance Policy

The university views class attendance and participation as an individual student responsibility. Students are expected to attend class and to complete all assignments.

Please refer to Student Rule 7 in its entirety for information about excused absences, including definitions, and related documentation and timelines.

Makeup Work Policy

Students will be excused from attending class on the day of a graded activity or when attendance contributes to a student's grade, for the reasons stated in Student Rule 7, or other reason deemed appropriate by the instructor.

Please refer to Student Rule 7 in its entirety for information about makeup work, including definitions, and related documentation and timelines.

Absences related to Title IX of the Education Amendments of 1972 may necessitate a period of more than 30 days for make-up work, and the timeframe for make-up work should be agreed upon by the student and instructor" (Student Rule 7, Section 7.4.1).

Amy Austin

"The instructor is under no obligation to provide an opportunity for the student to make up work missed because of an unexcused absence" (Student Rule 7, Section 7.4.2).

Students who request an excused absence are expected to uphold the Aggie Honor Code and Student Conduct Code. (See Student Rule 24.)

ACADEMIC INTEGRITY STATEMENT AND POLICY

"An Aggie does not lie, cheat or steal, or tolerate those who do."

"Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor request it, may be sufficient grounds to initiate an academic misconduct case" (Section 20.1.2.3, Student Rule 20).

You can learn more about the Aggie Honor System Office Rules and Procedures, academic integrity, and your rights and responsibilities at aggiehonor.tamu.edu.

AMERICANS WITH DISABILITIES ACT (ADA) POLICY

Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact Disability Resources in the Student Services Building or at (979) 845-1637 or visit disability.tamu.edu. Disabilities may include, but are not limited to attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability related needs with Disability Resources and their instructors as soon as possible.

TITLE IX AND STATEMENT ON LIMITS TO CONFIDENTIALITY

Texas A&M University is committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws prohibit gender-based discrimination and sexual harassment, including sexual assault, sexual exploitation, domestic violence, dating violence, and stalking.

With the exception of some medical and mental health providers, all university employees (including full and part-time faculty, staff, paid graduate assistants, student workers, etc.) are Mandatory Reporters and must report to the Title IX Office if the employee experiences, observes, or becomes aware of an incident that meets the following conditions (see University Rule 08.01.01.M1):

- The incident is reasonably believed to be discrimination or harassment.
- The incident is alleged to have been committed by or against a person who, at the time of the incident, was (1) a student enrolled at the University or (2) an employee of the University.

Mandatory Reporters must file a report regardless of how the information comes to their attention – including but not limited to face-to-face conversations, a written class assignment or paper, class discussion, email, text, or social media post. Although Mandatory Reporters must file a report, in most instances, you will be able to control how the report is handled, including whether or not to pursue a formal investigation. The University's goal is to make sure you are aware of the range of options available to you and to ensure access to the resources you need.

Students wishing to discuss concerns in a confidential setting are encouraged to make an appointment with Counseling and Psychological Services (CAPS).

Amy Austin

Students can learn more about filing a report, accessing supportive resources, and navigating the Title IX investigation and resolution process on the University's Title IX webpage.

Statement on Mental Health and Wellness

Texas A&M University recognizes that mental health and wellness are critical factors that influence a student's academic success and overall wellbeing. Students are encouraged to engage in proper self-care by utilizing the resources and services available from Counseling & Psychological Services (CAPS). Students who need someone to talk to can call the TAMU Helpline (979-845-2700) from 4:00 p.m. to 8:00 a.m. weekdays and 24 hours on weekends. 24-hour emergency help is also available through the National Suicide Prevention Hotline (800-273-8255) or at suicidepreventionlifeline.org.

Campus Safety Measures

To promote public safety and protect students, faculty, and staff during the coronavirus pandemic, Texas A&M University has adopted policies and practices for the Fall 2020 academic term to limit virus transmission. Students must observe the following practices while participating in face-to-face courses and course-related activities (office hours, help sessions, transitioning to and between classes, study spaces, academic services, etc.):

- Self-monitoring—Students should follow CDC recommendations for self-monitoring. **Students who have a fever or exhibit symptoms of COVID-19 should participate in class remotely and should not participate in face-to-face instruction.**
- Face Coverings—Face coverings (cloth face covering, surgical mask, etc.) must be properly worn in all non-private spaces including classrooms, teaching laboratories, common spaces such as lobbies and hallways, public study spaces, libraries, academic resource and support offices, and outdoor spaces where 6 feet of physical distancing is difficult to reliably maintain. Description of face coverings and additional guidance are provided in the Face Covering policy and Frequently Asked Questions (FAQ) available on the Provost website.
- Physical Distancing—Physical distancing must be maintained between students, instructors, and others in course and course-related activities.
- Classroom Ingress/Egress—Students must follow marked pathways for entering and exiting classrooms and other teaching spaces. Leave classrooms promptly after course activities have concluded. Do not congregate in hallways and maintain 6-foot physical distancing when waiting to enter classrooms and other instructional spaces.
- To attend a face-to-face class, students must wear a face covering (or a face shield if they have an exemption letter). If a student refuses to wear a face covering, the instructor should ask the student to leave and join the class remotely. If the student does not leave the class, the faculty member should report that student to the Student Conduct office for sanctions. Additionally, the faculty member may choose to teach that day's class remotely for all students.

Personal Illness and Quarantine

Students required to quarantine must participate in courses and course-related activities remotely and **must not attend face-to-face course activities**. Students should notify their instructors of the quarantine requirement. Students under quarantine are expected to participate in courses and complete graded work unless they have symptoms that are too severe to participate in course activities.

Amy Austin

Students experiencing personal injury or Illness that is too severe for the student to attend class qualify for an excused absence (See Student Rule 7, Section 7.2.2.) To receive an excused absence, students must comply with the documentation and notification guidelines outlined in Student Rule 7. While Student Rule 7, Section 7.3.2.1, indicates a medical confirmation note from the student's medical provider is preferred, **for Fall 2020 only, students may use the Explanatory Statement for Absence from Class form in lieu of a medical confirmation. Students must submit the Explanatory Statement for Absence from Class within two business days after the last date of absence.**

OPERATIONAL DETAILS FOR FALL 2020 COURSES

For additional information, please review the FAQ on Fall 2020 courses at Texas A&M University.