## CHANGES TO THE SYLLABUS AS A RESULT OF MOVING THE CLASS ONLINE

- Office Hours will be held via Zoom – times will be posted on my webpage, links will be posted in ecampus.
- Quizzes will be held in WebAssign. They will be timed, and you have a two day window to start them.
- There are no more lab assignments. Your lab average will be determined by your current graded assignments.
- Exam 2 will be given in WebAssign with a two day window to complete it.
- Exam 3 and the Final Exam will be proctored using some combination of platforms – likely Zoom and WebAssign
  - Exam 3 will be the week of April 20-24
  - The Final Exam will be at the originally scheduled Final Exam time
  - You will likely need a computer/tablet and smartphone for these proctored exams
- The tentative schedule will be shifted back one week
- Chapter 10 will not be covered this semester. You will see that material in Math 251/Cal 3. Some completed notes for these sections will be posted for those sections if you would like to see it before Math 251.
- The grade policies/weights have not changed.
  - This includes the final exam replacing your lowest exam score if it benefits you

## Class times and Locations

- Lecture for 152.546-554: TR 11:10am-12:25pm in KLCT 115

| | | | |
|---|---|---|---|
| Recitation for section 546 | MW 8:00-8:50am | Monday: BLOC 123 | Wednesday: HEB 134 |
| Recitation for section 547 | MW 9:10-10:00am | Monday: BLOC 123 | Wednesday: HEB 134 |
| Recitation for section 548 | MW 10:20-11:10am | Monday: BLOC 126 | Wednesday: HEB 223 |
| Recitation for section 549 | MW 11:30am-12:20pm | Monday: BLOC 124 | Wednesday: HEB 222 |
| Recitation for section 550 | MW 12:40-1:30pm | Monday: BLOC 123 | Wednesday: HEB 134 |
| Recitation for section 551 | MW 1:50-2:40pm | Monday: BLOC 126 | Wednesday: HEB 223 |
| Recitation for section 552 | MW 3:00-3:50pm | Monday: BLOC 124 | Wednesday: HEB 222 |
| Recitation for section 553 | MW 4:10-5:00pm | Monday: BLOC 124 | Wednesday: HEB 222 |
| Recitation for section 554 | MW 5:20-6:10pm | Monday: BLOC 126 | Wednesday: HEB 223 |

- Lecture for 152.561:569: TR 12:45pm-2:00pm in KLCT 115

| | | | |
|---|---|---|---|
| Recitation for section 561 | MW 9:10-10:00am | Monday: BLOC 128 | Wednesday: HEB 136 |
| Recitation for section 562 | MW 10:20-11:10am | Monday: BLOC 128 | Wednesday: HEB 136 |
| Recitation for section 563 | MW 12:40-1:30pm | Monday: BLOC 133 | Wednesday: BLOC 163 |
| Recitation for section 564 | MW TBD | Monday: TBD | Wednesday: TBD |
| Recitation for section 565 | MW 8:00-8:50am | Monday: BLOC 133 | Wednesday: BLOC 164 |
| Recitation for section 566 | MW 9:10-10:00am | Monday: BLOC 133 | Wednesday: BLOC 148 |
| Recitation for section 567 | MW 10:20-11:10am | Monday: BLOC 133 | Wednesday: RICH 302 |
| Recitation for section 568 | MW 3:00-3:50pm | Monday: BLOC 133 | Wednesday: BLOC 163 |
| Recitation for section 569 | MW 4:10-5:00pm | Monday: BLOC 133 | Wednesday: BLOC 163 |

## Catalog Description and Prerequisites

*Engineering Mathematics II (Math 2414)* Differentiation and integration techniques and their applications (area, volume, work), improper integrals, approximate integration, analytic geometry, vectors, infinite series, power series, Taylor series, computer algebra. MATH 172 designed to be a more demanding version of this course. Only one of the following will satisfy the requirements for a degree: MATH 148, MATH 152 and MATH 172. *Prerequisite*: MATH 151 or equivalent.

## Instructor Information

| | |
|---|---|
| **Name** | **Todd Schrader** |
| **Email** | todd.schrader@math.tamu.edu |
| **Office** | Blocker 247F |
| **Office Hours** | Monday/Wednesday 3:00-4:00pm Blocker 246<br>Tuesday/Thursday 2:15-4:00pm Blocker 246<br>other times by appointment |
| **Course Page** | http://www.math.tamu.edu/~todd.schrader/homepages/Math152_2020a.html |
| **Phone** | Math Department: 979-845-3261 (There is no phone in my office, so email is a better way to reach me.) |

## LEARNING OUTCOMES

This course is focused on quantitative literacy in mathematics as applied to Engineering and Physics. Upon successful completion of this course, students will be able to:

- Use the concepts of definite integrals to solve problems involving area, volume, work, and other physical applications.
- Use substitution, integration by parts, trigonometric substitution, and partial fractions to evaluate definite and indefinite integrals.
- Apply the concepts of limits, convergence, and divergence to evaluate different types of improper integrals.
- Determine convergence or divergence of sequences and series.
- Use Taylor and MacLaurin series to represent functions and to integrate functions not integrable by conventional methods.
- Use parametric representations of curves to find arc length and surface area.
- Understand and use polar coordinates to represent curves and to find areas of polar regions.

## CORE OBJECTIVES

*Critical Thinking*: The following critical thinking skills will be assessed on in-class quizzes and exams:

- Students will use graphs and visual skills to formulate and evaluate definite integrals to calculate areas, volumes, work, and surface areas of revolution.
- Students will analyze definite and indefinite integrals to determine and apply appropriate methods of evaluation of these integrals.
- Students will apply logical reasoning to determine the convergence or divergence of improper integrals and evaluate convergent improper integrals where appropriate.
- Students will apply logical reasoning to determine the convergence or divergence of sequences and series and evaluate convergent sequences and series where appropriate.
- Students will use Taylor and Maclaurin series to represent functions which cannot be integrated conventionally.

*Integrative Learning*: The following integrative learning skill will be assessed on computer lab assignments:

- Students will apply mathematical and logical reasoning skills to use Computer Algebra Systems such as Python to solve problems in Physics and a variety of Engineering fields.

*Problem Solving*: The following problem solving skills will be assessed on in-class quizzes and exams:

- Students will formulate and evaluate definite integrals to solve practical problems involving work and volume.
- Students will use geometric series to model and solve numerical and practical problems.
- Students will set up integrals using polar coordinates to find areas and lengths of polar curves.

*Communication*: The following written communication skills will be assessed on in-class quizzes and exams:

- Students will clearly explain problem-solving strategies and analysis used to answer questions concerning topics discussed in class.
- Students will use appropriate theorems to present clear written arguments in support of the convergence or divergence of improper integrals, sequences, and series.

*Quantitative Literacy*: The following quantitative literacy skills will be assessed on in-class quizzes and exams:

- Students will interpret a given integral as the area of an appropriate 2-dimensional region, volume of an appropriate solid, or area of an appropriate 3-dimensional surface.
- Students will use appropriate calculations to analyze the convergence or divergence of series.

## REQUIRED MATERIALS

*TEXTBOOKS*: *Calculus: Early Transcendentals* by Stewart, 8th Edition; 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 version of the text. The textbook is available in different formats, and there are a variety of purchasing options available (course specific access or Cengage Unlimited). Purchase can be made through the local bookstores or directly in 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 POLICY*: Calculators are not allowed on Quizzes or Exams.

*TEXAS A&M STUDENT ID*: Bring your student ID to each class.

## Tentative Course Topics and Calendar of Activities

| Week of | Topic | Sections |
|---|---|---|
| **1/14** | The Substitution Rule; Area Between Curves | 5.5, 6.1 |
| **1/21** | Area cont.; Volumes by Disks, Washers, and Slicing | 6.1, 6.2 |
| **1/28** | Volume by Cylindrical Shells; Work | 6.3, 6.4 |
| **2/4** | Integration by Parts; Trigonometric Integrals | 7.1, 7.2 |
| **2/11** | Trigonometric Substitution; **EXAM I (5.5 through 7.2)** | 7.3 |
| **2/18** | Integration by Partial Fractions; Improper Integrals | 7.4, 7.8 |
| **2/25** | Improper Integrals cont.; Sequences; Series | 7.8, 11.1, 11.2 |
| **3/3** | Series cont.; The Integral Test | 11.2, 11.3 |
| **3/10** | **SPRING BREAK** | |
| **3/17** | The Comparison Tests; **EXAM II (7.3 through 11.3)** | 11.4 |
| **3/24** | Alternating Series; Absolute Convergence and the Ratio Test; Power Series | 11.5, 11.6, 11.8 |
| **3/31** | Power Series cont.; Representations of Functions as Power Series | 11.8, 11.9 |
| **4/7** | Taylor and Maclaurin Series; Taylor Polynomials | 11.10, 11.11 |
| **4/14** | Review of Parametric Equations; Arc Length and Surface Area of Parametric Curves; **EXAM III (11.4 through 11.11)** | 10.1, 10.2 |
| **4/21** | Polar Coordinates; Areas and Lengths in Polar Coordinates; Conic Sections | 10.3, 10.4, 10.5 |
| **4/28** | Conic Sections in Polar Coordinates; Review for Final Exam; Final Exams | 10.6 |
| **5/5** | Final Exams | |

## Grading Policies

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. Due to FERPA privacy issues, I cannot discuss grades over email or phone. If you have a question about your grade, please come see me in person.

### Grade Breakdown

| Activity | Date | Percentage |
|---|---|---|
| **Homework** | Weekly | 7.5% |
| **Quizzes** | Weekly | 7.5% |
| **Labs** | See Lab Schedule | 5% |
| **Common Exam I** | 2/13/20 | 20% |
| **Common Exam II** | 3/19/20 | 20% |
| **Common Exam III** | 4/16/20 | 20% |
| **Final Exam** | See below | 20% |
| **TOTAL** | | **100%** |

### Grading Scale

| Range | Grade |
|---|---|
| **90 ≤ Average ≤ 100** | **A** |
| **80 ≤ Average < 90** | **B** |
| **67 ≤ Average < 80** | **C** |
| **57 ≤ Average < 67** | **D** |
| **Average < 57** | **F** |

## Grade Appeal Policy

If you believe an error has been made in grading of an exam, you have one week from the return of the exam to let me know. After that one week period, no change to the grade will be made. The only exception to this is if the points on the exam were totaled incorrectly. If a grade has been recorded incorrectly, you may talk to me anytime during the semester about fixing the grade. I will need to see the actual assignment before the grade will be changed.

## Homework

Homework assignments will be done online in WebAssign. For important information such as how to purchase access, how to log in and take assignments, the Student Help Request Form, and other WebAssign issues, please see http://www.math.tamu.edu/courses/eHomework. I suggest you bookmark this page and visit it before you log in to WebAssign each time. You must log in to WebAssign through the TAMU WebAssign login page at www.webassign.net/tamu/login.html.

### Quizzes and Labs

Each section will meet twice weekly for lab and recitation. You will take weekly quizzes for a grade and will work in groups to complete Python assignments. Your quizzes will include a place to write your section number. Failure to write your section number will lose you a point on your quiz. You must know your section number for the exams. Lab assignments and due dates will be posted online. Python assignments are group projects. Group members who do not participate in the lab assignment will not receive any credit for the assignment.

### Exams

There will be **three common exams** during the semester. These exams are evening exams taken by all Math 152 students at the same time. Bring your Texas A&M student ID and a pencil to all exams. The location of the common exams will be determined later. The tentative exam schedule is as follows:
**Common Exam I: Thursday February 13, 7:30-9:30pm**
**Common Exam II: Thursday March 19, 7:30-9:30pm**
**Common Exam III: Thursday April 16, 7:30-9:30pm**

For Common Exam I only, if you score below a 70, you will have the opportunity to take a different exam covering the same content to improve your grade. The maximum score you may earn on the retest is 70. If you make above a 70 on the retest, your score is recorded as a 70. If your score on the retest is higher than your original score, it will replace your original score, up to the maximum of 70. Tentatively, the retest will be given two weeks after the common exam on Friday, March 1.

### Final Exam

The final exam will be **comprehensive** and 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 schedule is as follows:

| Sections | Class Time | Final Exam Date, Time, and Location |
|---|---|---|
| 546:554 | TR 11:10am-12:25pm | Thursday, April 30: 3:00-5:00pm in KLCT 115 |
| 561:569 | TR 12:45-2:00pm | Tuesday, May 5: 8:00-10:00am in KLCT 115 |

(You can refer to http://registrar.tamu.edu/Courses,-Registration,-Scheduling/Final-Examination-Schedules for the University final exam schedule.)

### Attendance and Make-up Policies

Attendance is essential to complete this course successfully.

- The University views attendance as an individual student responsibility. It is essential that students attend class and complete all assignments to succeed in the course. University student rules concerning excused and unexcused absences, as well as makeups, can be found at http://student-rules.tamu.edu/rule07.

  > **Student Rule 7.3:** Students may 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 7.1, or other reason deemed appropriate by the student's instructor…

- **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/labs/activities 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 2 working days** of the missed exam, quiz, or assignment to arrange a makeup. In all cases where an exam/quiz/assignment is missed due to an injury or illness, whether it be more or less than 3 days, **I require a doctor's note**. I will not accept the "University Explanatory Statement for Absence from Class" form. Further, an absence due to a non-acute medical service or appointment (such as a regular checkup) is *not* an excused absence.

- Makeup exams will only be allowed provided the absence is excused. You must schedule the makeup with me during one of the scheduled makeup times provided by the Math Department. You are required to attend the earliest scheduled makeup following your absence unless you have a University-approved excuse for missing that makeup time as well. The list of makeup times will be available at http://www.math.tamu.edu/courses/makeupexams.html.

## Additional Help & Preparing for Exams

### Week-in-Review (WIR)

There will be Week-in-Review sessions conducted weekly, starting the second week of classes. Each review is open to all Math 152 students to review the topics of the previous week and to provide additional examples. The Week-in-Review schedule can be found at

**http://www.math.tamu.edu/courses/weekinreview.html**

### 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**

## Academic Integrity

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

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System. For additional information please visit **http://aggiehonor.tamu.edu/**.

- Providing a fake or falsified doctor's note or other falsified documentation will result in an F* in the course.
- Using unauthorized resources on a quiz or exam (calculator, note sheet, classmate's exam) will result in a zero on the assignment. A zero on an exam for cheating will not be replaced by the retest or the final exam. A zero on a quiz for cheating will not be dropped when calculating your quiz average.
- For assignments that are completed outside of class, copying solutions from other sources (i.e. the internet, other groups, friends in other classes or past classes…) is considered academic dishonesty. Since the Python assignments are group assignments, all members of the group may be held responsible for the academic dishonesty of individual group members.

## Americans with Disabilities Act (ADA)

Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to our 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 http://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 need with Disability Resources and their instructors as soon as possible.

**TITLE IX AND STATEMENT ON LIMITS TO CONFIDENTIALITY**

Texas A&M University and the College of Science are committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws provide guidance for achieving such an environment. Although class materials are generally considered confidential pursuant to student record policies and laws, University employees – including instructos – cannot maintain confidentiality when it conflicts with their responsibility to report certain issues that jeopardize the health and safety of our community. As the instructor, I must report (per Texas A&M System Regulation 08.01.01) the following information to other University offices if you share it with me, even if you do not want the disclosed information to be shared:

- Allegations of sexual assault, sexual discrimination, or sexual harassment when they involve TAMU students, faculty or staff, or third parties visiting campus.

These reports may trigger contact from a campus official who will want to talk with you about the incident that you have shared. In many cases, it will be your decision whether or not you wish to speak with the individual. If you would like to talk about these events in a more confidential setting, you are encouraged to make an appointment with the Counseling and Psychological Services (https://caps.tamu.edu/).

Students and faculty can report non-emergency behavior that causes them to be concerned at http://tellsomebody.tamu.edu/.