

Instructor : Rasika Mahawattege

Office : Dunn Hall 312

email:rmhwtte@memphis.edu

Office hours: video consultation available by an appointment.

Course Description :(4 credit hours) Introduction to calculus of one real variable; limits; continuity; derivatives; applications of derivatives including Newtons method, graphing techniques, optimization, indeterminate forms and L'Hospital's rule; antiderivatives; includes transcendental functions.

Prerequisites :One of the following criteria must be met to enroll in Math 1910:
MATH 1720 or MATH 1730 with a minimum grade of C- or an ACT MATH subscore of at least 26.

Note : Only one of MATH 1830 or MATH 1910 may be used to satisfy degree requirements. Students may NOT receive credit for both MATH 1910 and MATH 1421.

Course Objectives: To expand students problem solving skills with techniques from calculus. To develop students proficiency for solving problems motivated by economics, biology, physics, and other sciences.

Textbook : James Stewart, Calculus, Cengage Learning, 8th edition. I will not require a copy of the physical textbook to be purchased as you will have access to it through WebAssign (see below) and I plan that my lecture notes should provide a comprehensive source for exam and homework measurements. If you plan on studying higher level mathematics or sciences, however, I strongly urge you to buy a hardback copy of the text. It is well-written and will be with you far longer than any lecture notes.

Graphing calculator (not required): TI 83 Plus or TI 84 Plus or Silver Edition for classroom use. TI 89, TI 92, TI Inspire (as well as any other calculator with CAS capabilities) are prohibited. Cell phones **cannot** be used as calculators.

Tutoring : Free tutoring is available through the Universitys Education Support Programs. For more information visit <https://memphis.upswing.io/>

Disabilities : Any student who anticipates physical or academic barriers based on the impact of a disability should contact Disability Resources for Students (DRS) at 110 Wilder Tower, 901.678.2880 at the earliest opportunity. DRS coordinates access and accommodations for students with disabilities. You must give your instructor a copy of any accommodation memos provided by the DRS **within the first week of class.**

Drop / Withdraw : Students who need to drop this class must report to the Office of the Registrar to initiate withdrawal procedures. Check <http://www.memphis.edu/registrar/calendars/> for deadlines.

Email Rules : All email correspondence must be made through your University of Memphis email account. Check your email daily, and make sure that your inbox is not so full that no new messages will get through. When emailing to me please include **MATH 1910-006** as the subject of the email.

Grading Policy : Grades will be calculated based on homework, quizzes, tests, and final exam as follows:

- Homework: 30 %
- Quizzes: 25 %
- Exams: 40 %
- Attendance 5%

Grading scale :

A: [89.5-100] %; B: [79.5-89.5] %; C: [69.5-79.5] %; D: [59.5-69.5] %; F: below 59.5 %

Homework : Homework will be assigned for each section of the text, and must be finished before the due date. I will let know the due date during the class. We will be using **WebAssign** for homework assignments. You will need to purchase WebAssign with your text (or obtain it separately). You should sign up immediately. There should be free access for two weeks starting with Monday, AUGUST 17. This is a requirement for our Section since much of your work will use this. It provides quick feedback on your homework problems. WebAssign Access Code (Class key) for our class: **memphis 8190 6785**

Exams : There will be 3 exams conducted through WebAssign and in class comprehensive final exam. .

Quizzes : There will be at least 6 quizzes over the course of the semester. Deatils TBA.

Attendance : In order to get 5% for attendance, you need to be present in at least 90% of class meetings.

No Make-ups for a missed homework, quizzes or exams. If you miss a exam because of an official school function you may schedule to take the test at a time prior to the original test date. No other rescheduling will be allowed.

Important: This class will be a hybrid class. In the first month, I will be teaching remotely via **zoom meetings** during regular class time. You **need** to be able to join meetings with **both video and audio**. You will receive link for each zoom meetings via email,10 minutes prior to start the class.

We may proceed the rest of the course through in class meetings under university regulations.

COVID-19 Health and Safety Policy : Masks and Social Distancing All students, faculty and staff will wear masks in all public spaces, including our classroom (lab) per the COVID-19 policy. The first time a student enters a classroom without wearing a face covering, the student will be asked to leave the class until they return a covering. Further violations will be referred to the Office of Student Accountability. Students who repeatedly or flagrantly violate these community expectations may be referred for discipline under the Student Code and, if appropriate, immediately removed from campus by the Dean of Students.

Student Health : Students who are experiencing symptoms such as sneezing, coughing or a higher than normal temperature should inform me by email so they can be excused from class and should stay home. Students should contact their health care provider or the Student Health Center at <https://www.memphis.edu/health/>. Students who have a positive COVID-19 test should contact the Dean of Students at deanofstudents@memphis.edu.

Student Accommodations If and when we return to class, students seeking to remain remote for health or other serious reasons should discuss their options with me. Students with accessibility issues or with other learning.

This is a departmental webpage with detailed information about covid procedures . <https://www.memphis.edu/msci/news/covid.php>

Academic Integrity : I encourage you to work with your classmates on homework or to have study groups for tests; however, letting someone else do all the work while you just sit back and copy will not help you on your tests. Copying the work of others is not going to help you understand the material or pass the course. Plagiarism, cheating, and other forms of academic dishonesty are prohibited. Students guilty of academic misconduct, either directly or indirectly, through participation or assistance will receive a zero, in addition to other possible disciplinary sanction which may be imposed through the regular institutional disciplinary procedures. (<https://www.memphis.edu/osa/students/academic-misconduct>).

Course schedule : Any changes to this schedule will be announced in class, and in writing.

Chapters and sections to be covered :

Chapter 2: Limits and Derivatives

- 2.1 The tangent and velocity problems
- 2.2 The limit of a function
- 2.3 The limit of a function
- 2.4 The precise definition of a limit
- 2.5 Continuity
- 2.6 Limits at infinity and horizontal asymptotes
- 2.7 Derivatives and rates of change
- 2.8 The derivative as a function

Chapter 3: Differentiation Rules

- 3.1 Derivatives of polynomials and exponential functions
- 3.2 The product and quotient rules.
- 3.3 Derivatives of trigonometric functions
- 3.4 The chain rule
- 3.5 Implicit differentiation
- 3.6 Derivatives of logarithmic functions
- 3.7 Rates of change in the natural and social sciences
- 3.8 Exponential growth and Decay
- 3.9 Related rates
- 3.10 Linear approximations and differentials
- 3.11 Hyperbolic functions

Chapter 4: Applications of Differentiation

- 4.1 Maximum and minimum values
- 4.2 The Mean Value Theorem
- 4.3 How Derivatives affect the shape of a curve
- 4.4 Indeterminate forms and L'Hospital's Rule
- 4.5 Summary of Curve Sketching
- 4.6 Graphing with Calculus and Calculators
- 4.7 Optimization Problems
- 4.8 Newton's Method
- 4.9 Antiderivatives

Chapter 5: Integrals

- 5.1 Areas and distances
- 5.2 The definite Integral
- 5.3 Fundamental theorem of calculus
- 5.4 Indefinite integrals and the Net change Theorem
- 5.5 The Substitution rule

I reserve the right to make any changes in the course and the grading policy. Those changes will be announced in the class and through e-mail.