

Calculus I MATH2413-04 evans.tyler92@gmail.com

Class Meetings: Monday through Friday, 12:40pm-1:35pm.

Office Hours: M/W 8am-10:20am in the tutoring lab on the 2nd floor of the Lucas building. You do not need an appointment to attend. If you cannot meet with me during these times, please speak with me or email me to make an appointment. Also feel free to email me with your questions, and I will try to respond in a timely fashion. You can also stop and ask me anything whenever you run into me.

Furthermore, there's a good chance you'll be able to find me in the break room or tutoring lab between 10:30am-12:30pm M/W, 11:15am-12:30pm and 1:00pm-5:00pm T/R.

Textbook (optional): Calculus: Early Transcendental Functions, Larson, 6th ed. **All required course materials will be provided by the instructor**, but the book can act as an additional resource, especially for practice problems.

Prerequisites: MRS 800 or C or better in MATH 2312 or its equivalent. Prepares for: MATH 2305, 2414, 3328

Catalog Description: Functions, limits, derivatives of algebraic, trigonometric, exponential and logarithmic functions, curve sketching, related rates, maximum and minimum problems, definite and indefinite integrals with applications.

Core Curriculum Outcomes: Upon completion of this course, the student will demonstrate his or her abilities to think critically, communicate quantitative information, and apply mathematical concepts:

- (1) Critical Thinking: Develop a logical, consistent plan to solve a problem, recognize consequences of the solution, and articulate a reason for choosing solution method.
- (2) Communication Skills: Use and present quantitative information in connection with an argument or problem solution and explicate it in an effective format.
- (3) Empirical and Quantitative: Construct and present a detailed problem statement with evidence of relevant contextual factors and possible approaches for solving the problem, then implement a solution and review the results.

MATH2413 Learning Outcomes: When you have successfully completed this course, you will

- (1) Develop solutions for tangent and area problems using the concepts of limits, derivatives, and integrals
- (2) Draw graphs of algebraic and transcendental functions considering limits, continuity, and differentiability at a point
- (3) Determine whether a function is continuous and/or differentiable at a point using limits
- (4) Use differentiation rules to differentiate algebraic and transcendental functions
- (5) Identify appropriate calculus concepts and techniques to provide mathematical models of real-world situations and determine solutions to applied problems
- (6) Evaluate definite integrals using the Fundamental Theorem of Calculus
- (7) Articulate the relationship between derivatives and integrals using the Fundamental Theorem of Calculus
- (8) Compute the limit of a function
- (9) Interpret various definitions of a derivative including rate of change, slope of tangent line, and velocity
- (10) Find first order and higher order derivatives using the quotient rule, product rule, chain rule, and implicit differentiation
- (11) Find tangent lines, related rates, linear approximations, and solve optimization problems
- (12) Identify intervals of increase, decrease, and concavity for a function
- (13) Apply the Mean Value Theorem and LHospitals Rule
- (14) Compute definite and indefinite integrals, using various methods including the substitution rule

(15) Find volumes of solids of revolutions using rings and shells

Course Overview: In this course, I will introduce various topics of study, and we will discuss them. Then, you will explore them and practice working with them in more depth in assignments outside of class. A significant portion of our class time will be devoted to student presentations of this practice, so that we may learn from and better understand your thinking, collectively moving toward more effective methods of solving problems.

Student presentations are an important part of our learning process in mathematics, and dedicated preparation in your assignments is essential to your success. Each week, students will give presentations based on the assignments. **Everybody must present** some of their work during the semester; **otherwise, you forfeit that portion of your grade.**

You will have **20 to 30 minute quizzes in class** over the course of the semester and a comprehensive **final exam; due to Hurricane Harvey's disruption of the semester, there will no longer be a designated "finals week"**. **Rather, the final exam will be given on the last day of class, December 12.**

Grading Policy: Students with an average of 90% or greater will be awarded an A, 80% for a B, 70% for a C, 60% for a D, and an F for those with averages less than 60%. All assignments are due at the time class is designated to begin on the due date. No points will be earned for late work, but **all assignments must be completed in order to pass.** Grades will be calculated in the following manner.

- Quizzes (60%)
- Presentation (15% distributed equally)
- Participation/Courtesy (5%)
- Final Exam (20%)

Attendance: All students are expected to attend each class meeting. If you must miss a class for any reason, you are responsible for any material discussed during that session. **No make-up quizzes** will be given unless there are extraordinary circumstances, as the final gives students the opportunity to be tested on the material and replace a missed exam. If, for some reason, you miss multiple quizzes, a make-up will only be given in the event that each absence is determined to be excusable. It is essential that you notify me in advance if you must miss an exam or quiz, *especially* if you have already missed one previously. Failure to do so will result in a score of 0 for the exam/quiz. Towards the end of the semester, and contingent upon the total number of quizzes given throughout the semester and the progress the class has made, it will be determined if as many as two of the lowest quizzes may be dropped for the purposes of calculating the overall quiz grade.

Other: You do not need to ask permission to leave class for personal reasons, just do your best to avoid causing any disruption on your way out. **No computers, cell phones, or calculators are permitted** unless otherwise indicated; furthermore, use during quizzes or exams constitutes academic dishonesty unless otherwise specified. If there is an exam being administered, no student may begin testing after another student has turned in the exam, and you must turn in your exam before leaving or you will receive a score of 0.

Changes: While I have made sincere efforts to ensure that this syllabus is correct, changes may be required. Any substantive changes will be announced during a regularly scheduled class. If you find an error or omission, please advise me at once so that the other members of the class may be notified.