

MA 110 General Calculus

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Class format, Fall 2022: The classes will be held on the University City campus.

Class times and place, Fall 2022: Mon and Wed 1:50–3:05 pm in STC 237.

Office hours, Fall 2022: email me and we will find a time for us to meet.

Topics covered:

1. Limits, continuity, asymptotes
2. The derivative, rates of change. Finding and using derivative
3. Higher derivatives. Differentiability

(Exam 1)

4. Product, quotient and chain rules
5. Linear approximation
6. Implicit differentiation
7. Related rates

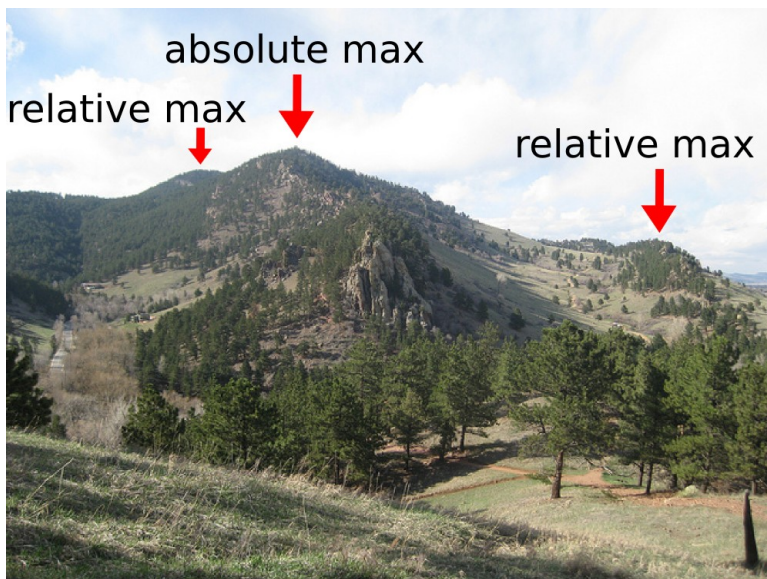
(Exam 2)

8. Increasing and decreasing functions
9. Second derivative and concavity
10. Relative extrema. First and second derivative tests. Graphical analysis
11. Absolute extrema and optimization

(Exam 3)

12. Indefinite integral. Substitution
13. Left and right sums. Definite integral
14. The Fundamental Theorem of Calculus. Areas between curves

(Final Exam)



Text: No textbook required.

Handouts with new material and practice problems will be distributed for each teaching unit.

Technology: All students are required to have a graphing calculator. Instructions will be given for TI83(+) or TI-84 calculators.

Tentative Exam Schedule:

Exam 1. During week 4 (9/14)

Exam 2. During week 7 (10/5)

Exam 3. During week 11 (11/9)

Final Exam: During the finals week

Grading:

Exams 1, 2 and 3	20% each
Final Exam	25%
Homework Assignments	15%
TOTAL	100%

Grades are computed according to the following system:

letter grade	A+	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
number grade	97 to 100	93 to 96	90 to 92	87 to 89	83 to 86	80 to 82	77 to 79	73 to 76	70 to 72	67 to 69	63 to 66	60 to 62	0 to 59

Relevant Course Elements.

Number of credits: 3

Prerequisites: MA107 or the permission of instructor.

Attendance: It is imperative that students attend all classes. Students are responsible for all material covered in class, even if attendance is not checked or assignments collected. This is a rigorous course. You should plan to spend a minimum of twice the number of class hours on reading, homework assignments, and practice problems. It is your responsibility to come to class prepared to ask questions on any covered concept.

Course Objectives. By passing all exams and projects with at least 60% accuracy, the student will be able to:

- obtain a well rounded introduction to the area of limits, differentiation and basic integration techniques;
- develop basic knowledge of calculus problem formulation, problem solving and modeling techniques required for successful application of mathematics;
- competently use the appropriate technology to model data, implement mathematical algorithms and solve mathematical problems.
- cultivate the analytical skills required for the efficient use and understanding of mathematics.

Learning outcomes: Students will

- know the basic concepts of differential and integral calculus.
- demonstrate proficiency in differentiation and integration techniques.
- be able to interpret and critique graphs using calculus techniques.
- be able to understand and solve multidisciplinary application problems using calculus.
- demonstrate proficiency in using mathematical software.
- know how to use appropriate technology to solve problems applying calculus techniques.

Assessment

Exams

There will be **3 semester exams and a cumulative final exam**. No makeup exam will be given unless the excuse for missing the scheduled exam is acceptable to the instructor. Any makeup exam must be taken **before** the next regularly scheduled exam. **No exam grade will be dropped.**

Assignments

There will be **4 assignments** during the semester, one before each exam. There will be **no makeup** assignments. Assignments and projects turned in after their due date will receive an automatic reduction in grade. **No assignment grade will be dropped.**

Response time: The assignments, projects and exams are typically graded in three days after they are turned in. Special circumstances like snow days, school closing or holidays, may occasionally delay the response time. Barring special circumstances, students' emails are usually responded to within one working day.

General Education Skills and their Assessment

The course satisfies two General Education Skills: Reasoning and Problem Solving,

Reasoning and Problem Solving

Relevant Learning Outcomes. Students will demonstrate a logical approach to the solution of a problem. Specifically, (1) Students will be able to critically examine information; (2) Students will be able to understand and solve multidisciplinary calculus application problems; (3) Students will be able to demonstrate the use of calculus in problem solving.

Learning Activities. Problem solving in class. Includes (1) demonstration by instructor, practice by students, class discussion and developing problem solving skills, demonstration and practice in mathematical modeling; (2) Problem solving on assignments, projects, and exams. Emphasis on student learning. Students directly demonstrate acquired problem solving skills and success in applying problem solving in mathematics to problems in other disciplines.

Means of Assessment and Evaluation. Student's grade on three in-class exams and the comprehensive final exam will be used for assessment of the skill. The following grading scheme will be used.

Exceeded Expectations:	97% to 100%
Met Expectations:	73% to 96%
Approaching Expectations:	70% to 72%
Did Not Meet Expectations:	69% and below

Academic Integrity: Academic integrity is at the center of the educational experience at SJU. Students are therefore expected to uphold the highest standards of academic integrity and not engage in nor tolerate academic dishonesty. Academic dishonesty includes, but is not limited to, fabrication, cheating or plagiarism, and unauthorized collaboration. Any violation of academic integrity will be investigated and, where warranted, the student will receive appropriate sanctions through the University's Student Conduct Process. In particular, adherence to the Student Conduct Policy and Academic Integrity Policy will help to ensure that your learning and living experiences are founded on integrity.

Americans with Disabilities Act (ADA) Compliance Statement: SJU supports the educational endeavors of all students, including students with disabilities. ADA defines a disability as a mental or physical impairment that substantially limits one or more major life activities. If you believe that you have a disability that may impact your ability to fulfill your course or degree requirements, and you would like more information on applying for an accommodation under ADA, please contact the Program Coordinator of Student Accommodations who serves as 504 Coordinator.

Mental Health Wellness Statement: SJU encourages students to recognize that academic success requires students to be emotionally and physically well. If you are having difficulty coping with stress associated with the classroom or are experiencing other personal issues, please go to SJU Health and Counseling. Additional emotional support is available 24/7 and can be obtained by contacting the National Suicide Prevention Hotline at 800.273.8255 or by texting “Go” to the Crisis Text Line 741-741. The services listed above are all free and confidential.

COVID-19 Statement: As we continue to navigate the COVID-19 pandemic it is important to remember that:

- All individuals, regardless of vaccination status, are required to wear masks indoors on campus.
- USciences mandates that all students, faculty, and staff are vaccinated against COVID-19.
- Practice good hygiene by frequently washing hands.
- Conduct a daily health check before coming to campus.

Students who are ill, regardless of symptoms, vaccination status or or diagnosis, should not come to campus for classes or activities and should contact SHAC. If students are ill, but able to virtually participate in courses they may do so. Students should not contact the Office of Student Health for “sick notes.” The COVID-19 pandemic has refocused the need for both mental and physical personal wellness. The University encourages students who are ill to take the time to focus on their health. Additionally, if needed students may reach out to their college dean’s office to inquire about leave of absence options including: short-term leave of absence (up to 10 business days), a personal leave of absence, or a medical leave absence. We firmly believe to learn you must be healthy.