

SYLLABUS

MATH 160-H1 Calculus I

Fall 2020

INSTRUCTOR INFORMATION

Instructor:	Dr. Andrew Incognito
Office:	Sci 207C
Telephone:	843-349-2513
E-mail:	aincogni@coastal.edu
Office Hours:	MWF 11:00 - 12:00 and 2:00 - 3:00 <i>and by appointment</i>
Course webpage:	ww2.coastal.edu/aincogni

COURSE DESCRIPTION

Prerequisite:	MATH 130 or MATH 130I and a grade of C or better in MATH 131, or a grade of C or better in MATH 135, or by Mathematics Placement.
Textbooks:	<i>Calculus I</i> by Andrew Incognito: https://ximera.osu.edu/math , and <i>Calculus Volume 1</i> by OpenStax: https://openstax.org/details/books/calculus-volume-1
Course Topics:	Limits, continuity, differentiation and integration of algebraic and transcendental functions, applications of the derivative to curve sketching, optimization and related rates.
Course Objectives:	We will develop the basic tools of calculus - limits, derivatives and integrals - and learn how to apply them to a variety of problems. We will see how calculus can help us understand the behavior of functions and their graphs, the relationship between average and instantaneous rates of change, and the interplay between distance, velocity and acceleration. We will solve problems of optimization, related rates, and linear approximation. As the course progresses, you will develop a conceptual understanding of calculus and general critical thinking skills which will allow you to understand and solve many new types of problems.

Tutoring Help: You can get free tutoring in the Mathematics Learning Center. Visit their webpage (<https://www.coastal.edu/mathcenter/>) for hours and location.

Math Outreach: Some math professors will hold outreach hours at various locations around campus. The weekly schedule will be posted on the course webpage.

Exams: There will be three 50-minute exams and a cumulative final exam.

Homework: Homework problems will be collected on a weekly basis. Homework assignments will consist of all of the problems from the indicated sections. Homework solutions should include all relevant details. Use the examples proceeding the problems as a guide for writing your homework solutions.

Calculator: While a graphing calculator is not required for this course, you may find one to be useful. No calculator of level TI 89 or higher (or calculator that can do symbolic manipulation) is allowed for any exams or quizzes. If you have questions about your calculator please let me know. Cell phones and tablets are not an acceptable substitute for a calculator and will not be allowed.

Grade Guidelines: Homework = 20% , 3 Tests = 50%, Final Exam = 30%

Note: if you make less than a 50 on the final, then the highest grade you can make in MATH 160 is a D+

Grade Scale:

A: 90–100	B+: 86–89	B: 80–85	C+: 76–79
C: 70–75	D+: 66–69	D: 60–65	F: below 60

Important Dates:

Monday, September 7	Labor Day Holiday
Friday, October 9	Last day to drop a course with a grade of “W”
Tuesday, November 3	Election Day Holiday
November 23-27	Thanksgiving Break
Wednesday, December 2	Last day of class
Friday, December 4	Final Exam

Attendance Policy: Students are obligated to attend class regularly. Absences, excused or not, do not absolve students from the responsibility of completing all assigned work promptly. Read the following page for details: <https://www.coastal.edu/policies/pdf/stud-332-may2020.pdf>

Students with Disabilities: Coastal Carolina University is committed to equitable access and inclusion of individuals with disabilities in accordance with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act. Individuals seeking reasonable accommodations should contact Accessibility & Disability Services (843-349-2503 or <https://www.coastal.edu/disabilityservices/>).

Statement of Academic Integrity: Coastal Carolina University is an academic community that expects the highest standards of honesty, integrity and personal responsibility. Members of this community are accountable for their actions and reporting the inappropriate actions of others and are committed to creating an atmosphere of mutual respect and trust. Any instances of academic dishonesty will be handled in accordance with the procedures outlined in the Code of Student Conduct, and may result in penalties up to and including failure of the course with a grade of "FX". The Coastal Carolina University Code of Student Conduct, which is available online via the CCU website, gives examples of plagiarism and cheating. Please review the CCU Code of Student Conduct that is available on the web at: <https://www.coastal.edu/conduct/>

Math 160 - Student Learning Outcomes

Student learning outcomes for Math 160 (Calculus I) fall into one of the following two categories: computational and conceptual. The following list summarizes the fundamental computational skills and concepts of calculus a student will possess when he/she successfully completes Math 160.

1. Compute average rates of change and instantaneous rates of change of a certain quantity as well as the ability to explain the relationship between these two types of rates of change.
2. Solve the classic problem of finding the equation of the line tangent to the graph of a differentiable function f at a given point $(a, f(a))$.
3. Explain the relationship between the slope of a tangent line and the instantaneous rate of change. Explain the relationship between the slope of a secant and the average rate of change.
4. Compute a variety of limits using numerical and graphical techniques, limit laws and algebraic techniques.
5. Identify continuous functions as well as explain why a function is or is not continuous. Apply the Intermediate-Value Theorem to an equation to show that a solution does or does not exist.
6. Compute several basic derivatives using the definition of the derivative such as polynomial functions, trigonometric functions, exponential functions, logarithmic functions, and inverse trigonometric functions. The ability to use the product rule, quotient rule, chain rule, implicit differentiation, and logarithmic differentiation to compute the derivatives of more complicated functions.
7. Solve the following types of applied problems: related rates problems, optimization problems and rates of change problems.
8. Explain The Mean Value Theorem in terms of average rates of change and instantaneous rates of change as well as provide a geometric interpretation of The Mean-Value Theorem in terms of secant lines and tangent lines.
9. Explain the relationship between a function f , its first derivative f' , and its second

- derivative f'' . The ability to use the first and second derivatives of a function f to gather certain information about the behavior of the function f .
10. Solve the classical problem of computing the area bounded between the x -axis and the graph of a continuous function f on a given interval $[a, b]$.
 11. Explain the intricate relationship between integration and differentiation via The Fundamental Theorem of Calculus.
 12. Compute basic definite integrals and indefinite integrals.

The syllabus is for planning purpose only and is subject to change.