

Instructor: Dr. Scott Kersey Office: Math/Physics 2308 Office Hours: See Folio for my schedule Email: skersey@georgiasouthern.edu Teaching Assistant: Samuel Walker	Classroom: MP 3028 Section F: Lecture: TR 9:30-10:45 and W 9:05-9:55 Recitation: M 9:05-9:55 (Samuel Walker) Section O: Lecture: TR 11:00-12:15 and W 11:15-12:05 Recitation: M 11:15-12:05 (Samuel Walker) Term Exams: Sept 14, Oct 12, Nov 9 (Thursdays)
---	---

Course Description: This is the first of a sequence of courses which present a unified treatment of the differential and integral calculus. Topics include: limits, continuity, differentiation and integration, applications of the derivative and the integral.

Prerequisites: Minimum grade of C in Math 1112 or Math 1113

Credit Hours: 4

Textbook: *Open Stax Calculus*, Volume 1, <https://openstax.org/details/books/calculus-volume-1>.

Course Objectives: The successful student will be able to:

- Demonstrate their understanding of the definitions of limits and continuity
- Perform computations of limits and determine the continuity
- Evaluate derivatives using differentiation rules and the Chain Rule
- Apply derivatives to find extreme values and sketch graphs of functions
- Apply derivatives to solve problems of related rates
- Evaluate indefinite integrals and definite integrals using integration formulas and properties
- Evaluate indefinite integrals and definite integrals using the substitution method
- Understand the definition of definite integrals and apply definite integrals to solve area and volume problems

General Educational Objectives: <http://academics.georgiasouthern.edu/provost/pdf/GeneralEducationOutcomes.pdf>

Coursework/Assessment:

- Homework (100 points)
- Quizzes (50 points)
- Three Term Exams (100 points each): In class on dates given above
- Final Exam (100 points): About half new material and half review
- Course average: $(H+E1+E2+E3+F+R) / 5.5$
- Final Grade A (90-100%), B (80-89%), C (70-79%), D (60-69%), F (<60%)

Homework: On line homework using Webwork (sign in through Folio)

Recitation: Review, Solve some homework problems, Short quiz

Lectures: Students are responsible for class material and should get notes from any class they miss from a classmate.

Exams: No early or late exams given except under extreme circumstances with my approval and written documentation. Exam Policies will be given in class before exams.

Academic Dishonesty Policy: Any student who exhibits academic dishonesty in any form will receive penalty ranging from a zero grade or deductions on that assignment or test to a failing grade (F) for the entire course, and will be reported to the University Judicial Officer. For a full discussion of academic dishonesty, see the Student Guide at <http://deanofstudents.georgiasouthern.edu/conduct/resources/faculty/academic-dishonesty/>.

Civility Statement: See the Student Conduct Code at the URL above.

Disability Policy: See <http://students.georgiasouthern.edu/disability/>.

Additional Help: Free tutoring is offered in the Math Department (Room 3000) and at the Academic Success Center (912-478-5371, <http://academics.georgiasouthern.edu/success/>). Check for hours.

Copyright Statement: (1) I hold the copyright on my lectures and course materials, (2) my copyright encompasses student notes or summaries that exactly reproduce my lectures and course materials, (3) these materials are made available to students for their personal use only, and (4) students may not distribute or reproduce these materials for commercial purposes without my express written consent. Any student in violation of my copyright will be referred to the Dean of Students' Office as having violated the Code of Academic Integrity.

		Calculus I Topics	14 th Thomas'	OpenStax
Limits				
	C	Rates of Change and Tangents to Curves	2.1	2.1
	C	Limit of a Function and Limit Laws	2.2	2.2
	O	The Precise Definition of a Limit	2.3	2.5
	C	One-Sided Limits	2.4	2.2
	C	Continuity	2.5	2.4
	C	Limits Involving Infinity	2.6	2.2
Derivative				
	C	Tangents and the Derivative at a Point	3.1	3.1
	C	The Derivative as a Function	3.2	3.2
	C	Differentiation Rules	3.3	3.3
	O	The Derivative as a Rate of Change	3.4	3.4
	C	Derivatives of Trigonometric Functions	3.5	3.5
	C	The Chain Rule	3.6	3.6
	C	Implicit Differentiation	3.7	3.8
	C	Related Rates	3.8	4.1
	O	Linearization and Differentials	3.9	4.2
	X	Derivative of Exponential and Log Functions	7.1-7.4	3.9
Applications				
	C	Extreme Values of Functions on Closed Intervals	4.1	4.3
	C	The Mean Value Theorem	4.2	4.4
	C	Monotonic Functions and the First Derivative Test	4.3	4.5
	C	Concavity and Curve Sketching	4.4	4.5
	C	Applied Optimization	4.5	4.7
	O	Newton's Method	4.6	4.9
	C	Antiderivatives	4.7	4.10
	X	L' Hopital's Rule	7.5	4.8
Integration				
	C	Area and Estimating with Finite Sums	5.1	5.1
	O	Sigma Notation and Limit of Finite Sum	5.2	5.1
	C	The Definite Integral	5.3	5.2
	C	The Fundamental Theorem of Calculus	5.4	5.3
	C	Indefinite Integrals and the Substitution Method	5.5	5.5
	C	Substitution and Area between Curves	5.6	5.5
Applications				
	C	Volumes Using Cross-Sections	6.1	6.2
	C	Volumes by Cylindrical Shells	6.2	6.3
	O	Arc Length (<i>covered in Calculus III</i>)	6.3	6.4
	O	Areas of Surfaces of Revolution (<i>covered in Calculus III</i>)	6.4	6.4
	O	Work and Fluid Forces	6.5	6.5
	O	Moments and Center of Mass	6.6	6.6
	X	Integrals, Exponential and Log Functions	7.1-7.4	6.7