

MAT 181 Calculus I
Course Syllabus
Siena Heights University
Fall 2017


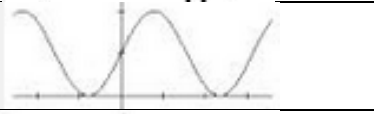
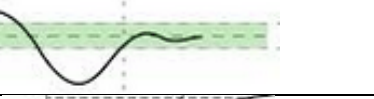
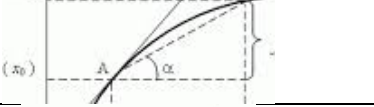

<i>Instructor:</i>	Dr. Jeff Kallenbach
<i>Phone:</i>	264-7641
<i>Office:</i>	SC29B
<i>Hrs:</i>	M-F 1:00-2:00; MW 9:00-10:00
<i>Course Meets:</i>	M-F 10:00-10:50 Science Building Rm 23
<i>Prerequisites:</i>	Successful completion of Pre-Calculus
<i>Text:</i>	<i>Thomas's Calculus, Early Transcendentals</i> by Joel R. Haas, et. al., 14 th Edition, Pearson, 2017. 978-0134439020
<i>Handheld:</i>	A TI-NSpire CAS or TI CX CAS will be the handheld model of choice.
<i>Course Management:</i>	Canvas will be used for this course. Other resources of use may be found at my web site page for this course .

The instructor reserves the right to make changes to this syllabus without notice

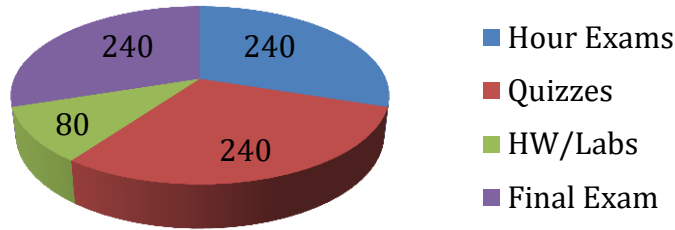
Course Objectives:

This course will introduce you to the first part of the subject of calculus: the study of limits and derivatives, and their applications. We will cover most of the first 5 chapters of the text.

Topics Covered

Functions	
Graphs	
Limits	
Derivatives	
Applications	

Grades



Grading Scale	
A	$[90, +\infty)$
B	$[80,90)$
C	$[70,80)$
D	$[60,70)$
E	$(-\infty, 60)$

Course Description

Calculus I at SHU covers the material normally associated with a university-level Calc I course. We begin with an overview of functions that most students will have learned in their pre-calculus course (function representations, domains and ranges, the basics of graphs, categories of functions like polynomials, trigonometric functions, exponentials and logarithms). We then discuss the concept of a limit of a function, both intuitive and formal epsilon-delta definitions, and develop the idea through our catalog of functions from the first unit. We then move to continuity with formal definitions and theorems. Next we cover derivatives of continuous functions, beginning with the definition in terms of limits, and follow with the rules, theorems, and shortcuts with all of our functions. Applications such as velocity/acceleration, exponential growth, and related rates are treated at the end of this unit. We wrap up Calc I with the development of the concept of area, the definition of anti-derivative, the Fundamental Theorem, the Mean Value Theorem, and integration by substitution.

Method of Evaluation

- **Hour Exams** – 4 or 5 of them, evenly space during the semester. 50 minutes in length. Together will constitute 240 of your 800 grade points.
- **Homework quizzes** – A few times per week, we will have a quiz consisting of 2-3 problems directly from uncollected homework problems from the sections currently under discussion. All homework quizzes together will count for 240 points of your grade. Should you have to miss a class during which we have a quiz or exam, you must notify me via e-mail before the class. After that, you will have until the beginning of the following class period to make it up with a 10% deduction on your score. After that you will receive a 0. To allow for the bad day/missed class, the lowest HW quiz score will be dropped.
- **Homework/TI labs** – From time to time during the semester I will assign some homework to be collected, and we will have a computer assignment/lab on the TI Calculator. Each collected assignment will be graded on a scale of 1-10. Your percentage on these homework & labs together will make up the 80 points of your grade.

Standards for graded homework:

- Work should be neat, organized, and legible – one column only

- Use filler paper or remove ragged spiral edges
 - Use pencil and eraser (not pen)
 - Number each problem
 - Show work so that I can follow your steps and so that you don't need to recreate your work when studying homework for the exam
 - Leave space for my comments
 - **STAPLE** your papers together
- **Final Exam** – 240 points, comprehensive, time & location TBA

Practice Problems:

Practice problems will be assigned for each section that we cover. They will be listed on board at the end of class, and on the Canvas page for that date. I'll also try to keep a master problem list for the course up to date on Canvas, working a couple weeks ahead if you would like to try to keep up on things. In general these problems will NOT be collected, but will be covered on the homework quizzes we have frequently (see above).

Late Work:

Collected assignments are to be submitted at the beginning of the class session on the due date (unless otherwise specified). No late assignments will be accepted.

Course Methods:

- The focus of this class is on learning through daily activities. In this pursuit, we'll use technology: calculators (e.g., TI-NSpire) to enhance your understanding of the concepts being developed. **We will review and discuss daily assignments** to provide instant and interactive feedback on your learning. Students should keep a notebook of worked examples and written homework assignments. Students are expected to be active participants in class discussions. *Successful completion of this course requires a substantial amount of out of class study* **(About 2 hours outside of class for every hour in class)**. Students are encouraged to form study groups and visit the Math Lab (Science 26). **Homework is assigned for every section, and you should plan to complete it once that section is covered in class unless otherwise stated. We will be discussing the assignment at the beginning of the next class, before proceeding to the next topic.** Mainly odd-numbered problems will be assigned, so you will be able to check to see if you've gotten to the correct answer.
- Visit the text companion website at: www.stewartcalculus.com. The resources there can be an important part of understanding Calculus from another perspective. You are encouraged to visit the site as needed to enhance your understanding of the course material.

On Getting Through the Course

- Come to class prepared: review notes, read book, do problems.
- You should not miss class if at all possible. However, if you must, a pdf of the notes for the missed class will usually be posted in Canvas. Be sure to make use of those postings when needed.
- **USE YOUR GRAPHING CALCULATOR** whenever possible (even if not assigned). Graphs & Numerical tables provide concrete visual representations of important concepts, patterns & abstract relationships. Technology gives you the freedom to explore realistic problems & examples, and to spend your time learning concepts, w/o getting bogged down by difficult and/or tedious hand calculations.

- **Ask** questions **DURING** class: if you're confused, seek clarification. One of the things I get paid for is answering your questions.
- **Answer** questions **DURING** class. Lead group discussions and help others: tell us what you've learned and let us learn from you.
- Study in groups as **SOON** after class as possible: help -- but don't copy from each other ...we call that plagiarism and the results of that are undesirable.

Learning Outcomes

The **Mathematics Department** has identified the following five learning outcomes to be achieved by majors and minors in its program.

1. Students will read and understand mathematics, differentiating between correct and incorrect mathematical reasoning. (Reading, listening, following my discussions).
2. Students will effectively communicate mathematics to others, both in writing and speaking. (Presentations and written work)
3. Students will demonstrate abilities to work independently and in-groups to develop mathematical models using appropriate technologies.
4. Students will demonstrate mastery of the content of the course. (Quizzes and exams)

Academic Honesty:

The search for truth and dissemination of knowledge are the central missions of a university. Siena Heights University pursues these missions in an environment guided by our Roman Catholic tradition and our Dominican heritage. Integrity and honesty are therefore expected of all members of the University community, including students, faculty members, administration, and staff. Actions such as cheating, plagiarism, collusion, fabrication, forgery, falsification, destruction, multiple submission, solicitation, and misrepresentation, are violations of these expectations and constitute unacceptable behavior in the University community. The penalties for such actions range from verbal warning, all the way to expulsion from the University.

Students are responsible for their own work and accomplishments. You are encouraged to discuss problems with others, but the actual written work submitted should be your own. The first occurrence of cheating on any assignment will result in a grade of zero on that assignment. The second time the same student is observed cheating will result in that student being given an E for the course. All cases of academic dishonesty will be documented and reported to the appropriate authorities on campus. for a complete explanation of the Academic Dishonesty Policy, refer to page 169 of the SHU Undergraduate Catalog 2004-2006.

Students With Disabilities

Section 504 of the Rehabilitation Act of 1973 (Section 504), prohibits discrimination on the basis of physical or mental disability (29 U.S.C. Section 794). Siena Heights University is committed to furnishing appropriate auxiliary aids and services where necessary to afford any student with a disability an equal opportunity to participate in, and enjoy the benefits of, a service, program, or activity conducted by a public entity.

An academically qualified (has met admission standards) student with a disability who is in need of auxiliary aids/services is obligated to provide detailed documentation of the nature of the disabling condition to the Office of Disability Resources (303 Sacred Heart Hall/ 517 264-7683). The student will discuss with the coordinator of the ODR how the disability impacts performance in the academic setting. The student should initiate this process at the beginning of the semester, so that accommodations may be arranged before the student experiences difficulty. This process is not

retroactive-a student may not disclose a disability in order to retake a failed test. Once appropriate accommodations/services have been determined, the student presents a Letter of Accommodation (provided after consultation with the coordinator of the ODR) to his/her course teaching staff and discusses a plan for implementing the accommodation/service.

[Classroom Emergency Preparedness and Response Information](#)

To Report an Emergency or Suspicious Activity

Call the Department of Public Safety at 517-264-7800 (Adrian Campus). If the line is unavailable or you are calling from another University location, dial 911.

Shelter in Place – General Guidance

Although it is unlikely that we will ever need to shelter in place, it is helpful to know what to do just in case. No matter where you are on campus, the basic steps of shelter in place will generally remain the same:

- If you are inside, stay where you are. If you are outdoors, proceed into the closest building or follow instructions from emergency personnel on scene.
- Shelter-in-place in an interior room, above ground level, and with the fewest windows. If sheltering in a room with windows, keep away from the windows. If there is a large group of people inside a particular building, several rooms maybe necessary.
- Shut and lock all windows (locking will form a tighter seal) and close exterior doors.
- Turn off air conditioners, heaters, and fans. Close vents to ventilation systems as you are able. (Facilities staff will turn off ventilation systems as quickly as possible).
- Make a list of the people with you and call the list in to Public Safety so they know where you are sheltering.
- Visit Campus Safety @ Siena for incident updates <http://www.sienaheights.edu/campussafety.aspx> or call the Information Line 517-264-7900. If possible, turn on a radio or television and listen for further instructions. If your e-mail address or mobile device is registered with SHU Alerts, check for alert notifications.
- Make yourself comfortable and look after one other. You will get word as soon as it is safe to come out.

Evacuation

An evacuation will be considered if the building we are in is affected or we must move to a location of greater safety. We will always evacuate if the fire alarm sounds. In the event of an evacuation, please gather your personal belongings quickly (purse, keys, cell phone, SHU ID card, etc.) and proceed to the nearest exit. **Ground Floor – Exit doors next to SCI 45; 1st Floor – Exit doors next to SCI 131.** Do not use the elevator. ***A second way out of the building for both floors - note the exit door by science 40 and the one upstairs on the east end.**

Once we have evacuated the building, proceed to our primary rendezvous location **Enter Studio Angelico, if needed.** In the event that this location is unavailable, we will meet at **Performing Arts Theater.**

SHU Alerts

SHU Alerts provides free notification by e-mail or text message during an emergency. Visit Campus Safety @ Siena for a link and instructions on how to sign up for alerts pertaining to your campus. If you receive a SHU Alert notification during class, please share the information immediately.

Additional Information

Additional information about emergency preparedness and response at SHU as well as the University's operating status can be found on Campus Safety @ Siena website <http://www.sienaheights.edu/campussafety.aspx> or by calling the Department of Public Safety at 517-263-0731.

MAT 181 Calculus 1
TENTATIVE Course Schedule

This is a tentative schedule for the semester. The actual one will be kept in Canvas as updated as needed. Text is Thomas's Calculus, Early Transcendentals by Joel R. Haas, et. al., 14th Edition

Week	Section	Topic
1	1.1	Functions and Their Graphs
	1.2	Combining Functions; Transformations
2*	1.3	Trigonometric Functions
	1.4	Graphing with Technology
3	1.5	Exponential Functions
	1.6	Inverse Functions & Logarithms
		Exam 1 - Chapter 1
4	2.1	Rates of Change; Tangent Lines
	2.2	Limit Of a Function; Limit Laws
5	2.3	Precise Definition of a Limit
	2.4	One-Sided Limits
6	2.5	Continuity
	2.6	Limits involving infinity; Asymptotes
		Exam 2 - Chapter 2
7	3.1	Tangent Lines; Derivative at a Point
	3.2	The Derivative Function
	3.3	Differentiation Rules
8*	3.4	Derivative as a Rate of Change
	3.5	Derivatives of Trig Functions
9	3.6	Chain Rule
	3.7	Implicit Differentiation
	3.8	Inverse Trig Functions
10	3.9	Related Rates
	3.10	Linearization
		Exam Ch 3
11	4.1	Extreme Values on a Closed Interval
	4.2	The Mean Value Theorem
	4.3	Monotonic Functions; First Derivative Test
12	4.4	Concavity & Curve Sketching
	4.5	Indeterminate Forms; L'Hopital's Rule
	4.6	Optimization Problems
13*		Exam Ch 4
14	4.8	Antiderivatives
	5.1	Area Under a Curve; Finite Sums
15	5.2	Sigma Notation; Limits of Finite Sums
	5.3	The Definite Integral