MTH 2313/2113.001—Calculus I
Department of Mathematics and Statistics
Class Policy Sheet and Syllabus—Summer 1 2023

Professor: Dr. Sarah Stovall
Office: 338 Mathematics building
Email: sstovall@sfasu.edu
Office Phone: 936.468.1684

Course Requirements:

- **Three in-class exams**—If a student must miss an exam due to an excused absence, special arrangements should be made in advance. Our exams are not multiple choice; you will be required to write complete, logically organized solutions.

- **Homework Quizzes**—We will have homework quizzes with the due date given in class. The homework quizzes are multiple choice so we can grade them more quickly, but you should focus on writing solutions as we do together in class.

- **Lab assignments**—Lab reports will be turned in and graded. During the lab meetings, students will investigate various topics in calculus using a variety of mathematical tools. Students will convert their lab report to a pdf and submit via a dropbox in d2l (Brightspace).

- **A comprehensive final exam**—The final exam is Friday, June 30, 10:30am-12:35pm in our regular classroom.

- **Homework**—We suggest additional exercises for practice from the text but will not take up homework for a grade.

- **Class attendance**—Students are expected to attend all class meetings, arriving on time. Bring your text (or some representation of it) daily. I will model daily how to use your text. If you are absent, you are responsible for determining what you missed and for being prepared for class when you return. Any student missing 7 classes will receive a 10 point deduction on his or her final course grade. We will use the Groupme app for texting, in addition to communicating via your @jacks email.

- **Preparing for class**—Students should be prepared to invest several hours (at least 2 hours for each credit hour) outside of class reading the text, practicing examples, and working homework exercises. **Material to be discussed in class should be previewed before coming to class.**

- **There is no extra credit or alternative credit.** Do well enough on the graded items to earn the grade you seek.

**Grading Policy:**

- **First Three Exams** (top two 20% each, lowest 15%)
- **Homework Quizzes**
- **Labs**
- **Comprehensive Final Exam**

**Grading Scale:**

- First Three Exams 60%:    D
- Homework Quizzes 70% - 80%: C
- Labs 60% - 70%: D
- Comprehensive Final Exam Below 60%: F

**Exam Dates:**

- Exam 1 Wednesday, June 7
- Exam 2 Thursday, June 15
- Exam 3 Monday, June 26
- **Final Friday, June 30, 10:30am-12:35pm** in our regular classroom

**Office Hours:**

<table>
<thead>
<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
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<td>2:30-3:30</td>
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**Course description:** Topics include limits, continuity, differentiation of algebraic, trigonometric, and other transcendental functions, and applications of differentiation, including optimization and curve sketching, antiderivatives, integration by substitution, definite integrals, the Fundamental Theorem of Calculus, and application of integration to areas of regions in the plane.

**Text and Materials:** The **required textbook** is *Calculus (Early Transcendentals), 4th edition,* by Rogawski and Adams, ISBN 9781319050740. Topics for MTH 2313 are included in chapters 2, 3, 4, and 5 of the text. Google “9781319050740” to find cheap copies. For exams, students may use only a non-programmable, non-graphing calculator.

**Tentative Exam Calendar:** Please note that the dates for our exams except the final below are subject to change. The final is university scheduled and cannot be taken at a different time without permission of the Chair of the Department of Mathematics and Statistics. Be sure to arrange your end-of-the-semester travel plans accordingly.

- **Exam 1** Wednesday, June 7
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- **Exam 3** Monday, June 26
- **Final** Friday, June 30, 10:30am-12:35pm in our regular classroom

**Calendar:**

- First Three Exams
- Exam 1
- Exam 2
- Exam 3
- Final

**Homework:**

- Homework will be given in class and be due the next class meeting.

**Office Hours:**

Monday: 2:30-3:30
Tuesday: 12:45-1:45
Wednesday: 2:30-3:30
Thursday: 12:45-1:45
Friday: none

**Lab Time & Place:**

- Lab Time: 2:45-3:45
- Place: Math Building 358

**Materials:**

There is no extra credit or alternative credit. Do well enough on the graded items to earn the grade you seek.

**COMPLETE COURSE POLICY SHEET ACCESSIBLE ONLINE IN D2L.**
<table>
<thead>
<tr>
<th>MTH 2313-Tentative Homework Schedule</th>
<th>Rogawski/Adams, 4th edition</th>
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<tbody>
<tr>
<td>2.1 Limits, rate of change, tangent lines</td>
<td>p.65: 1, 5, 9, 11, 13, 17, 23</td>
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<tr>
<td>2.2 Limits: numerical and graphical</td>
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<td>2.3 Limit Laws</td>
<td>p.78: 1, 5, 9, 13, 19, 29, 31, 37-39</td>
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<td>2.4 Limits and Continuity</td>
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<td>2.5 Evaluating Limits Algebraically</td>
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<td>2.6 Trig Limits</td>
<td>p.99: 1, 3, 17, 23, 29, 33, 43, 49</td>
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<td>2.7 Limits at Infinity</td>
<td>p.105: 1, 3, 7, 13, 17, 19, 23, 27, 33</td>
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<tr>
<td>Exam 1:</td>
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<tr>
<td>2.8 Intermediate Value Theorem</td>
<td>p.110: 1, 5, 13, 25</td>
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<td>2.9 Formal Definition of Limit</td>
<td>p.117: 4, 5, 7</td>
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<td>3.1 Definition of Derivative</td>
<td>p.129: 3, 7, 8, 17, 31, 37, 39</td>
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<td>3.7 Chain Rule</td>
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<td>3.8 Implicit Differentiation</td>
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<td>3.9 Derivatives of Log and Exp</td>
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<td>3.10 Related Rates</td>
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<td>4.4 Shape of a Graph</td>
<td>p.243: 5, 7, 9, 11, 13, 15, 19, 45, 55, 65</td>
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<td>4.5 L'Hopital's Rule</td>
<td>p.252: 3, 5, 9, 17, 30, 34, 48, 50</td>
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<td>4.6 Graph Sketching and Asymptotes</td>
<td>p.260: 1, 7, 11, 19, 27, 31, 53, 57, 65</td>
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<td>4.7 Applied Optimization</td>
<td>p.269: 1, 5, 9, 13, 15, 45</td>
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<td>[4.8 Newton's Method]</td>
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<td>5.1 Approximating and Computing Area</td>
<td>p.294: 15, 17, 21, 27, 40, 47</td>
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<td>5.7 Substitution Method</td>
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<td>Review</td>
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<td>Final Exam</td>
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**SFASU Policy 5.4:** The federal definition of a credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally established equivalency that reasonably approximates:

1. Not less than one hour of classroom or direct faculty instruction and a minimum of two hours out-of-class student work each week for approximately fifteen weeks for one semester or trimester hour of credit, or 10 to 12 weeks for one quarter hour of credit, or the equivalent amount of work over a different amount of time, or;

2. At least an equivalent amount of work as outlined in item 1 above for other academic activities as established by the institution including laboratory work, internships, practica, studio work, and other academic work leading to the award of credit hours.

To this end, all students in courses offered by the Department of Mathematics and Statistics that wish to be successful should plan to spend at least two hours outside of class for every credit hour associated with this course. Expected activities to be completed in the time outside of class include reviewing notes from previous class meetings, reading assigned course resources, completing all assigned exercises and projects, and performing periodic assessment preparation.
Advice to Students of Calculus

- Seek to understand and perform well on each skill. Your degree is not earned by “sitting” for classes. Each mathematics course builds on the previous ones. You will be held responsible for retention of skills AND for reviewing those skills when you need them. Keep your resources.
- Seek help as soon you need it because ignoring that you have a problem will make it worse. Signs that you need to seek help are quiz grades below 70%, failure to understand how to complete homework exercises, or exam grades below 70%. In each course that is a prerequisite for another, you need to make a C or better to qualify for subsequent courses. It is up to you to make this happen.
- Understanding does not come without practice. In mathematics, practice is working homework problems. Homework is not graded, but that does not mean you don’t have to do it. Your quickest means of feedback comes from doing problems and then checking your answer. We assign odd-numbered homework problems for this reason. Ask questions in class when you get stuck on homework.
- When you come to ask questions, be prepared to show your attempts at the problem, or at the very least, be prepared to verbalize what part of the problem is confusing you. If you are asking just so that you can see one more example worked, what do you think will make this example any different from the others we have worked before? Seeing someone else work examples helps start your learning; only you doing problems will finish it. You have to have roughened the surface of your understanding for help to stick. There are no shortcuts to understanding.
- This is calculus. How you write is important. Responses on exams and quizzes should be thorough and complete. Be sure to answer the question posed using a logical combination of equations and words to narrate your solution.
- All exams count. Make sure you are ready for each one.
- Lab reports must be turned in on time.
- Make sure to bring any allowed tools you need for success. Cell phones as calculators and graphing calculators are NOT allowed on exams and quizzes. Make sure to get a scientific calculator and bring it to exams if you need it. If you come to an exam and say "but I only have a graphing calculator", you will not be allowed to use it. Poor planning on your part does not make an emergency on my part. With that said...
- From my position at the front of the room, it is easy to see what you are doing and how you spend your class time. I am not looking at your cell phone, I am not looking at a calculator, and I am not looking at people writing notes. From my position at the front of the room, it is easy to see what you are doing and how you spend your class time. I am not looking at your cell phone, I am not looking at a calculator, and I am not looking at people writing notes.
- This wastes your time, wastes your money, and fails to favorably impress people from whom you will ultimately be seeking letters of recommendation.)
- If you barely got a C in the prerequisite to this course, be prepared to hit the ground running and hit the books!

General Education Core Curriculum
The Texas Higher Education Coordinating Board has identified six core learning objectives: Critical Thinking Skills, Communication Skills, Empirical and Quantitative Skills, Teamwork, Personal Responsibility, and Social Responsibility. SFA is committed to the improvement of its general education core curriculum by regular assessment of student performance on these six objectives.

Core Objectives (CO):
1. Critical Thinking [CO 1]: to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
2. Communication Skills [CO 2]: to include effective development, interpretation and expression of ideas through written, oral and visual communication
3. Empirical and Quantitative Skills [CO 3]: to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions

Course schedule: Approximate time spent

- Limits and continuity [CO 1, 2, 3] 30%
  - Limits at a point
    - Formal definition, Existence, Infinite limits/vertical asymptotes
  - Limits to infinity/horizontal asymptotes
  - Algebraic evaluation
    - Basic rules/techniques
    - Sandwich Theorem
  - Continuity/Intermediate Value Theorem
- Derivatives and antiderivatives [CO 1, 2, 3] 30%
  - Definition of derivative/Interpretations
  - Derivative rules
    - Basic rules
    - Transcendental rules
    - Product and Quotient rules
    - Chain rule/Implicit differentiation
  - Antiderivative rules
    - Basic rules
    - Transcendental rules
    - Substitution
- Applications of derivatives [CO 1, 2, 3] 25%
  - Related rates
  - Position, velocity, and acceleration
  - Extreme values/optimization
  - Mean Value Theorem
  - Curve sketching
  - Newton’s method
  - L’Hospital’s Rule
- Definite integration [CO 1, 2, 3] 10%
  - Definition of the definite integral/interpretations (area, etc.)
  - Riemann sums
  - The Fundamental Theorem of Calculus
  - Definite integrals with substitution
- Explicit instruction in Critical Thinking, Communication and Empirical and Quantitative Reasoning is in addition to implicit instruction, modeling and practice that occur daily in the discussion of limits and continuity, derivatives and antiderivatives, applications of derivatives and definite integration. This explicit instruction includes explanation of solving mathematical problems by thinking critically, communicating logically ordered solutions with complete and correct notation, and applying empirical or quantitative skills as appropriate to the problem.

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Academic Integrity (Policy A-9.1)  
Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

The penalty for a student found cheating on any part of an assignment, quiz, or exam in this class will range from a grade of zero on the work to a grade of F in the course, and may result in additional, more severe disciplinary measures. A student who allows another to copy his work and the student copying the work are both guilty of cheating. Do your own work. Do not show your completed work to others. Do not allow others to copy your work.

Definition of Academic Dishonesty:
Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1) submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one's paper without giving the author due credit.

Please read the complete policy at http://www.sfasu.edu/policies/academic_integrity.asp.

Withheld Grades Semester Grades Policy (A-54)  
Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average. The circumstances precipitating the request must have occurred after the last day in which a student could withdraw from a course. Students requesting a WH must be passing the course with a minimum projected grade of C.

Students with Disabilities:  
To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to http://www.sfasu.edu/disabilityservices.

Acceptable Student Behavior:  
Classroom behavior should not interfere with the instructor's ability to conduct the class or the ability of other students to learn from the instructional program (see the Student Conduct Code, policy D-34.1 http://www.sfasu.edu/policies/student_conduct_code.asp). Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic or other penalties. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc. The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom. Students who do not attend class regularly or who perform poorly on class projects/exams may be referred to the Early Alert Program. This program provides students with recommendations for resources or other assistance that is available to help SFASU students succeed.

SFASU Mental Health Statement: SFASU values students' mental health and the role it plays in academic and overall student success. SFA provides a variety of resources to support students mental health and wellness. Many of these resources are free, and all of them are confidential.

On-campus Resources:  
SFASU Counseling Services  
www.sfasu.edu/counselingservices  
3rd Floor Rusk Building  
936-468-2401

SFASU Human Services Counseling Clinic  
www.sfasu.edu/humanservices/139.asp  
Human Services Room 202  
936-468-1041

Crisis Resources:  
Burke 24-hour crisis line 1(800) 392-8343  
Suicide Prevention Lifeline 1(800) 273-TALK (8255)  
Crisis Text Line: Text HELLO to 741-741

Student Learning Outcomes (SLO): At the end of MTH 2313, a student who has studied and learned the material should be able to:
1. Find limits using graphs, algebraic techniques, and L'Hopital's Rule. [PLO:2,4], [CO: 1,3]
2. Demonstrate an understanding of the connection between limits and asymptotic behavior in functions. [PLO:2,4,5], [CO: 1,2,3]
3. Recognize and construct continuous functions. [PLO:4], [CO:1,3]
4. Connect the definitions of the derivative and definite integral to their geometric interpretations and applications. [PLO: 1], [CO:1,3]
5. Find derivatives and antiderivatives of algebraic and transcendental functions, including compositions of functions. [PLO: 2,4], [CO:1,3]
6. Use implicit differentiation to solve related rates problems and to determine derivative rules for inverse transcendental functions. [PLO: 2,4], [CO:1,3]
7. Use information revealed by limits and derivatives to sketch graphs of functions and find extreme values of functions on given intervals. [PLO:2,4,5], [CO: 1,2,3]
8. Convey the connections between limits, derivatives, and integrals. [PLO:1,5], [CO: 1,3]
9. Use the Fundamental Theorem of Calculus to evaluate definite integrals. [PLO:1,2,4], [CO:1,3]

Program Learning Outcomes: Students graduating from SFASU with a B.S. Degree and a major in mathematics will:
1. Demonstrate comprehension of core mathematical concepts. [Concepts]  
   (notion of theorem, mathematical proof, logical argument)  
2. Execute mathematical procedures accurately, appropriately, and efficiently. [Skills]  
   (calculus, algebra, routine, nonroutine, applied)  
3. Apply principles of logic to develop and analyze conjectures and proofs. [Logical Reasoning]  
   (quantifiers, breaking down mathematical statements, counterexamples)  
4. Demonstrate competence in using various mathematical tools, including technology, to formulate, represent, and solve problems. [Problem Solving]  
   (calculus tools, algebra tools, applied tools, nonstandard problem solving)  
5. Demonstrate proficiency in communicating mathematics in a format appropriate to expected audiences. [Communication] [written, visual, oral]