MTH 2313/2113.002—Calculus I
Department of Mathematics and Statistics
Class Policy Sheet and Syllabus—Fall 2023

Professor: Dr. Sarah Stovall
Office: 338 Mathematics building
Email: sstovalli@sfasu.edu
Office Hours: I am available to meet at the times below in my office or by Zoom, but in-office visitors will be seen first.

<table>
<thead>
<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
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<td>2:30-4</td>
<td>10-11</td>
<td>2:30-4</td>
<td>10-11</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), 3rd edition*, by Rogawski and Adams, ISBN 9781319050740. Topics for MATH 2313 are included in chapters 2, 3, 4, and 5 of the text. Google “9781319050740” to find cheap copies. You may use a scientific, non-graphing calculator for exams.

Exam Calendar: Please note that the dates for our in-class exams 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-semester travel plans accordingly.

- Exam 1: Tuesday, September 19
- Exam 2: Tuesday, October 17
- Exam 3: Tuesday, November 14
- Final: Monday, December 11, 10:30am-12:30pm in our regular classroom

Grading Policy: 55% First Three Exams (top two 20% each, lowest 15%) 10% Quizzes 10% Labs 25% Comprehensive Final Exam Grading Scale: 90% - 100%: A 80% - 90%: B 70% - 80%: C 60% - 70%: D Below 60%: F

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.
- **Quizzes**—We will have take-home quizzes with the due date at the top.
- **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 Monday, December 11, 10:30am-12:30pm in our regular classroom.
- **Homework**—We will assign exercises from the text but will not take up homework for a grade. These discussions can be helpful for all!
- **Class attendance**—Students are expected to attend all class meetings, arriving on time. Bring your text (or some representation of it) daily. 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.

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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</thead>
<tbody>
<tr>
<td>2.1 Limits, rate of change, tangent lines</td>
<td>p.65: 1, 5, 9, 11, 13, 17, 23</td>
</tr>
<tr>
<td>2.2 Limits: numerical and graphical</td>
<td>p.73: 3, 9, 21, 25, 33</td>
</tr>
<tr>
<td>2.3 Limit Laws</td>
<td>p.78: 1, 5, 9, 13, 19, 29, 31, 37-39</td>
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<tr>
<td>2.4 Limits and Continuity</td>
<td>p.87: 3, 5, 9, 19, 21, 29, 51, 57, 65, 67, 77, 79, 87</td>
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<td>2.5 Evaluating Limits Algebraically</td>
<td>p.94: 1, 9, 17, 29, 30, 53, 59</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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<td>2.8 Intermediate Value Theorem</td>
<td>p.102: 1, 5, 9, 13, 17, 19, 25, 26</td>
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<tr>
<td>2.9 Formal Definition of Limit</td>
<td>p.117: 4, 5, 7</td>
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<td><strong>Exam 1</strong></td>
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<tr>
<td>3.1 Definition of Derivative</td>
<td>p.129: 3, 7, 8, 17, 31, 37, 39</td>
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<td>3.2 Derivative as a Function</td>
<td>p.143: 3, 5, 9, 11, 13, 17, 23, 25, 30, 32, 35, 36, 45</td>
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<tr>
<td>3.3 Product and Quotient Rules</td>
<td>p.150: 17, 18, 20, 27, 28, 31, 32</td>
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<td>3.4 Rates of Change</td>
<td>p.159: 1, 5, 9, 10, 11, 37, 39, 46</td>
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<td>3.5 Higher Derivatives</td>
<td>p.167: 7, 11, 13, 21, 25</td>
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<tr>
<td>3.6 Trigonometric Functions</td>
<td>p.172: 5, 7, 11, 17, 19, 20, 23, 29</td>
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<tr>
<td>3.7 Chain Rule</td>
<td>p.178: 5, 7, 11, 13, 17, 19, 21, 35, 39, 51, 53, 67</td>
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<tr>
<td>3.8 Implicit Differentiation</td>
<td>p.187: 9, 15, 19, 21, 23, 39, 41, 43, 55, 59</td>
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<tr>
<td>3.9 Derivatives of Log and Exp</td>
<td>p.196: 1, 3, 5, 9, 15, 16, 17, 20, 29, 31, 41, 43, 45, 49</td>
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<tr>
<td><strong>Exam 2</strong></td>
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<tr>
<td>3.10 Related Rates</td>
<td>p.202: 3, 9, 11, 17, 23, 33</td>
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<tr>
<td>4.1 Linear Approximation (Differentials)</td>
<td>p.218: 1, 5, 9, 13, 17, 21, 25, 33</td>
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<tr>
<td>4.2 Extreme Values</td>
<td>p.227: 1, 5, 7, 13, 15, 17, 33, 39, 51, 57, 65</td>
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<tr>
<td>4.3 Mean Value Theorem, Monotonicity</td>
<td>p.237: 4, 5, 6, 27, 29, 37, 43, 45, 51, 57</td>
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<tr>
<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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<tr>
<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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<tr>
<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>
<td>[p.279: 1, 3, 9, 11, 13]</td>
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<td><strong>Exam 3</strong></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>5.2 Definite Integral</td>
<td>p.307: 3, 4, 9, 23, 37, 44, 59, 61</td>
</tr>
<tr>
<td>5.3 Indefinite Integral</td>
<td>p.316: 13, 14, 17, 24, 26, 28, 31, 35, 39, 51, 57</td>
</tr>
<tr>
<td>5.4 Fundamental Theorem of Calculus, I</td>
<td>p.323: 11, 19, 31, 35, 41, 45</td>
</tr>
<tr>
<td>5.5 Fundamental Theorem of Calculus, II</td>
<td>p.330: 1, 5, 9, 13, 21, 23, 29, 31, 33</td>
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<tr>
<td>[5.6 Net Change]</td>
<td>[p.336: 1, 3, 5, 9, 11]</td>
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<tr>
<td>5.7 Substitution Method</td>
<td>p.344: 1, 5, 9, 13, 17, 21, 25, 29</td>
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<tr>
<td>5.8 Further Transcendental Functions</td>
<td>p.349: 1, 9, 13, 17, 19, 21, 25, 29, 33, 37</td>
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<tr>
<td>Review</td>
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<tr>
<td><strong>Final Exam</strong></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.

Notes regarding my 2313.002 course:
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:  

<table>
<thead>
<tr>
<th>Program Learning Outcomes (PLO):</th>
<th>Approximate time spent</th>
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<tbody>
<tr>
<td>Limits and continuity [CO 1, 2, 3]</td>
<td>30%</td>
</tr>
<tr>
<td>o Limits at a point</td>
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<tr>
<td>o Formal definition, Existence, Infinite limits/vertical asymptotes</td>
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<tr>
<td>o Limits to infinity/horizontal asymptotes</td>
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<tr>
<td>o Algebraic evaluation</td>
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<tr>
<td>o Basic rules/techniques</td>
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<td>o Sandwich Theorem</td>
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<tr>
<td>o Continuity/Intermediate Value Theorem</td>
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<tr>
<td>Derivatives and antiderivatives [CO 1, 2, 3]</td>
<td>30%</td>
</tr>
<tr>
<td>o Definition of derivative/interpretations</td>
<td></td>
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<tr>
<td>o Derivative rules</td>
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<tr>
<td>o Basic rules</td>
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<tr>
<td>o Transcendental rules</td>
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<tr>
<td>o Product and Quotient rules</td>
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<tr>
<td>o Chain rule/implicit differentiation</td>
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<tr>
<td>o Antiderivative rules</td>
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<tr>
<td>o Basic rules</td>
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<tr>
<td>o Transcendental rules</td>
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<tr>
<td>o Substitution</td>
<td></td>
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<tr>
<td>Applications of derivatives [CO 1, 2, 3]</td>
<td>25%</td>
</tr>
<tr>
<td>o Related rates</td>
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<tr>
<td>o Position, velocity, and acceleration</td>
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<tr>
<td>o Extreme values/optimization</td>
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<tr>
<td>o Mean Value Theorem</td>
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<tr>
<td>o Curve sketching</td>
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<tr>
<td>o Newton’s method</td>
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<tr>
<td>o L’Hospital’s Rule</td>
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<tr>
<td>Definite integration [CO 1, 2, 3]</td>
<td>10%</td>
</tr>
<tr>
<td>o Definition of the definite integral/interpretations (area, etc.)</td>
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<tr>
<td>o Riemann sums</td>
<td></td>
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<tr>
<td>o The Fundamental Theorem of Calculus</td>
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<tr>
<td>o Definite integrals with substitution</td>
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<tr>
<td>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.</td>
<td>5%</td>
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</table>

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’Hospital’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)

Academic Integrity
The Code of Student Conduct and Academic Integrity outlines the prohibited conduct by any student enrolled in a course at SFA. It is the responsibility of all members of all faculty, staff, and students to adhere to and uphold this policy.

Articles IV, VI, and VII of the new Code of Student Conduct and Academic Integrity outline the violations and procedures concerning academic conduct, including cheating, plagiarism, collusion, and misrepresentation. Cheating includes, but is not limited to: (1) Copying from the test paper (or other assignment) of another student, (2) Possession
and/or use during a test of materials that are not authorized by the person giving the test, (3) Using, obtaining, or attempting to obtain by any means the whole or any part of a non-administered test, test key, homework solution, or computer program, or using a test that has been administered in prior classes or semesters without permission of the Faculty member, (4) Substituting for another person, or permitting another person to substitute for one’s self, to take a test, (5) Falsifying research data, laboratory reports, and/or other records or academic work offered for credit, (6) Using any sort of unauthorized resources or technology in completion of educational activities.

Plagiarism is the appropriation of material that is attributable in whole or in part to another source or the use of one’s own previous work in another context without citing that it was used previously, without any indication of the original source, including words, ideas, illustrations, structure, computer code, and other expression or media, and presenting that material as one’s own academic work being offered for credit or in conjunction with a program course or degree requirements.

Collusion is the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any provision of the rules on academic dishonesty, including disclosing and/or distributing the contents of an exam.

Misrepresentation is providing false grades or résumés; providing false or misleading information in an effort to receive a postponement or an extension on a test, quiz, or other assignment for the purpose of obtaining an academic or financial benefit for oneself or another individual or to injure another student academically or financially.

Withheld Grades Semester Grades (SFA Policy 5.5)
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. For additional information, go to https://www.sfasu.edu/policies/course-grades-5.5.pdf.

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/disabilityservice.

Student Wellness and Well-Being
SFA values students’ overall well-being, mental health and the role it plays in academic and overall student success. Students may experience stressors that can impact both their academic experience and their personal well-being. These may include academic pressure and challenges associated with relationships, emotional well-being, alcohol and other drugs, identities, finances, etc.

If you are experiencing concerns, seeking help, 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:
The Dean of Students Office (Rusk Building, 3rd floor lobby)
www.sfasu.edu/deanofstudents
936.468.7249
dos@sfasu.edu

SFA Human Services Counseling Clinic Human Services, Room 202
www.sfasu.edu/humanservices/139.asp
936.468.1041

The Health and Wellness Hub “The Hub”
Location: corner of E. College and Raguet St.
To support the health and well-being of every Lumberjack, the Health and Wellness Hub offers comprehensive services that treat the whole person – mind, body and spirit.
Services include:
- Health Services
- Counseling Services
- Student Outreach and Support
- Food Pantry
- Wellness Coaching
- Alcohol and Other Drug Education
www.sfasu.edu/thehub
936.468.4008
thehub@sfasu.edu

Crisis Resources:
- Burke 24-hour crisis line: 1.800.392.8343
- National Suicide Crisis Prevention: 9-8-8
- Suicide Prevention Lifeline: 1.800.273.TALK (8255)
- Crisis Text Line: Text HELLO to 741-741

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 10.4). 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.
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 likely to make any special arrangement for people who do not use class time wisely. Examples of not using class time wisely are, texting, talking about topics other than calculus, sleeping, arriving late consistently, and doing other homework. (I have noticed a pattern that people who engage in these behaviors skate by with a C or do even worse. 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!
Math 2313 – Calculus I
Course Syllabus

Course description: Topics include limits, continuity, differential calculus of algebraic and transcendental functions with applications, basic antidifferentiation with substitution, definite integrals.

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

Credit hours: 3

The following is an excerpt from SFA 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 a minimum of 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.

Course Prerequisites and Corequisites: MATH 1318 or MATH 2212

General Education Core Curriculum: This course has been selected to be part of SFA’s core curriculum. The Texas Higher Education Coordinating Board has identified six objectives for all core courses: 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. Assessment of these objectives at SFA will be based on student work from all core curriculum courses. This student work will be collected in D2L, the assessment management system selected by SFA to collect student work for core assessment.

By enrolling in MATH 2313/2113 Calculus I you are also enrolling in a Core Curriculum Course that fulfills the Mathematics Core Objective requirement.

The chart below indicates: (a) The core objectives that are required to be taught in this course per the Texas Higher Education Coordinating Board (THECB), (b) How the required core objectives will be addressed.
Core Curriculum Objective Table

<table>
<thead>
<tr>
<th>Core Objective</th>
<th>Definition</th>
<th>How the Core Objective Will be Addressed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical Thinking Skills</td>
<td>To include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.</td>
<td>Related Rates and Optimization Modules</td>
</tr>
<tr>
<td>Communication Skills</td>
<td>To include effective development, interpretation and expression of ideas through written, oral, and visual communication.</td>
<td>Calculus Lab Reports—students gather evidence to communicate ideas using charts and graphs and calculus concepts</td>
</tr>
<tr>
<td>Empirical and Quantitative Skills</td>
<td>To include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.</td>
<td>First and Second Derivative Tests for Curve-Sketching Module</td>
</tr>
</tbody>
</table>

Course outline:

- **Limits and continuity** [CO 1, 2, 3]  
  - 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]  
  - 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]  
  - Related rates  
  - Position, velocity, and acceleration  
  - Extreme values/optimization

sfasu.edu/math
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.

Program Learning Outcomes: Students graduating from SFA with a B.S. Degree and a major in mathematics will:
1. Written Communication - SFA Mathematics majors communicate mathematical ideas effectively in written form, integrating mathematical notation correctly and consistently.
2. Verbal Communication - SFA Mathematics majors communicate mathematics effectively to diverse audiences.
3. Mathematical Maturation - SFA Mathematics majors grow from a computational understanding of mathematics to an integrated approach which includes critical thinking proficiency, computational facility, conceptual understanding, and problem-solving persistence.

Student Learning Outcomes (SLO): At the end of MTH 233, a student who has studied and learned the material should be able to:
1. Find limits using graphs, algebraic techniques, and L’Hospital’s Rule. [PLO:1,23], [CO: 1,3]
2. Demonstrate an understanding of the connection between limits and asymptotic behavior in functions. [PLO: 1,2,3] , [CO: 1,2,3]
3. Recognize and construct continuous functions. [PLO: 1,2,3], [CO: 1,3]
4. Connect the definitions of the derivative and definite integral to their geometric interpretations and applications. [PLO: 1,2,3], [CO: 1,3]
5. Find derivatives and antiderivatives of algebraic and transcendental functions, including compositions of functions. [PLO: 1,2,3, CO:1,3]
6. Use implicit differentiation to solve related rates problems and to determine derivative rules for inverse transcendental functions. [PLO: 1,2,3], [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: 1,2,3], [CO: 1,2,3]
8. Convey the connections between limits, derivatives, and integrals. [PLO: 1,2,3], [CO: 1,3]
9. Use the Fundamental Theorem of Calculus to evaluate definite integrals. [PLO: 1,2,3], [CO: 1,3]

This course meets educator preparation standards for one or more certification programs; a complete listing of all the educator preparation standards this course meets can be found at: https://sfasu.edu/docs/jacksteach/jacksteach-standards-alignment-chart.xlsx.

Academic Integrity
The Code of Student Conduct and Academic Integrity outlines the prohibited conduct by any student enrolled in a course at SFA. It is the responsibility of all members of all faculty, staff, and students to adhere to and uphold this policy.

Articles IV, VI, and VII of the new Code of Student Conduct and Academic Integrity outline the violations and procedures concerning academic conduct, including cheating, plagiarism, collusion, and misrepresentation. Cheating includes, but is not limited to: (1) Copying from the test paper (or other assignment) of another student, (2) Possession and/or use during a test of materials that are not authorized by the person giving the test, (3) Using, obtaining, or attempting to obtain by any means the whole or any part of a
non-administered test, test key, homework solution, or computer program, or using a test that has been administered in prior classes or semesters without permission of the Faculty member, (4) Substituting for another person, or permitting another person to substitute for one’s self, to take a test, (5) Falsifying research data, laboratory reports, and/or other records or academic work offered for credit, (6) Using any sort of unauthorized resources or technology in completion of educational activities.

Plagiarism is the appropriation of material that is attributable in whole or in part to another source or the use of one’s own previous work in another context without citing that it was used previously, without any indication of the original source, including words, ideas, illustrations, structure, computer code, and other expression or media, and presenting that material as one’s own academic work being offered for credit or in conjunction with a program course or degree requirements.

Collusion is the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any provision of the rules on academic dishonesty, including disclosing and/or distributing the contents of an exam.

Misrepresentation is providing false grades or résumés; providing false or misleading information in an effort to receive a postponement or an extension on a test, quiz, or other assignment for the purpose of obtaining an academic or financial benefit for oneself or another individual or to injure another student academically or financially.

Withheld Grades Semester Grades (SFA Policy 5.5)
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. For additional information, go to https://www.sfasu.edu/policies/course-grades-5.5.pdf.

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.

Student Wellness and Well-Being
SFA values students’ overall well-being, mental health and the role it plays in academic and overall student success. Students may experience stressors that can impact both their academic experience and their personal well-being. These may include academic pressure and challenges associated with relationships, emotional well-being, alcohol and other drugs, identities, finances, etc.

If you are experiencing concerns, seeking help, 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:
The Dean of Students Office (Rusk Building, 3rd floor lobby)
www.sfasu.edu/deanofstudents
936.468.7249
dos@sfasu.edu

SFA Human Services Counseling Clinic Human Services, Room 202
www.sfasu.edu/humanservices/139.asp
936.468.1041

The Health and Wellness Hub “The Hub”
Location: corner of E. College and Raguet St.
To support the health and well-being of every Lumberjack, the Health and Wellness Hub offers comprehensive services that treat the whole person – mind, body and spirit. Services include:

- Health Services
- Counseling Services
- Student Outreach and Support
- Food Pantry
- Wellness Coaching
- Alcohol and Other Drug Education

www.sfasu.edu/thehub
936.468.4008
thehub@sfasu.edu

Crisis Resources:
- Burke 24-hour crisis line: 1.800.392.8343
- National Suicide Crisis Prevention: 9-8-8
- Suicide Prevention Lifeline: 1.800.273.TALK (8255)
- Crisis Text Line: Text HELLO to 741-741

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 10.4). 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.

Date of document: 08/23/2023