Class Syllabus / Policy
2018 Fall
MTH 233.002, .700
Calculus I

Instructor: Dr. Roy Joe Harris
Department: Mathematics & Statistics
Email: rharris@sfasu.edu
Phone: 936-468-1486
Office: 346 Math/Nursing
Office Hours: Monday 10-1; Wednesday 10-12

Class meeting time and place: TTh 8-9:15, Mathematics 203
Lab: W 2:30-3:45 Mathematics 359
August 27—December 14.


Course Requirements: There will be three in-class exams and a comprehensive final exam. Each exam date will be announced at least one week in advance. If a student must miss an exam due to an excused absence, special arrangements should be made in advance. Student ID with photo may be required for all exams.

Course Calendar:
Class begins on August 27 and ends on December 14. The final exam will be during the week of December 10-14.

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

Department syllabus:
Please read the official Department of Mathematics & Statistics syllabus for MTH 233 at http://www2.sfasu.edu/math/docs/syllabi/MTH233Syllabus.pdf.

Grading Policy:
The homework/quiz average will be worth 10% of the student’s final average, the average of the first three exams will constitute 50% of the student's final average, the lab grade will be worth 12% of the student's final average and the final exam will be worth 25% of the student's final average. The remaining 5% of the final grade is assigned by Dr. Harris. Dr. Harris reserves the right to allow the final exam score to replace a lower exam score. A final average ranging from 90 to 100 will be an A in the course, 80 to 89 a B, 70 to 79 a C, 60 to 69 a D, and below a 60 will be an F.

Attendance Policy:
Students who have 3 or more unexcused absences may have points deducted from their final average.
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.

By enrolling in Calculus I you are also enrolling in a Core Curriculum Course that fulfills the communication skills requirement. You will see this course on your D2L list. At one point during the semester, you will receive an assignment that fulfills both the requirements of this course and the needs of Stephen F. Austin State University’s Core Curriculum Assessment Plan with the Texas Higher Education Coordinating Board. When you complete this one assignment, you need to upload the assignment the “Core Curriculum” dropbox. The Core Curriculum dropbox will be identified by the Objective for which work is being collected. (Examples: Critical Thinking, Teamwork, Social Responsibility Empirical & Quantitative Skills, Personal Responsibility, Communication Skills-Written, Communication Skills-Written & Visual, and Communication Skills- Oral & Visual.) Please note that this only applies to the approved assignment. All other assignments should be submitted according to regular class operations.

When you complete the assignment mentioned above, you will upload the assignment to the Communication dropbox.

Please note that this only applies to the specific assignment listed in the matrix below. All other assignments should be submitted according to regular class operations.

If you have any questions, please see your instructor, or contact the Office of Student Learning and Institutional Assessment at (936) 468-1130.

The chart below indicates the core objectives addressed by this course, the assignment(s) that will be used to assess the objectives in this course and uploaded to the D2L Communication dropbox this semester, and the date the assignment(s) should be uploaded to the D2L Communication dropbox. Not every assignment will be submitted for core assessment every semester. Your instructor will notify you which assignment(s) must be submitted for assessment in the D2L Communication dropbox.

<table>
<thead>
<tr>
<th>Core Objective</th>
<th>Definition</th>
<th>Course Assignment Title</th>
<th>Date Due in LiveText</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical Thinking Skills (CT)</td>
<td>To include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.</td>
<td>Not assessed in this course</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Communication Skills (C)</td>
<td>To include effective development, interpretation and expression of ideas through written, oral, and visual communication.</td>
<td>Relative Growth Rates (lab)</td>
<td>We, 14 Nov (subject to change if necessary)</td>
</tr>
<tr>
<td>Empirical and Quantitative Skills (EQS)</td>
<td>To include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.</td>
<td>Not assessed in this course</td>
<td>Not applicable</td>
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Student Learning Outcomes (SLOs): 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'Hôpital'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)

Course outline: Approximate time spent (Weeks noted indicate approximate time material will be introduced)

- **Limits and Continuity**
  - 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**
  - 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**
  - Related rates
  - Position, velocity, and acceleration
  - Extreme values/optimization
  - Mean Value Theorem
  - Curve sketching
  - Newton's method
  - L'Hôpital's Rule

- **Definite Integration**
  - Definition of the definite integral/interpretation (area, etc.)
    - Riemann sums
    - The Fundamental Theorem of Calculus
    - Definite integrals with substitution

You should budget 250 minutes per week for classroom time/direct instruction and at least 10 hours of out-of-class work per week for fifteen weeks.

**Academic Integrity (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.

**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 person as if they were your own; and (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.