Class Syllabus / Policy

MTH 233
Calculus I

Professor: Jeremy J. Becnel,
Department: Mathematics and Statistics
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Phone: 468-1582
Office: 322 Math
Office Hours: by appointment or
T/Th 10:45-11:45; 1:45-2:45
Class meeting time and place:
Class 9:30 – 10:45 T/TH Math 359
Lab 1:00 - 2:15 W, Math 359

Text and Materials:
Tan's Single Variable Calculus (Early Transcendentals) 1st ed.
In addition, students may also use a non-programmable, non-graphing calculator with no permanent memory.

Course Requirements:
Homework will be regularly assigned, but not collected; students are responsible for completing the homework and understanding the material. Assessments will include regular exams, laboratory assignments, a comprehensive final exam, and assignments to turn in at the discretion of the professor.

Course outline: Approximate time spent
- Limits and continuity 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 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 30%
Related rates
- Position, velocity, and acceleration
- Extreme values/optimization
- Mean Value Theorem
- Curve sketching
- Newton’s method
- L’Hopital’s Rule

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

**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’Hopital’s Rule. [PLO: 2,4], [EEO: 2, 4, 5]
2. Demonstrate an understanding of the connection between limits and asymptotic behavior in functions. [PLO: 2,4,5], [EEO: 2, 3, 5]
3. Recognize and construct continuous functions. [PLO: 4], [EEO: 2, 5]
4. Connect the definitions of the derivative and definite integral to their geometric interpretations and applications. [PLO: 1], [EEO: 1, 2, 5]
5. Find derivatives and antiderivatives of algebraic and transcendental functions, including compositions of functions. [PLO: 2,4], [EEO: 2, 4]
6. Use implicit differentiation to solve related rates problems and to determine derivative rules for inverse transcendental functions. [PLO: 2,4], [EEO: 1, 2, 4]
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], [EEO: 2, 4, 5]
8. Convey the connections between limits, derivatives, and integrals. [PLO: 1,5], [EEO: 2, 3, 6]
9. Use the Fundamental Theorem of Calculus to evaluate definite integrals. [PLO: 1,2,4], [EEO: 1, 4, 5]

**Program Learning Outcomes (PLO):**

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. 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)
4. Demonstrate proficiency in communicating mathematics in a format appropriate to expected audiences. [Communication]
   (written, visual, oral)

**Exemplary Educational Objectives (EEO):**

1. To apply arithmetic, algebraic, geometric, higher-order thinking, and statistical methods to modeling and solving real-world situations.
2. To represent and evaluate basic mathematical information verbally, numerically, graphically, and symbolically.
3. To expand mathematical reasoning skills and formal logic to develop convincing mathematical arguments.
4. To use appropriate technology to enhance mathematical thinking and understanding and to solve mathematical problems and judge the reasonableness of the results.
5. To interpret mathematical models such as formulas, graphs, tables and schematics, and draw inferences from them.
6. To recognize the limitations of mathematical and statistical models.

**Grading Policy:**
The final average will be computed using the following weights:

- Labs/Assignments: 20%
- Final exam: 20%
- Tests: 60%

**Labs/Assignments**
During the lab students will present problems covered over the previous two classes. Students will incorporate Sage to solve the problems assigned to them and demonstrate their solutions. On these assignments, students cannot earn a grade above a 60% unless all lab assignments are completed.

**Tests**
There are no make-ups for missed exams, so make every effort to be at class on exam day. If you know ahead of time that you will miss an exam, see me at least one class before the scheduled exam and we will work something out. Department policy requires that you bring and be recognizable from either your SFASU Student ID or another valid photo ID before you are permitted to take each exam.

**Final Exam**
The final exam is comprehensive and counts 20% toward the final grade.

**Attendance Policy:**
Attendance is expected but will not be recorded. Any student that misses class is responsible to getting the lesson from that day from another class member.

**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; (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.

**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). 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 SFA students succeed.

**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/.