CoSM Class Syllabus/Policy
MTH 439: Introduction to Analysis I, Fall 2018

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Office Hours: MTWRF 9:30–10:30, M 2:30–3:30, TR 1:30–2:30
Department: Mathematics and Statistics
Class meeting time/place: TR 8–9:15, Math 357

Course Description: Elements of point set theory and an in-depth study of the basic ideas of sequences, limits, continuity and differentiability. Prerequisites: MTH 311 and 333. Purpose: To provide an in-depth understanding of the Calculus of one Real Variable and to hone the ability of the student to present sound mathematical proofs.


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. (notion of theorem, mathematical proof, logical argument)
2. Execute mathematical procedures accurately, appropriately, and efficiently. (calculus, algebra, routine, nonroutine, applied)
3. Apply principles of logic to develop and analyze conjectures and proofs. (quantifiers, breaking down mathematical statements, counterexamples)
4. Demonstrate competence in using various mathematical tools, including technology, to formulate, represent, and solve problems. (calculus tools, algebra tools, applied tools, nonstandard problem solving)
5. Demonstrate proficiency in communicating mathematics in a format appropriate to expected audiences. (written, visual, oral)

Student Learning Outcomes (SLO): At the end of MTH 439, a student who has studied and learned the material should be able to:

1. A knowledge of the definitions and characteristics of sequences, limits, continuity, and derivative. [PLO: 1,2,5]
2. A knowledge of the critical theorems of Real Analysis dealing with derivatives. [PLO: 1,2]
3. The ability to do original mathematical proofs. [PLO: 1,3,4]
4. An understanding of the critical connections and differences between sequences and functions of a continuous variable. [PLO: 1,2]
5. The ability to use analytic knowledge to solve problems. [PLO: 3,5]

6. The ability to use the problem-solving process of experimentation, conjecture, and proof. [PLO: 3,1]

7. The ability to communicate mathematics to a heterogeneous audience in both oral and written form. [PLO: 4,5]

8. The ability to use available technology in the problem solving process. [PLO: 4]

Course Requirements: Students will be expected to come to class prepared—most notably, to have read the section(s) under discussion and attempted any assigned homework. Each student is expected to gain a deeper understanding of the real number system as well as the concepts of limit, derivative and continuity. In addition, each student should be able to state mathematical definitions with accuracy and to produce mathematically sound proofs. The final exam will be comprehensive and is scheduled for Th, 13 Dec, 8–10.

Course calendar/outline: (Topics may be presented in a different order than given here)

- **Preliminaries**
  - Sets and Functions of one variable
  - Mathematical Induction and the Principle of Well-Ordering
  - The Field of Real Numbers
  - The Completeness Axiom

- **Sequences**
  - Definitions, limits and/or special properties

- **Limits**
  - Definitions, theorems and/or special properties

- **Derivative**
  - Definitions, theorems and/or special properties

- **Continuity**
  - Definitions, theorems and/or special properties

Grading Policy: Grades will be based on the total points accumulated on homework, quizzes, exams, and any in-class activities. Homework will consist of exercise sets from the textbook as well as other problems discussed in class or posted to D2L. Some assigned problems may not be collected/graded, but it is expected that all problems should be completed. Quizzes will be used to check each student’s ability to state definitions precisely, or explain definitions and concepts relative to class. Exams will be designed do the same, as well as include “short” proofs.

Attendance Policy: Don’t miss class.

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.

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). 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.

Please be respectful of your fellow students and your instructor. Cell phone use and texting are not allowed in class. Remember to turn your cell phone off or place it in quiet mode before entering the classroom.