Instructor: Dr. Roy Joe Harris
Department: Mathematics & Statistics
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Office: 346 Math/Nursing
Office Hours: Monday 8-9, 10-12 and Tuesday 11-1
Class meeting time and place: TTh 8-9:15, Mathematics 209
Lab: W 1-2:15 Mathematics 358
Jan 15—May 8


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 January 16 and ends on December 8. The final exam will be during the week of December 9-13.

Course description:
Applications and techniques of integration, improper integrals, infinite series and power series.

Department syllabus:
Please read the official Department of Mathematics & Statistics syllabus for MTH 233 at http://www2.sfasu.edu/math/docs/syllabi/MTH234Syllabus.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 3% 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.

SPASU 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.

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'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 SPASU 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]
   (calculation tools, applied 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 at infinity/horizontal asymptotes
  - Algebraic evaluation
    - Basic rules/techniques
    - Sandwich Theorem
  - Continuity/Intermediate Value Theorem
  - Approximate time spent (30% Weeks 1, 2, 3)

• 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
  - Approximate time spent (30% Weeks 4, 5, 6, 7)

• Applications of derivatives
  - Related rates
  - Position, velocity, and acceleration
  - Extreme values/optimization
  - Mean Value Theorem
  - Curve sketching
  - Newton's method
  - L'Hôpital's Rule
  - Approximate time spent (30% Weeks 8, 9, 10, 11)

• Definite integration
  - Definition of the definite integral/interpretation (area, etc.)
  - Riemann sums
  - The Fundamental Theorem of Calculus
  - Definite integrals with substitution
  - Approximate time spent (10% Weeks 12, 13, 14)

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 own 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 purposes of comparing 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 / 468-1104 (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/