Instructor: Dr. Roy Joe Harris  
Department: Mathematics & Statistics  
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Phone: 936-468-1486  
Office: 346 Math/Nursing  
Office Hours: Monday 9-11; Tuesday 9:30-12:30  
Class meeting time and place: MWF 11-11:50, Mathematics 358  
Lab 12:30-1:45 Mathematics 358  
August 28—December 15.  


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 28 and ends on December 15. The final exam will be during the week of December 11-15.  

Course Description:  
Vectors, vector operations, and vector functions; multivariate functions, partial derivatives, gradients, and multiple integrals; integration in vector fields, Green’s, Stokes’, and the Divergence theorems.  

Department Syllabus:  
Please read the official Department of Mathematics & Statistics syllabus for MTH 333 at http://www2.sfasu.edu/math/docs/syllabi/MTH333Syllabus.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.
Course outline:

- Vector operations and vector functions
  - Vectors and vector operations
    - Definition, addition, scalar multiplication
    - Vector products: dot, cross, box
    - Lines and planes in space
  - Vector-valued functions
    - Limits and continuity; differentiation and integration
    - Arc length
    - Unit tangents and normals, curvature
- Multivariate functions
  - Definitions, domain/range, surfaces, level curves/surfaces
  - Limits and continuity
  - Partial derivatives/implicit differentiation
    - The extended chain rule
    - Directional derivatives and gradients
    - Tangent planes
    - Extreme values
  - Multiple integrals
    - Double integrals, areas, moments and center of mass
    - Triple integrals, masses and moments
    - Substitution with multiple integrals, Jacobians
    - Integrals in other coordinate systems
- Integration in vector fields
  - Line integrals
  - Vector fields: work and potential, circulation, flux
  - Green’s Theorem: divergence and curl
  - Surface integrals
  - Stokes’ Theorem
  - Divergence Theorem

Approximate time spent

- Vector operations and vector functions 20%
- Multivariate functions 40%
- Integration in vector fields 40%

Student Learning Outcomes (SLO): At the end of MTH 333, a student who has studied and learned the material should be able to:

1. Perform and interpret the standard vector operations. [PLO: 2]
2. Calculate and interpret the arc length, unit tangent vector, curvature, and principal unit normal of vector-valued functions parameterized either by time or arc length. [PLO: 2]
3. Demonstrate an understanding of the connection between the gradient of a multivariate function, directional derivatives, and tangent planes. [PLO: 1]
4. Set up, manipulate, transform, and interpret multiple integrals to solve mathematical and real-world problems. [PLO: 2,4]
5. Calculate line integrals in vector fields and relate these integrals to the notions of circulation and flux. [PLO: 2,4]
6. Use Green’s Theorem to connect the flux of a vector field to its divergence and the circulation to the curl. [PLO: 1,2]
7. Calculate surface integrals and relate them to real-world applications. [PLO: 2,4]
8. Generalize Green’s Theorem in the plane to Stokes’ Theorem and the Divergence Theorem on surfaces. [PLO: 1,2]

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]
2. Execute mathematical procedures accurately, appropriately, and efficiently. [Skills]
3. Demonstrate competence in using various mathematical tools, including technology, to formulate, represent, and solve problems. [Problem Solving]

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 work 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/.