

Course: MAT 267 Calculus III 4 credit hours

Instructor: _____

Office Location and Phone: _____

Office Hours: _____

Course Description: This is the third of three courses in the basic calculus sequence. Topics include vector valued functions, functions of two or more variables, partial derivatives and their applications, quadric surfaces, multiple integration, vector calculus including Green's Theorem, Divergence Theorem, line and surface integrals and Stoke's Theorem.

Textbook: *Calculus*, 7th edition by Larson, Hostetler and Edwards

Course Content: This course will cover the material found in Chapters 11-15.

Course Objectives:

1. Demonstrate comprehension of the geometry of space.
Plot vectors and compute their magnitudes. Compute the dot product, the cross product and the angle between two vectors. Determine if lines in space are parallel or perpendicular. Find the equation of a line in space. Transform between rectangular, cylindrical and spherical coordinate systems. Convert equations for quadric surfaces to standard form and identify the surface.
2. Demonstrate comprehension of vector valued functions.
Define continuity and derivative of a vector valued function. Compute derivatives and interpret them in terms of velocity, acceleration, etc. Find tangent vectors and normal vectors. Compute arc length and curvature.
3. Demonstrate comprehension of functions of several variables.
Discuss limits, continuity and partial derivatives for functions of several variables. Compute partial derivatives. Compute the gradient and directional derivatives. Find extreme values of a function of several variables. Use the method of Lagrange multipliers.
4. Demonstrate comprehension of multiple integration.
Compute double and triple integrals and apply the results to area and volume problems. Use polar, cylindrical and spherical coordinate systems in multiple integration. Use the Jacobian to change variables in multiple integration.
5. Demonstrate comprehension of vector calculus.
Define and sketch vectors in a vector field. Find the curl and divergence of a vector field. Evaluate line and surface integrals. Use Green's, Stoke's and Divergence Theorems.

Minimum Standards and Grading: There will be three (3) written exams given throughout the term and a cumulative final at the end of the term which will test the course objectives. An objective is passed if the student receives at least 2/3 of the points assigned to that objective. The instructor reserves the right to require other written assignments (such as homework, quizzes, worksheets, etc.) throughout the term. If such written assignments are used, the instructor will inform the students how they will be used in that instructor's grading scheme.

The following grades will be assigned:

- A: The student must attain an average of at least 90% and pass 5 objectives.
- B: The student must attain an average of at least 80% and pass at least 4 objectives.
- C: The student must attain an average of at least 70% and pass at least 4 objectives.
- D: The student must attain an average of at least 60% and pass at least 3 objectives.
- F: The student attains an average lower than 60%.

A student must obtain at least a grade of C in order to pass this class. That is, the student must attain an average of at least 70% and pass at least 4 objectives.

Tutorial Facilities: A tutorial lab is located in the basement of Harper Council Trenholm Hall (Science Building), room 24. An official schedule will be posted outside the room.

Student Conferences: A student may request a conference with the instructor during regular office hours or by making an appointment.

Attendance Policy: Each student is expected to attend all lectures, seminars, laboratories and field work for each registered class, including the first class session, in order to verify registration with the instructor and to complete all work assigned for the course. If a student does not attend class during the first week (first 5 instructional days) of the semester, and does not give prior notification to the instructor of reasons for absence and intent to attend the class, the student will be dropped from the course.

At the beginning of the class, the instructor is responsible for having listed on his/her syllabus the University Attendance Policy. The student will be held responsible for adhering to the University Attendance Policy. Instructors of courses are not obligated to provide make up opportunities for student who are absent, unless the absences have been officially approved. An official absence, however, merely gives the individual who missed the class an opportunity to make up the work and in no way excuses him from the work required.

Official excuses are granted by the Office of Student Affairs for authorized university activities, verified personal illness or illness or deaths in the immediate family.

Any student whose absences from a course exceed one and a half (1.5) times the number of credit hours assigned to the course will be assigned a grade of F. For this course (MAT 267 - Calculus III), the maximum number of absences is 6 days (1.5×4 credit hours = 6). Absences will count from the first official date of classes and not from the first day the student attends. Students receiving veterans benefits are required to attend classes according to the regulations of the Veterans Administration in addition to those regulations set by the University for all students. It is the responsibility of the instructor to keep an accurate attendance record of all students enrolled. Students should understand that absences may jeopardize their grades.