SYRACUSE UNIVERSITY

MAT 397
Calculus III
2017-2018
(4 credits)

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Description

MAT 397 is the third course in a three-semester sequence in calculus designed for mathematics, science, and engineering majors and those in other majors who intend to take advanced courses in mathematics. Concepts covered in the course include: vectors, vector-valued functions, functions of several variables, partial derivatives, and multiple integration.

Prerequisites

To register for this course, students must provide documents confirming completion of one of the following prerequisites:

1. Passing Syracuse University MAT 295 and 296 with a grade of C- or better;
2. Earning a score of 4 or better on the AP BC calculus examination; or
3. Earning a qualifying score on University examinations

Course Outline

1. Vectors and the Geometry of Space: a) three-dimensional coordinate systems, b) the dot product, c) the cross product, d) equations of lines and planes, e) cylinders and quadric surfaces.
2. Vector Functions: a) vector functions and space curves, b) derivatives and integrals of vector functions, c) arc length and curvature, d) velocity and acceleration.
3. Partial derivatives: a) functions of several variables, b) limits and continuity, c) partial derivatives, d) tangent planes and lineal approximations, e) the chain rule, f) directional derivatives and the gradient vector, g) maximum and minimum values, h) Lagrange multipliers.
4. Multiple Integrals: a) double integrals over rectangles, b) iterated integrals, c) double integrals over general regions, d) double integrals in polar coordinates, e) applications of double integrals, f) triple integrals, g) triple integrals in cylindrical coordinates, h) triple integrals in spherical coordinates, i) change of variables in multiple integrals.
5. Vector Calculus: a) vector fields, b) line integrals, c) the fundamental theorem for line integrals, d) Green's theorem.

(*Over*)

Author/Title (Publisher)	Quantity Per Section of 20 Students	Price Per Copy	Ordering Source
Text			
Multivariable Calculus: Early Transcendentals, 8th Edition; Stewart, J. ISBN: 9781305266643 Or *Calculus: Early Transcendentals,* 8th Edition; Stewart, J. ISBN: 9781285741550	20	$299.95 $299.95	Cengage Learning Phone: 800-354-9706
Calculator			
Texas Instruments: TI-83 Plus Or TI-84 Plus	20	$934.49 for 10 $1,034.59 For 10	D&H Distributing Phone: 800-340-1006 (Educational Sales)

Prices are subject to change.