



STARK STATE COLLEGE

GENERAL SYLLABUS

Course Information

Course Name: Analytic Geometry and Calculus III
Course Number: MTH225

Required Materials

Textbook(s): Calculus-Early Transcendentals, 9th edition; James Stewart, Daniel Clegg, Saleem Watson
 Cengage Learning, 2019;
 ISBN (instant access): 9780357128930
 ISBN (loose leaf): 9780357771105

Required Readings: None

Additional Materials: A graphing calculator is recommended.

Course Outline/Calendar

The date of coverage and order of coverage may be modified based on the faculty member and events beyond the control of faculty members that interfere with class times and teaching.

16 Week Calendar

Week	Chapter/Topic/Lab
1	Ch. 12 Vectors and Geometry of Space 12.1 Three-Dimensional Coordinate System 12.2 Vectors 12.3 The Dot Product
2	Ch. 12 Vectors and Geometry of Space 12.4 The Cross Product 12.5 Lines and Planes in Space 12.6 Cylinders and Quadric Surfaces
3	Ch. 13 Vector-Valued Functions * Test 1 (Chapter 12) 13.1 Vector Functions. Continuity. Differentiation. 13.2 Integrals of Vector Functions. Projectile Motion

Week	Chapter/Topic/Lab
4	Ch. 13 Vector-Valued Functions 13.3 Arc Length and the Unit Tangent Vector T 13.4 Curvature and the Unit Normal Vector N
5	Ch. 14 Partial Derivatives * Test 2 (Chapter 13) 14.1 Functions of Several Variables
6	Ch. 14 Partial Derivatives 14.2 Limits and Continuity in Higher Dimensions 14.3 Partial Derivatives
7	Ch. 14 Partial Derivatives 14.4 The Chain Rule 14.5 Directional Derivatives and Gradients 14.6 Tangent Planes and Differentials
8	Ch. 14 Partial Derivatives 14.7 Extreme Values and Saddle Points * Test 3 (Chapter 14)
9	Ch. 15 Multiple Integrals 15.1; 15.2 Double Integrals over Rectangles and General Regions 15.3 Areas, Moments, And Centers of Mass 15.4 Double Integrals in Polar Form
10	Ch. 15 Multiple Integrals 15.4 Triple Integrals in Rectangular Coordinates 15.5 Masses and Moments in Three Dimensions 15.6 Triple Integrals in Cylindrical and Spherical Coordinates
11	Ch. 15 Multiple Integrals 15.8 Substitution in Multiple Integrals * Test 4 (Chapter 15)
12	Ch. 16 Integration in Vector Fields 16.1 Line Integrals 16.2 Vector Fields, Work, Circulation, and Flux 16.3 Path Independence, Potential Functions, and Conservative Fields
13	Ch. 16 Integration in Vector Fields 16.4 Green's Theorem in the Plane. 16.5 Surfaces and Area. 16.6 Surface Integrals.
14	Ch. 16 Integration in Vector Fields 16.7 Stokes' Theorem
15	Make-up week and/or review for the final exam (if time permits)
16	Comprehensive Final Exam (Chapter 16 and selected topics from previous chapters).

8 Week Calendar

Week	Chapter/Topic/Lab
1	Ch. 12 Vectors and Geometry of Space 12.1 Three-Dimensional Coordinate System 12.2 Vectors 12.3 The Dot Product 12.4 The Cross Product 12.5 Lines and Planes in Space 12.6 Cylinders and Quadric Surfaces
2	Ch. 13 Vector-Valued Functions * Test 1 (Chapter 12) 13.1 Vector Functions. Continuity. Differentiation. 13.2 Integrals of Vector Functions. Projectile Motion 13.3 Arc Length and the Unit Tangent Vector T 13.4 Curvature and the Unit Normal Vector N
3	Ch. 14 Partial Derivatives * Test 2 (Chapter 13) 14.1 Functions of Several Variables 14.2 Limits and Continuity in Higher Dimensions 14.3 Partial Derivatives
4	Ch. 14 Partial Derivatives 14.4 The Chain Rule 14.5 Directional Derivatives and Gradients 14.6 Tangent Planes and Differentials 14.7 Extreme Values and Saddle Points * Test 3 (Chapter 14)
5	Ch. 15 Multiple Integrals 15.1; 15.2 Double Integrals over Rectangles and General Regions 15.3 Areas, Moments, And Centers of Mass 15.4 Double Integrals in Polar Form 15.4 Triple Integrals in Rectangular Coordinates 15.5 Masses and Moments in Three Dimensions 15.6 Triple Integrals in Cylindrical and Spherical Coordinates
6	Ch. 15 Multiple Integrals 15.8 Substitution in Multiple Integrals * Test 4 (Chapter 15) Ch. 16 Integration in Vector Fields 16.1 Line Integrals 16.2 Vector Fields, Work, Circulation, and Flux 16.3 Path Independence, Potential Functions, and Conservative Fields

Week	Chapter/Topic/Lab
7	Ch. 16 Integration in Vector Fields 16.4 Green's Theorem in the Plane. 16.5 Surfaces and Area. 16.6 Surface Integrals. 16.7 Stokes' Theorem
8	Make-up week and/or review for the final exam (if time permits) Comprehensive Final Exam (Chapter 16 and selected topics from previous chapters).