RUTGERS
UNIVERSITY | NEWARK

CALCULUS III

21:640:235 (4 credits)

COURSE DESCRIPTION:
Introduction to vectors in the plane, solid analytic geometry, and vectors in three dimensions; partial differentiaion; multiple integrals; applications.

PREPREQUISITE:
21:640:136 (Calculus II), or 156 (Honors Calculus II.)

IMPORTANT NOTE:
Students who took 21:640:136 (Calculus II) or 156 (Honors Calculus II) for 3 credits, prior to Spring 2000, should arrange with the Mathematics Department Undergraduate Program Director to complete the missing credit in Calculus II before taking Calculus III.

TEXTBOOK:
"Calculus Early Transcendentals Multivariable," (3rd edition), by Briggs, published by Pearson. ISBN-13 978-0134766799.

DEPARTMENT WEB SITE: http://www.ncas.rutgers.edu/math

FREE TUTORING: is available in the Rutgers Learning Center, Room 140 Bradley Hall (973-353-5608.)

THIS COURSE COVERS THE FOLLOWING CHAPTERS AND SECTIONS:

Chapter 11: Vectors and Vector-Valued Functions

11.1 Vectors in the Plane

11.2 Vectors in Three Dimensions

11.3 Dot Products

11.4 Cross Products (excluding subsection "Applications of the Cross Product")

11.5 Lines and Curves and in Space

11.6 Calculus of Vector-Valued Functions

11.7 Motion in Space (excluding subsection "Range, Time of Flight, Maximum Height")

11.8 Length of Curves

11.9 Curvature and Normal Vectors (include just vectors T , N , B and scalar-valued function K by first definition)

Chapter 12: Functions of Several Variables

12.1 Planes and Surfaces
12.2 Graphs and Level Curves
12.3 Limits and Continuity
12.4 Partial Derivatives (exclude subsection "Applications of Partial Derivatives")
12.5 The Chain Rule
12.6 Directional Derivatives and the Gradient
12.7 Tangent Planes and Linear Approximation
12.8 Maximum/Minimum Problems
12.9 Lagrange Multipliers

Chapter 13: Multiple Integration

13.1 Double Integrals over Rectangles
13.2 Double Integrals over General Regions
13.3 Double Integrals in Polar Coordinates
13.4 Triple Integrals
13.5 Triple Integrals in Cylindrical and Spherical Coordinates
13.7 Change of Variables in Multiple Integrals (excluding subsection "Change of Variables in Triple Integrals")

Chapter 14: Vector Calculus

14.1 Vector Fields
14.2 Line Integrals
14.3 Conservative Vector Fields
14.4 Green's Theorem (just include "Green's Theorem in Circular Form" and "Green's Theorem in Flux Form" - do not include proofs)

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