

## OFFICIAL SYLLABUS

**Math 250, Calculus III (Assumes 4 50 min/week)**

(Adopted – Spring 2006; Committee: Z. Agustin , K. Fick , G. Pelekanos (Chair), S. Staples)

*Textbook: Calculus 9<sup>th</sup> Ed. By Varberg, Purcell, Rigdon*

**Contents of the course:**

**Warning:** *Instructor might need one lecture to review sections 10.4 and 10.5.*

**Ch. 11. Geometry in Space and Vectors (recommended time: 12 days)**

- 11.1 Cartesian Coordinates in Three-Space
- 11.2 Vectors
- 11.3 The Dot Product
- 11.4 The Cross Product
- 11.5 Vector-Valued Functions and Curvilinear Motion
- 11.6 Lines and Tangent Lines in Three-Space
- 11.7 Curvature and Components of Accelerations
- 11.8 Surfaces in Three-Space
- 11.9 Cylindrical and Spherical Coordinates

**Ch. 12. Derivatives for Functions of Two or More Variables (recommended time: 14 days)**

- 12.1 Functions of Two or More Variables
- 12.2 Partial Derivatives
- 12.3 Limits and Continuity
- 12.4 Differentiability
- 12.5 Directional Derivatives and Gradients
- 12.6 The Chain Rule
- 12.7 Tangent Planes and Approximations
- 12.8 Maxima and Minima
- 12.9 The Method of Lagrange Multipliers

**Ch. 13. Multiple Integrals (recommended time: 15 days)**

- 13.1 Double Integrals over Rectangles
- 13.2 Iterated Integrals
- 13.3 Double Integrals over Nonrectangular Regions
- 13.4 Double Integrals in Polar Coordinates
- 13.5 Applications of Double Integrals
- 13.6 Surface Area
- 13.7 Triple Integrals in Cartesian Coordinates
- 13.8 Triple Integrals in Cylindrical and Spherical Coordinates
- 13.9 Change of Variables in Multiple Integrals

**Ch. 14. Vector Calculus (recommended time: 13 days)**

- 14.1 Vector Fields
- 14.2 Line Integrals
- 14.3 Independence of Path
- 14.4 Green's Theorem in the Plane (**Suggestion:** Incorporate in your discussion the section about "*Vector Forms of Green's Theorem*" which covers Gauss's and Stokes's Theorems in two dimensions. Then sections 14.6 and 14.7 should follow faster)
- 14.5 Surface Integrals
- 14.6 Gauss's Divergence Theorem
- 14.7 Stokes's Theorem

**Any instructor should cover all of the material specified; additional sections are optional.**