Torrey Pines High School Calculus D
MiraCosta College Math 260 Calculus and Analytic Geometry III

(4 semester units)

Note: Students in Calculus D completed Calculus C or passed the AP Calculus BC exam. They covered all topics for that exam as outlined in the *Advanced Placement Program Course Description: Calculus* published by The College Board.

Text: *Calculus: Early Transcendentals* by James Stewart, Sixth Edition, ©2008

Chapter 12 – Vectors and the Geometry of Space
12.1 Three-Dimensional Coordinate Systems
12.2 Vectors
12.3 The Dot Product
12.4 The Cross Product
12.5 Equations of Lines and Planes
12.6 Cylinders and Quadric Surfaces
12.7 (4th ed.) Cylindrical and Spherical Coordinates

Chapter 13 – Vector Functions
13.1 Vector Functions and Space Curves
13.2 Derivatives and Integrals of Vector Functions
13.3 Arc Length and Curvature
13.4 Motion in Space: Velocity and Acceleration

Chapter 14 – Partial Derivatives
14.1 Functions of Several Variables
14.2 Limits and Continuity
14.3 Partial Derivatives
14.4 Tangent Planes and Linear Approximations*
14.5 The Chain Rule
14.6 Directional Derivatives and the Gradient Vector
14.7 Maximum and Minimum Values
14.8 Lagrange Multipliers*

Chapter 15 – Multiple Integrals
15.1 Double Integrals over Rectangles
15.2 Iterated Integrals
15.3 Double Integrals over General Regions
15.4 Double Integrals in Polar Coordinates
15.5 Applications of Double Integrals*
15.6 (4th ed.) Surface Area
15.6 Triple Integrals
15.7 Triple Integrals in Cylindrical Coordinates
15.8 Triple Integrals in Spherical Coordinates
15.9 Change of Variables in Multiple Integrals*

Chapter 16 – Vector Calculus
16.1 Vector Fields
16.2 Line Integrals
16.3 The Fundamental Theorem for Line Integrals
16.4 Green's Theorem
16.5 Curl and Divergence
16.6 Parametric Surfaces and Their Areas
16.7 Surface Integrals
16.8 Stokes' Theorem
16.9 The Divergence Theorem
16.10 Summary

Formal Definitions of Limits (Part of Chapter 2)
Finite Limits
Infinite Limits
Limits at Infinity
Infinite Limits at Infinity

*Topic covered briefly.

MiraCosta Course Student Learning Outcomes: For a given set of problems the student will demonstrate quantitative reasoning by developing a problem-solving strategy, performing appropriate analysis and computation, and critically assessing the meaning of the conclusion or outcome.

MiraCosta Core Competencies: Intellectual and practical skills, including quantitative literacy and problem solving, will be practiced extensively across the curriculum in the context of progressively more challenging problems, projects, and standards for performance.