Administrative Unit: Computer and Mathematical Sciences Department

Course Prefix and Number: MATH 245

Course Title: Calculus and Analytic Geometry, IIB

Number of Credit Hours: 3  Lecture Hours: 3  Laboratory Hours: 0

Catalog Description: The fourth course in a four part Calculus sequence. Topics include: parametric equations and polar coordinates, vectors and the geometry of space, vector functions, partial derivatives and their applications. Prerequisite: MATH 235 with a score of C or higher.

Prerequisite(s)/Corequisite(s): MATH 235 with a score of C or higher.

Text(s): Most current editions of the following:


Course Objectives:

• To use calculus to formulate and solve problems and communicate solutions to others.
• To use technology as an integral part of the process of formulation, solution, and communication.
• To understand calculus from numerical, graphical, symbolic, and analytical perspectives.
• To understand and appreciate the connections between mathematics and other disciplines.

Measurable Learning Outcomes:

• Apply basic calculus concepts to parametric and polar curves to determine arc length, surface area of revolution, and other geometric characteristics.
• Use vectors in two and three dimensions to describe lines and planes in space.
• Use vector functions to describe curves in space.
• Use vector-valued functions to describe the motion of objects through space.
• Apply basic ideas of differential calculus to functions of several variables.

Topical Outline (major areas of coverage):

• Parametric equations and polar coordinates
• Vectors and the geometry of space
• Vector functions
• Partial derivatives and their applications

Recommended maximum class size for this course: 30
Library Resources: Online databases are available at http://www.ccis.edu/offices/library/resources.asp. You may access them from off-campus using your eServices login and password when prompted.

Prepared by: Suzanne Tourville
Name _____________________________ Signature _____________________________

Date: April 3, 2006

NOTE: The intention of the master syllabus is to provide an outline of the contents of this course, as specified by the faculty of Columbia College, regardless of who teaches the course, when it is taught or where it is taught. Faculty members teaching this course for Columbia College are expected to facilitate learning pursuant to the course objectives and cover the subjects listed in the topical outline. However, instructors are also encouraged to cover additional topics of interest so long as those topics are relevant to the course’s subject. The master syllabus is, therefore, prescriptive in nature but also allows for a diversity of individual approaches to course material.

Office of Academic Affairs
12/04