Administrative Unit: Computer and Mathematical Sciences Department

Course Prefix and Number: MATH 226

Course Title: Calculus and Analytic Geometry, 1B

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

Catalog Description: The second course in a four part calculus sequence. Topics include: the integral and its application, transcendental functions, and integration by parts. Prerequisite: MATH 215 with a score of C or higher. G.E.

Prerequisite(s)/Corequisite(s): MATH 215 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 topics from numerical, graphical, symbolic, and analytical perspectives.
- To understand and appreciate the connections between mathematics and other disciplines.

Measurable Learning Outcomes: 
- Compute definite integrals as the limit of Riemann sums and approximate integrals using finite Riemann sums.
- Evaluate definite integrals using geometric interpretation together with other basic properties of integrals.
- Evaluate definite and indefinite integrals using the Fundamental Theorem of Calculus and the method of substitution.
- Compute areas and volumes using definite integrals.
- Identify the natural exponential and logarithmic functions as inverses of each other and find their derivatives and integrals.
- Solve exponential growth and decay problems arising from biology, physics, chemistry, and other sciences.
- Compute derivatives and integrals of functions containing inverse trigonometric functions.
- Analyze various indeterminate forms and apply L'Hopital's rule to evaluate limits of such forms.
- Use the Substitution Rule and the Integration by Parts formula to evaluate indefinite and definite
integrals.

Topical Outline (major areas of coverage):

- Integration
- Applications of integration
- Transcendental functions
- Integration by parts

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.

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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.

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