Rowan College at GLOUCESTER COUNTY
SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS (STEM) DIVISION
1400 TANYARD ROAD, SEWELL, NJ 08080
856-468-5000

MAT 122: CALCULUS II
SYLLABUS
LECTURE HOURS/CREDITS: 4/4

CATALOG DESCRIPTION
Prerequisite: MAT 108 – Calculus I

This is a study of integral calculus and its applications. Topics include areas bounded by curves, volumes and surface areas of solids of revolution, arc length, integration techniques, improper integrals, transcendental functions and infinite sequences and series. The class also covers the study of parametric equations and polar coordinates.

TEXTBOOK AND COURSE MATERIALS
It is the **responsibility of the student** to confirm with the bookstore and/or their instructor the textbook, handbook and other materials required for their specific course and section.

Please see current textbook prices at rcgc.bncollege.com

EVALUATION AND ASSESSMENT

Grading Distribution

Individual instructors may include the following assessment(s): • Exams • Quizzes • Class Discussions • Written Assignments • Attendance and Participation	Grading to be determined by individual instructors

Grading Scale Example
The grading scale for each course and section will be determined by the instructor and distributed the first day of class.

ROWAN COLLEGE AT GLOUCESTER COUNTY CORE COMPETENCIES

(Based on the NJCC General Education Foundation - August 15, 2007; Revised 2011)

This comprehensive list reflects the *core* competencies that are essential for all RCGC graduates; however, each program varies regarding competencies required for a specific degree. Critical thinking is embedded in all courses, while teamwork and personal skills are embedded in many courses.

	RCGC Core Competencies
1	**Written and Oral Communication** Students will communicate effectively in both speech and writing.
2	**Quantitative Knowledge and Skills** Students will use appropriate mathematical and statistical concepts and operations to interpret data and to solve problems.
3	**Scientific Knowledge and Reasoning** Students will use the scientific method of inquiry, through the acquisition of scientific knowledge.
4	**Technological Competency** Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals.
5	**Society and Human Behavior** Students will use social science theories and concepts to analyze human behavior and social and political institutions and to act as responsible citizens.
6	**Humanistic Perspective** Students will analyze works in the fields of art, history, music, or theater; literature; philosophy and/or religious studies; and/or will gain competence in the use of a foreign language
7	**Historical Perspective** Students will understand historical events and movements in World, Western, non-Western or American societies and assess their subsequent significance.
8	**Global and Cultural Awareness** Students will understand the importance of a global perspective and culturally diverse peoples.
9	**Ethical Reasoning and Action** Students will understand ethical issues and situations.
10	**Information Literacy** Students will address an information need by locating, evaluating, and effectively using information

MAT 122 CORE COMPETENCIES

This course focuses on one of RCGC's Core Competencies:

- Quantitative Knowledge and Skills

STUDENT LEARNING OUTCOMES: MAT 122 – CALCULUS II

Successful completion of MAT 122 will help students:	**RCGC Core Competencies**	**Evaluation / Assessment** (Additional means of evaluation may be included by individual instructors)
1. Differentiate and integrate transcendental functions.	- Quantitative Knowledge and Skills	- Tests and Quizzes
2. Use integrals in applications.	- Quantitative Knowledge and Skills	- Tests and Quizzes
3. Apply a variety of integration techniques to evaluate definite and indefinite integrals.	- Quantitative Knowledge and Skills	- Tests and Quizzes
4. Work with infinite sequences and series.	- Quantitative Knowledge and Skills	- Tests and Quizzes
5. Work with and apply properties of parametric equations.	- Quantitative Knowledge and Skills	- Tests and Quizzes

MAT 122 TOPICAL OUTLINE

Logarithmic, Exponential, and Other Transcendental Functions

- The Natural Logarithmic Function: Differentiation
- The Natural Logarithmic Function: Integration
- Exponential Functions: Differentiation and Integration
- Bases Other than e and Applications
- Inverse Trigonometric Functions: Differentiation
- Inverse Trigonometric Functions: Integration

Applications of Integration

- Area of a Region Between Two Curves
- Volume: The Disk Method
- Volume: The Shell Method
- Arc Length and Surfaces of Revolution

Integration Techniques, L'Hôpitals Rule, and Improper Fractions

- Integration by Parts
- Trigonometric Integrals
- Trigonometric Substitution
- Partial Fractions
- Indeterminate Forms and L'Hôpital's Rule
- Improper Integrals

Infinite Series

- Sequences
- Series and Convergence
- The Integral Test and p-Series
- Comparisons of Series
- Alternating Series
- The Ratio and Root Tests
- Power Series
- Representation of Functions by Power Series
- Taylor and Maclaurin Series

- Plane Curves and Parametric Equations
- Parametric Equations and Calculus
- Polar Coordinates