VERNON COLLEGE
SYLLABUS

DIVISION: Mathematics & Science


COURSE NUMBER AND TITLE: MATH 2414 Calculus II

CREDIT HRS: 4    HRS/LEC WK: 4    HRS/LAB WK: 0    LEC/LAB COMB: 4

I. VERNON COLLEGE GENERAL EDUCATION PHILOSOPHY STATEMENT

General education at Vernon College reflects the institution’s deep conviction that successful, satisfying lives require a wide range of skills and knowledge. Through the Texas Core Curriculum and through support and reinforcement in all non-core courses, students will gain a foundation of knowledge of human cultures and the physical and natural world, develop principles of personal and social responsibility for living in a diverse world, and advance intellectual and practical skills that are essential for all learning.

CORE OBJECTIVES (GENERAL EDUCATION OUTCOMES)

- Critical Thinking Skills – to include creative thinking, innovation, inquiry and analysis, evaluation and synthesis of information
- Communication Skills – to include effective development, interpretation, and expression of ideas through written, oral, and visual communication
- Empirical and Quantitative Skills – to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions
- Teamwork - to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal
- Personal Responsibility – to include the ability to connect choices, actions and consequences to ethical decision making
- Social Responsibility – to include intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities

II. CATALOG DESCRIPTION:

Prerequisite: MATH 2413. Differentiation and integration of transcendental functions; parametric equations and polar coordinates; techniques of integration; sequences and series; improper integrals. Special Fee: $2.00

III. REQUIRED BACKGROUND:

Prerequisite: MATH 2413 Calculus I. Extensive algebraic skills which should have been developed in the process of satisfying the prerequisite. Basic knowledge of the trigonometric functions, their graphs, and identities is also required.

IV. TEXTS AND OTHER REQUIRED MATERIALS:


Graphing calculator required, TI-calculator recommended.
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V. METHODS OF INSTRUCTION:

Lecture/Discussion

Students desiring auxiliary aids and services for this course should make their requests to the instructor and the Special Services Director.

VI. COURSE CONTENT:

1. Integration.
2. Applications of the Definite Integral.
3. Techniques of Integration.
4. Infinite Sequences and Series.

VII. COURSE OUTCOMES:

Upon successful completion of this course, students will:
1. Use the concepts of definite integrals to solve problems involving area, volume, work, and other physical applications.
2. Use substitution, integration by parts, trigonometric substitution, partial fractions, and tables of anti-derivatives to evaluate definite and indefinite integrals.
3. Define an improper integral.
4. Apply the concepts of limits, convergence, and divergence to evaluate some classes of improper integrals.
5. Determine convergence or divergence of sequences and series.
6. Use Taylor and MacLaurin series to represent functions.
7. Use Taylor or MacLaurin series to integrate functions not integrable by conventional methods.
8. Use the concept of polar coordinates to find areas, lengths of curves, and representations of conic sections.

VIII. ASSESSMENT:

The student will be evaluated by his/her performance in successfully solving problems requiring the competencies listed above. The assessments will be done through homework assignments, work at the board in class, quizzes through the semester and a comprehensive final exam. An overall success rate of 60% will be required for a passing grade. Care will be taken to evaluate the performance of students and to make adjustments in teaching strategies as indicated.