Calculus II Syllabus

College of the Atlantic

Course Name: Calculus II
Course Number: ES3012M
Textbook: Hughes-Hallet, et al, *Calculus: Single Variable*, J Wiley. Instructor: David Feldman
Frequency: Offered Every Other Year
Times: Meets three times a week for 1hr 20min. Optional weekly problem-solving sessions.
Evaluation: Weekly problem sets, two take-home exams

Topics Covered:

- **The Definite Integral**

    - Measuring distance traveled
    - The definite integral
    - The fundamental theorem and interpretations

- **Constructing Antiderivatives**

    - Graphical and numerical antiderivatives
    - Analytic antiderivatives
    - The second fundamental theorem

- **Techniques of Integration**

    - Substitutions
    - Integration by parts
    - Tables and symbolic computation
    - Improper integrals
    - Comparisons of improper integrals

- **Applications of Integration**

    - Areas and volumes
    - Applications to geometry
    - Economics applications
    - Distribution functions
    - Probability, mean, median
    - Normal distributions and statistics

- **Sequences and Series**

    - Introduction to sequences
    - Geometric series
    - Convergence of series
    - Tests for convergence
    - Power series and intervals of convergence

- **Approximating Functions Using Series**

    - Taylor polynomials
    - Taylor series
    - Finding and using Taylor series
    - Fourier series