1. **Course**: Math 1372 – CSE Calculus II

2. **Workload**: 4 credits; 5 contact hours

3. **Coordinator**: Jennie Morgan and Eoin O’Hara

4. **Textbook and other materials**:

5. **Specific course information**
   a. **Catalog Description**: Techniques of integration. Calculus involving transcendental functions, polar coordinates, Taylor polynomials, vectors-curves in space, cylindrical-spherical coordinates. Use of calculators, cooperative learning.
   b. **Prerequisites**:
      i. Calculus I (Grade of at least C- in MATH 1371)
      ii. CSE or pre-Bioprod/Biosys Engr student
   c. **Role in Program**: required

6. **Specific goals for the course**
   a. **Course Outcomes**:
      i. Practically every homework assignment, quiz, and exam requires students to solve problems in integral calculus. Students receive ample feedback about this learning outcome during the semester.
   b. **Criterion 3 Outcomes and Program Criteria**:
      i. (a) apply math, science or engineering

7. **Topics**:

   Chapter 1  Review of Substitution
   Chapter 2  Integration of Parts
   Chapter 3  Integration using Trigonometric Identities
   Chapter 4  Integration Using Partial Fractions
   Chapter 5  Substitution in Definite Integrals
   Chapter 6  Numerical Integration
   Chapter 7  Improper Integrals
   Chapter 8  Arc Length and Surface Area
   Chapter 9  First Moments and Centroids
   Chapter 10 Hydrostatic Force
   Chapter 11 Variables Separable
   Chapter 12 Exponential Growth
   Chapter 13 The Logistic Equation
   Chapter 14 Euler’s Method
   Chapter 15 First Order Linear Differential Equations
   Chapter 16 Polar Coordinates
   Chapter 17 Graphing Polar Equations
   Chapter 18 Area of Simple Polar Region
   Chapter 19 Area Between Polar Curves
   Chapter 20 Introduction to Vectors
Chapter 21 Addition of Vectors
Chapter 22 The Dot Product
Chapter 23 The Position Vector and Lines
Chapter 24 Calculus of Vector Functions
Chapter 25 Velocity and Acceleration
Chapter 26 Limits of Sequences
Chapter 27 Finite Arithmetic and Geometric Series
Chapter 28 Definition of Infinite Series
Chapter 29 The Comparison Test
Chapter 30 Alternating Series
Chapter 31 Ratio Test
Chapter 32 Power Series
Chapter 33 Taylor’s Series and Polynomials
Chapter 34 Applications of Taylor Polynomials
Chapter 35 Manipulating Power Series
Chapter 36 Vectors in Three Space
Chapter 37 Dot Product in Space
Chapter 38 Cross Product
Chapter 39 Three Dimensional Position Vector
Chapter 40 Vector Calculus in Three Space
Chapter 41 Velocity in Three Dimensions