Columbus State Community College  
Mathematics Department

Course and Number:  MATH 2153 – Calculus III  
Credits:  5  
Class Hours Per Week:  5

Prerequisites:  MATH 1152 with a grade of C or higher

COURSE DESCRIPTION:  A continuation of the calculus sequence, this course provides an introduction to multivariable calculus:  Vector-valued functions and motion in the plane and in space, functions of several variables, partial derivatives, directional derivatives, gradients, extrema, multiple integrals, line integrals, Green’s theorem, parametric surfaces, divergence theorem, and Stokes theorem.  Applications to problems in science and engineering.

SPECIAL COURSE REQUIREMENTS:  None

COURSE GOALS:  To develop mathematical thinking and communication skills and learn to apply precise, logical reasoning to problem solving.  To experience geometric as well as algebraic viewpoints and approximate as well as exact solutions.  Students will use computer technology to support problem solving and to promote understanding.  To facilitate the mathematical development of students as they progress from a procedural/computational understanding of mathematics to a broad understanding encompassing logical reasoning, generalization, abstraction, and formal proof and become skilled at conveying their mathematical knowledge in a variety of settings, both orally and in writing.

GENERAL EDUCATION GOALS:  Critical Thinking and Quantitative Literacy

TEXTBOOK, MANUALS, REFERENCES, AND OTHER REQUIRED MATERIALS
- A graphing calculator is strongly recommended.  However, symbolic manipulators (e.g. TI-89, TI-92) are not permitted.

UNITS OF INSTRUCTION
- Vectors and the Geometry of Space (Sections 11.5 – 11.7)
- Vector-valued Functions (Sections 12.1 – 12.5)
- Functions of Several Variables (Sections 13.1 – 13.10)
- Multiple Integration (Sections 14.1 – 14.8)
- Vector Analysis (Sections 15.1 – 15.8)

GENERAL INSTRUCTIONAL METHODS:  Lecture, discussion, demonstration, exploration and discovery exercises with the use of visual aids, graphing calculators, and/or computer resources.

STANDARDS AND METHODS FOR EVALUATION:  The final examination will be weighted between 25% and 35% of the course grade.  The remainder of the course grade will be determined by the instructor.

GRADING SCALE:  Letter grades for the course will be awarded using a 90% - 80% - 70% - 60% scale.  Grades will NOT be curved, skewed, or otherwise inflated.