MATH 2110 Calculus and Analytic Geometry III

INSTRUCTOR INFORMATION:

Name:
Office phone:
Office location:
Office hours:

COURSE DESCRIPTION

A continuation of MATH 1920 and the third course in the traditional three-course calculus sequence. Topics include solid analytical geometry, the calculus of more than one independent variable, surfaces and curves in space, cylindrical and spherical coordinate systems, vectors and vector-valued functions, partial derivatives, multiple integrals, and applications.

Credit Hours: 4 credits, 4 class hours

Prerequisite: MATH 1920

COURSE OUTCOMES AND TOPICS

Upon successful completion of this course, students will:

- Calculate operations on three-dimensional vectors, including the dot product and cross product, and determine what the results reveal about the relationship between the vectors.
- Classify cylinders and quadric surfaces from their equations.
- Write the equations of lines and planes and determine whether a set of lines is parallel, intersecting, or skew.
- Solve projectile motion applications using vector functions and explain the results.
- Use partial derivatives to find a linear approximation for a function of two variables.
- Apply the method of Lagrange multipliers to optimize a function subject to given constraints.
- Evaluate double integrals over rectangular and bounded regions, including the use of polar coordinates to find the volume of a solid.
**TOPICS**

- Vectors in the Plane
- Vectors in Three Dimensions
- Dot Products
- Cross Products
- Lines and Curves in Space
- Calculus of Vector-Valued Functions
- Motion in Space
- Planes and Surfaces
- Graphs and Level Curves
- Limits and Continuity
- Partial Derivatives
- The Chain Rule
- Directional Derivatives and the Gradient
- Tangent Planes and Linear Approximation
- Maximum/Minimum Problems
- Lagrange Multipliers
- Double Integrals over Rectangular Regions
- Double Integrals over General Regions
- Double Integrals in Polar Coordinates
- Triple Integrals
- Triple Integrals in Cylindrical and Spherical Coordinates
- Integrals for Mass Calculations
- Change of Variables in Multiple Integrals
- Vector Fields
- Line Integrals
- Conservative Vector Fields
- Green’s Theorem

**MATERIALS**

- **Textbook**: Calculus, Early Transcendentals, 2nd Edition by Briggs, Cochran, & Gillett
  Publisher: Pearson. ISBN: 0321947347
- A MyMathLab access code may be required and used for homework and quizzes. ISBN 032119991X. Check with your instructor.
- Calculator: A graphing calculator is required. The TI-84+ calculator will be the demonstration tool in the classroom.
  A TI-89 calculator or other software that performs symbolic manipulations may not be used for exams.
COURSE POLICIES

Attendance:

Each Instructor will provide information regarding his/her attendance policy. Failure to attend class will result in a final course grade of “FA” or “FN” (see explanation below) depending on the individual instructor’s course policy.

FA= failure, attendance-related (unofficial withdrawal) Last recorded date of attendance required
FN= failure, never attended class (unofficial withdrawal)

Method of Evaluation
Grading: 90-100 A, 80-89 B, 70-79 C, 60-69 D, below 60 F

The instructor will clarify specific examination, homework, and other methods of evaluation.

ADA STATEMENT

Nashville State Technical Community College complies with the Americans with Disabilities Act. Please contact the Access Services Coordinators at 615-353-3721 or 615-353-3741 if you would like to arrange ADA accommodations. Their office is located in K-106A.

CLASSROOM BEHAVIOR

You are expected to arrive in class on time and remain seated until dismissed. If you arrive late (more than 10 minutes after the start of class), quietly take your seat and do not cause further disruption. Repeated late arrivals (3) or leaving class early is disruptive to the instructor and those in class. If you exhibit behavior that is disruptive to either me or a classmate, you will be removed from the class. Any form of cheating on an exam will result in a grade of 0. A second instance of cheating will result in a grade of F for the course. The use of pagers and cell phones, including text messaging, is prohibited. If you violate this policy twice, you will be asked to leave class. If you need to take a nap, do so in the library, not in class. Please silence cell phones before entering class. Food or drinks are not allowed in the classroom. Refer to the Student Handbook if you have questions concerning institutional policies.

Nashville State Community College has a zero tolerance policy for disruptive conduct in the classroom. Students whose behavior disrupts the classroom will be subject to disciplinary sanctions. The instructor has primary responsibility for control over classroom behavior and maintenance of academic integrity. He/she can order temporary removal or exclusion from the classroom of any student engaged in disruptive conduct or in conduct which violates the general rules and regulations of the College. Disruptive behavior in the classroom may be
defined as, but is not limited to, behavior that obstructs or disrupts the learning environment (e.g., offensive language, harassment of students and professors, repeated outbursts from a student which disrupt the flow of instruction or prevent concentration on the subject taught, failure to cooperate in maintaining classroom decorum, etc.), the continued use of any electronic or other noise or light emitting device which disturbs others (e.g., disturbing noises from beepers, cell phones, palm pilots, lap-top computers, games, etc.). Please be aware that children are not allowed in class or unattended on campus.

ACADEMIC DISHONESTY (HONOR CODE)

Any form of academic dishonesty, cheating, plagiarizing, or other academic misconduct is prohibited. “Plagiarism may result from: (1) failing to cite quotations and borrowed ideas, (2) failing to enclose borrowed language in quotation marks, and (3) failing to put summaries and paraphrases in your own words” (A Writer’s Reference 331). Academic dishonesty may be defined as, but is not limited to, intentionally trying to deceive by claiming credit for the work of another person, using information from a web page or source without citing the reference, fraudulently using someone else’s work on an exam, paper, or assignment, recycling your own work from another course, purchasing papers or materials from another source and presenting them as your own, attempting to obtain exams/materials/assignments in advance of the date of administration by the instructor, impersonating someone else in a testing situation, providing confidential test information to someone else, submitting the same assignment in two different classes without requesting both instructor’s permission, allowing someone else to copy or use your work, using someone else’s work to complete your own, altering documents, transcripts or grades, and forging a faculty/staff member’s signature.

In addition to other possible disciplinary sanctions that may be imposed through regular college procedures as a result of academic dishonesty the instructor has the authority to assign an “F” or a “Zero” for the exercise, paper, or examination or to assign an “F” for the course.

NOTE: This syllabus is meant simply as a guide and overview of the course, the topics, the objectives, the general assessments, and some standard college policies. Some items are subject to change or revision at the instructor’s discretion. Each instructor will further clarify their criteria for grading, classroom procedures, attendance, exams and dates, etc.