

MATH 1830 Concepts of Calculus
(formerly Calculus for Business/Biology)

Instructor Information:

Name
Office phone
Office location
Office hours
E-mail address

I. Course Description

An introduction to calculus without a requirement for trigonometry with applications from business, economics, life sciences, and health sciences. Topics include a survey of limits, continuity, differentiation, integration, related rates, maximum-minimum problems, and exponential growth and decay.

Credit Hours: 3 Credits 3 Class Hours

Prerequisite: MATH 1710 or MATH 1130

II. Course Outcomes and Topics

Upon successful completion of this course, students will:

- Solve problems using mathematics, and determine if solutions are reasonable.
 Solve derivative and integral application problems and determine if solutions are reasonable.
- Apply mathematical concepts to solve real-life problems using formulas (deduction) and interpret the meaning of the solutions.
- Construct meaningful connections (transfer of knowledge) between mathematics and other disciplines.
- Apply technology for mathematical reasoning and problem solving.
- Analyze data/graphs by using mathematical modeling and /or statistical reasoning.
 Analyze the graph of a function to determine intervals of concavity as well as intervals of increase or decrease.

 Determine the limits of functions both graphically and analytically.
- Determine the derivatives and/or integrals of algebraic, rational, exponential, and logarithmic functions.
- Recognize the relationship between the area under a curve and the Fundamental Theorem of Calculus.

Topics

Graphs & Equations
Functions & Models
Finding Domain & Range
Slope & Linear Equations
Other Functions & Models

Limits & Continuity
Limits
Average Rate of Change
Differentiation Using Limits of Difference Quotients
Differentiation Techniques
Instantaneous Rates of Change
The Product & Quotient Rules
The Chain Rule
Higher-Order Derivatives
Using First Derivatives to Find Max-Min Values
Using Second Derivatives to Find Max-Min Values
Using Derivatives to Find Absolute Max-Min Values
Max-Min Problems
Differentials
Implicit Differentiation & Related Rates
Exponential Functions
Logarithmic Functions
Applications: Growth
Applications: Decay
Elasticity of Demand
Integration
Area & Definite Integrals
Limits of Sums & Accumulations
Properties of Definite Integrals
Substitution
Integration Techniques: Tables
Consumer Surplus & Producer's Surplus

III. Materials

Students must check with the instructor before purchasing any materials.

- Required: ***Calculus and Its Applications, 9th Edition***, Marvin L. Bittinger, Publisher: Pearson, **ISBN 0-321-39534-4**.
- Optional: ***Student Solution Manual***, Pearson, **ISBN 0-321-45056-6**
- **Calculator/software:** A graphing calculator is strongly recommended or required. The TI-84+ calculator will be the demonstration tool in the classroom. Some software may be used. (The instructor will clarify.)

IV. 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.

V. ADA Information

Nashville State complies with the Americans with Disabilities Act. If you wish to request any accommodation(s) for any courses in which you are enrolled, contact the Student Disabilities office. Such services must have proof of documentation that is not over three years old. Contact the Disabilities Coordinator at 353-3721.

VI. Classroom Behavior

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.

