Bridgewater State University

MATH 261: Multivariate Calculus (Calculus III)

Summer 2022 Syllabus

Duration: July 11 – August 5, 2022	Instructor: TBA
Office: TBA	Office Hours: TBA (Or by appointment)
Credits: 4	E-mail: TBA

Catalog Course Description
A study of conic sections; vectors in two and three dimensions; dot and cross products and their applications to geometry; equations of lines and planes; quadratic surfaces; polar, cylindrical, and spherical coordinates; and functions of several variables, partial derivatives, differentials, directional derivatives, gradients, optimization problems, multiple integrals and their applications.

Prerequisite
MATH 162: Single Variable Calculus with a minimum grade of C (2.00) or higher.

Text
The official course text is **Calculus: Early Transcendentals**, third edition, by Jon Rogawski and Colin Adams.

Student Learning Outcomes
Upon successful completion of this course, students will be able to:
• Understand the parametric equations of curves in high dimensions.
• Apply and interpret basic properties of vectors.

- Perform calculus operations on vector-valued functions, such as derivatives, integrals, velocity, acceleration, etc.
- Describe and sketch graphs of functions using polar and cylindrical systems.
- Find extrema and tangent planes.

Topic Calendar

No.	Sections Covered (Tentative)
	WEEK 1
1	Chapter 11.1 Parametric Equations
2	Chapter 11.2 Arc Length and Speed (Scalar Systems)
3	Chapter 11.3 Polar Coordinates
4	Chapter 11.4 Area and Arc Length in Polar Coordinates
5	Chapter 12.1 Vectors in the Plan
6	Chapter 12.2 Vectors in Three Dimensions
	WEEK 2
7	Chapter 12.3 The Dot Product
8	Chapter 12.4 The Cross Product & Midterm Exam 1 Review
9	Chapter 13.1 Vector-Valued Functions
10	Chapter 13.2 Calculus of Vector-Valued Functions
11	Chapter 13.3 Arc Length and Speed (Vectors)
12	Chapter 14.1 Functions of Two or More Variables
13	Chapter 14.2 Limits and Continuity in Several Variables
	WEEK 3
14	Chapter 14.3 Partial Derivatives
15	Chapter 14.4 Differentiability and Tangent Planes
16	Chapter 14.5 The Gradient and Directional Derivatives

17	Chapter 14.6 The Chain Rule
18	Chapter 14.7 Optimization in Several Variables & Midterm Exam 2 Review
19	Chapter 15.1 Integration in Two Variables
20	Chapter 15.2 More General Regions
	WEEK 4
21	Chapter 15.3 Triple Integrals
22	Chapter 15.4 Polar, Cylindrical, and Spherical Integrals
23	Chapter 16.1 Vector Fields
24	Chapter 16.2 Line Integrals
25	Chapter 16.3 Conservative Vector Fields
26	Chapter 16.4 Surface Integrals & Final Exam Review

Homework
Homework will be assigned through the online homework system WebWork. To sign up or log in, click on the link in the Course Content section in Blackboard. Your lowest homework grade will be dropped. NO LATE HOMEWORK WILL BE ACCEPTED.

Blackboard
Grades and additional course content will be uploaded to Blackboard. Make sure to check it regularly for updates.

Quizzes (Attendance)
Quizzes will be given in class. Often you will be able to work in groups, but each individual student must submit his or her own work. **There will not be any make-up quizzes available.**

Important Notes about Submitted Work
On all of your written assignments you must show all work for the problems to receive full credit, even if the final answer is correct. Do not submit just the final answer not supported by any work. Your handwriting must be legible, your name and class time must be clearly written at the top of the front page. Proper notation is mandated.

Midterm Exams
You will take 2 mid-term exams during the semester. Exams are given in class and time will be limited to class time. Each will involve a mix of mechanical skills and conceptual reasoning. The best possible preparation for them is regular attendance and completion of assigned homework &

quizzes. You may have 1 page 8x11 of hand written notes (1 side only) on each exam, including a final exam; specific problems solved may be included. Make-up exams are only given in case of documented emergencies.

Final Exam
The final exam will take place at the last class meeting on August 5, 2022.

Grading Criteria
Your final course grade will be determined by
Homework: 25%
Quizzes (Attendance): 10%
Midterms: 20% each
Final Exam: 25%

Grading Scale:
A 90-100% B 80-89.9% C 70-79.9% D 60-69.9% F 0-59.9%

Extra credit:
If you come to class and do the homework, your grade will take care of itself. Any opportunity for extra credit will be offered to the class as a whole, usually as part of a test or exam. No individual requests for extra credit projects will be considered.

Academic conduct
Students are encouraged to discuss the course material with one another and form study groups to prepare for the quizzes and exams. However, collaboration on individual assignments (homework, quizzes, and exams) is not allowed and will be handled in accordance with BSU's academic integrity policy.
* This syllabus may be amended during the semester.