

BERGEN COMMUNITY COLLEGE
DIVISION OF MATHEMATICS, SCIENCE AND TECHNOLOGY
DEPARTMENT OF MATHEMATICS

COURSE SYLLABUS

MAT-282 CALCULUS III

COURSE DESCRIPTION: Calculus III is a study of vectors, partial differentiation, directional derivatives, gradients, multiple integrals, vector calculus, line integrals, topics from vector analysis, and applications.

CREDITS/HOURS: 4 credits, 4 hours

PREREQUISITE: MAT-281 Calculus II with a grade of C or better or by permission of the Department Chair

GENERAL EDUCATION COURSE: Yes

STUDENT LEARNING OBJECTIVES: **Upon successful completion of this course the student will be able to:**

1. Use vectors in two and three dimensions and apply their properties.
2. Apply various types of functions including functions of several variables, vector valued functions, and vector fields.
3. Compute partial derivatives of functions of two or more variables.
4. Use partial derivatives to find gradient vectors, equations of tangent planes, solve maximum and minimum problems (both constrained and unconstrained).
5. Set up and evaluate double and triple integrals and use them to compute surface areas and volumes. Use double and triple integrals to solve applied problems involving centers of mass and moments of inertia.
6. Apply calculus concepts to problems involving vector fields including line integrals, divergence, curl, and Green's Theorem, and use these concepts to solve problems in physics.

ASSESSMENT MEASURES: Each of the above listed student learning objectives will be assessed by:

1. Written assignments and/or quizzes.
2. Written examinations.
3. Other, as announced by the instructor.

COURSE GRADE: Students should refer to the instructor's grading policy which will be distributed during the first meeting of the class.

TEXTBOOK: Calculus, Early Transcendental Functions, 6e (6th Edition), Larson/Edwards, Cengage Learning Publisher.

COURSE CONTENT:

<u>TOPIC</u>	<u>CHAPTER</u>	<u>SECTIONS</u>
Vectors and the Geometry of Space	11	All
Vector Valued Functions	12	All
Functions of Several Variables	13	1-9, (10 optional)
Multiple Integration	14	1-7, (8 optional)
Vector Analysis	15	1-8

REFERENCES: Anton, Calculus with Analytic Geometry, John Wiley & Sons
Schaum's Outline of Calculus, McGraw Hill
Shenk Calculus with Analytic Geometry, Goodyear
Swokowski, Calculus with Analytic Geometry, Prindle, Weber, and Schmidt

ELECTRONIC DEVICES: **The Department of Mathematics prohibits the use of cell-phones, PDA's, laptops, headphones, IPODs and other such devices in mathematics classes unless otherwise specified in the grading policy provided by the instructor at the beginning of the semester.**

FACULTY ABSENCE PROCEDURE: CLASS CANCELLATIONS may be found at <http://www.bergen.edu/classcancellations>
A list is also posted in a glass case near A-129, the main corridor on the first floor and in Ender Hall. If a cancelled class is not listed, it should be reported to the Department Office (A-327) or the Adjunct Office (C-107).

WEBSITE: Go to <http://www.bergen.edu/academics/academic-divisions-departments/mathematics> for more information regarding the Mathematics Department.

STUDENT SUPPORT SERVICES:	Learning Assistance Center	Room: L-125	879-7489
	Math and Science Walk-In	Room: L-131	879-7489
	Office of Specialized Services	Room: L-115	612-5269