

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

**COURSE SYLLABUS**

**MAT-223 CALCULUS FOR THE MANAGERIAL AND SOCIAL SCIENCES**

**COURSE DESCRIPTION:** Calculus for the Managerial and Social Sciences cover the essential ideas of the Calculus: functions, limits, continuity, derivatives and integration. The course includes applications to problems in business, economics, psychology and the social sciences.

**CREDITS/HOURS:** 3 credits      3 hours

**PREREQUISITES:** MAT-160 with a grade of C or better or by proficiency examination.

**GENERAL EDUCATION**

**COURSE:** Yes

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

1. Evaluate the domain and range of a function.
2. Demonstrate the ability to find the equilibrium point given a supply function and a demand function.
3. Evaluate and interpret limits using numerical, graphical, and algebraic methods.
4. Demonstrate the ability to recognize and interpret continuous functions.
5. Compute an average rate of change.
6. Demonstrate the ability to analyze and solve problems involving rates of change by applying the derivative.
7. Sketch curves using techniques of calculus.
8. Solve maximum-minimum and related rate problems with business and economic applications using calculus.
9. Differentiate exponential and logarithmic functions.
10. Solve exponential growth problems using calculus.
11. Evaluate definite and indefinite integrals using basic formulas and the substitution method.
12. Solve business and economic problems involving antiderivatives.
13. Given a demand and supply function, find the consumer's surplus and producer's surplus at the equilibrium point.
14. Solve applications relating to business and the social sciences.

**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 and Its Applications, 10<sup>th</sup> Edition, Marvin Bittinger, Pearson Publisher.

**CALCULATOR:** Scientific calculator (not graphing)

**COURSE CONTENT:**

| <u>TOPIC</u>                          | <u>CHAPTER</u> | <u>SECTIONS</u> |
|---------------------------------------|----------------|-----------------|
| Review of Basic Algebra               | Appendix       | P. 605-615      |
| Functions and Graphs                  | R              | All             |
| Limits, Continuity and the Derivative | 1              | All             |
| Applications of Differentiation       | 2              | 1-5, 7          |
| Exponential and Logarithmic Functions | 3              | 1-4             |
| Integration                           | 4              | 1, 3-5          |
| Applications of Integration           | 5              | 1               |

**REFERENCES:** Applied Mathematics by S. T. Tan, Brooks/Cole.  
Calculus: For Business, Economics, and the Social and Life Sciences by Hoffman and Bradley, McGraw-Hill.

**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 by the grading policy provided by the instructor at the beginning of the semester.**

**FACULTY ABSENCE PROCEDURE:** "CLASS CANCELLATIONS" may be found by clicking on the bottom of the Bergen Community College website, [www.bergen.edu](http://www.bergen.edu). A list is also posted in a glass case near A-129, the main corridor on the first floor and in Ender Hall. Students may consult these listings before going to class. If a cancelled class is not listed, it should be reported to the Department Office (A-325) or the Adjunct Office (C-107).

**WEBSITE:** Go to [www.bergen.edu/math](http://www.bergen.edu/math) for more information regarding the Mathematics Department.