

# Elements of Calculus Syllabus

## General Information

**MAT174 Elements of Calculus:** *4 hours, 4 credits.* (Not open to students majoring in math.) Differentiation and integration of elementary functions with applications to business, social sciences, and life sciences.

**Prerequisite:** A grade of C (or better) in MAT 171 or placement by the Department.

**Notes:** Students may not receive credit for both MAT 174 and MAT 175. MAT 174 will not serve as a prerequisite for MAT 176.

**Instructor:** *Your instructor will provide contact information, office hours and meeting times for your section*

## Grading Policy

**Expectations:** Students are expected to learn both the mathematics covered in class and the mathematics in the textbook and other assigned reading. Completing homework is part of the learning experience. Students should review topics from prior courses as needed and, if needed, go to their instructor's office hours, to the Math Lab or to problem sessions regularly.

**Homework:** Approximately two hours of homework will be assigned in each lesson as well as additional review assignments.

**Grades:** *The precise grading policy for your section will be distributed by your instructor.*

## Materials, Resources, and Accommodating Disabilities

**Textbook:** Harshbarger/Reynolds, *Mathematical Applications for the Management, Life, and Social Sciences*, Cengage Learning, 8<sup>th</sup>, 9<sup>th</sup>, or 10<sup>th</sup> Edition.

**Technology:** Students can use a Scientific Calculator in class and on homework.

*Graphing Calculators are not permitted at all.*

**Tutoring:** Departmental tutoring is available in the Math Lab on the 2nd floor of Gillet Hall.

**Accommodating Disabilities:** Lehman College is committed to providing access to all programs and curricula to all students. Students with disabilities who may need classroom accommodations are encouraged to register with the Office of Student Disability Services. For more info, contact the Office of Student Disability Services, Shuster Hall, Room 238, 718-960-8441.

## Course Objectives

At the end of the course, students will be able to:

1. Find derivatives of polynomial, exponential, and logarithmic functions. (a,b)
2. Use the product, quotient, and chain rules to find derivatives. (a,b,e)
3. Apply derivatives to solve problems arising in economics and business. (a,b,c)
4. Find antiderivatives and integrals of polynomial, exponential, and logarithmic functions. (a,b)
5. Apply integrals to solve problems arising in economics and business. (a,b,c)

***These objectives will be assessed on the final exam along with other important techniques.***

## Course Topics

There is flexibility in the order and time allotted to each of the topics below, but all topics must be covered by the instructor and understood by the student. *Section numbers refer to the most RECENT edition of the text; consult with your instructor if you are using an older edition.*

- Lesson 1:** Section 9.1 The Idea of Limits
- Lesson 2:** Section 9.2 The Notion of Continuous Functions
- Lesson 3:** Section 9.3 Average and Instantaneous Rate of Change
- Lesson 4:** Section 9.4 Derivative Formulas
- Lesson 5:** Section 9.5 Applying the Product and Quotient Rules
- Lesson 6:** Section 9.6 Applying the Power and Chain Rules
- Lesson 7:** Section 9.7 Using Derivative Formulas and Review
- Lesson 8:** Exam I on 9.1-9.5

**Students who fail this exam should consider dropping the course.**

**Please consult with your professor or a math advisor during office hours for more personalized advising.  
Bring a copy of your exam and completed homework**

- Lesson 9:** Section 9.8 Higher Order Derivatives
- Lesson 10:** Section 9.9 Applications of Derivatives in Economics and Business
- Lesson 11:** Section 10.1 - 10.2 Relative Extrema and Curve Sketching
- Lesson 12:** Section 10.3 Optimization in Business and Economics
- Lesson 13:** Review
- Lesson 14:** Exam II on 9.1 - 10.3

**Students who fail both exams should probably drop the course.**

**Please consult with your professor or a math advisor for more personalized advising.  
Bring a copy of your exams and completed homework.**

- Lesson 15:** Section 10.4 Applications of Maxima and Minima
- Lesson 16:** Section 11.1 Derivatives of Log Functions (Review 9.6)
- Lesson 17:** Section 11.2 Derivatives of Exponential Functions
- Lesson 18:** Section 12.1 The Indefinite Integral
- Lesson 19:** Section 12.2 The Power Rule
- Lesson 20:** Section 12.3 Integral involving Exponentials and Logs
- Lesson 21:** Section 12.4 Applications of the Indefinite Integral in Business and Economics
- Lesson 22:** Review
- Lesson 23:** Exam III on 9.1 - 12.4
- Lesson 24:** Section 13.1-13.2 Area under a curve and the Definite Integral
- Lesson 25:** Section 13.3 Area between curves
- Lesson 26:** Section 13.4 Applications of the Definite Integral in Business and Economics
- Lesson 27:** Section 11.3 - 11.4 Implicit Differentiation and Related Rates
- Lesson 28:** Review of the final

**Final Exam: A final exam will be given to all students during finals week.**

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*Last Updated: Summer, 2013*