

Calculus I Lab Syllabus

General Information

MAT155 Calculus I Laboratory: 2 hours, 1 credit. Calculus computer software will be used to illustrate ideas in MAT 175. COREQ: MAT 175.

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.

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

Course Description

This lab is designed to supplement Calculus instruction through the use of relevant and accessible technology platforms. Instructors are encouraged to use class time to review appropriate mathematical topics relevant to the corequisite Calculus course and to facilitate by-hand problem solving sessions. Software, such as Maple, MS Excel, WolframAlpha, and the Graphing Calculator, is expected to be incorporated into the labs, as well. These programs should be used to help students to visualize, analyze, and understand Calculus ideas and to verify their by-hand calculations.

Materials, Resources, and Accommodating Disabilities

Textbook: Same as MAT 175

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. Use technology to verify by-hand Calculus computations.
2. Use technology to graph a function, find its intercepts, identify its intervals of increase/decrease, recognize its local/global maxs/mins, and inspect its concavity.
3. Use technology to investigate limits.
4. Use technology to recognize the derivative's effects on a function's graph.

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

Course Topics

The Department maintains a repository of suggested lessons using suggested technology platforms. However, an instructor is free to design their own lessons using accessible software as they see fit. Instructors who design their own lessons are kindly asked to share these lessons with the Department so that they may be added to the repository and used by future instructors. In addition, the Department asks that instructors adequately familiarize their students with any incorporated technology before it is used.

The following is a suggested list of topics that can be covered in your lab throughout the semester. All instructors must dedicate a portion of the first several labs to a review of Calculus I topics; this is consistent with the Department's uniform MAT 175 syllabus. In addition, all instructors must cover topics so that the course objectives can be tested on the final exam.

- **Precalculus Review**
 - Graphing Functions and Examining Graphs
 - Inverse Functions, Exponentials, and Logarithms
 - Asymptotes

- **Limits**
 - Numerical, Algebraic, and Graphical Investigations
 - Infinite Limits

- **Derivatives**
 - Computing Derivatives
 - The Chain Rule
 - Visual Interpretations
 - First/Second Derivative Test

- **Applications of the Derivative**
 - Optimization Problems
 - Newton's Method

- **Area Under A Curve**
 - Antidifferentiation
 - Riemann Sums

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