

The College of Staten Island
Department of Mathematics
MTH 229 Calculus Computer Laboratory
Course Outline

The main objective of this course is to reinforce calculus concepts and explore the application of calculus to solving problems by making use of a series of computer projects. The student will be first introduced to mathematical software. In particular, MATLAB software will be used in this course. MATLAB has capabilities for both numerical and symbolic calculations. It can also create graphical output so that the results can be visualized more readily.

The following projects are integrated with the material covered in courses MTH 230 *Calculus I with Pre-Calculus* and MTH231 *Analytical Geometry and Calculus I*. Therefore, full appreciation of these projects requires a solid understanding of the course material.

1. Using MATLAB as a Calculator
2. Plotting Graphs in MATLAB
3. More on Graphing with MATLAB
4. Graphical Solutions to Equations
5. Investigating Limits in MATLAB
6. Approximate First and Second Derivatives
7. Critical and Inflection Points
8. Newtons' Method
9. Optimization
10. Definite Integrals and Riemann Sums

Examinations: There will be a midterm and a final examination.

Optional Materials:

Software: MATLAB is installed in several of the campus computer labs. However, if you wish to work from home, you can purchase the MATLAB Student Version Release 14 with Service Pack 3 (Includes MATLAB 7.1, Simulink 6.3, and key functions of the Symbolic Math Toolbox) at the student bookstore or online at <http://www.mathworks.com/academia>

Text: Online documentation can be found at

<http://www.mathworks.com/access/helpdesk/help/techdoc/matlab.shtml>