The College of Staten Island
Department of Mathematics

MTH 229 Calculus Computer Laboratory
Fall 2012 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. Newton's Method

9. Optimization

10. Definite Integrals and Riemann Sums

- You will use the login ID and password, provided by your instructor, to gain access to the projects online at *http://www.math.csi.cuny.edu*. All course-work will be submitted electronically through the site.

- You will use the MATLAB software to perform the tasks described to you in the projects. Please note that MATLAB must be installed on your PC and is not 'embedded' in the web browser. MATLAB is installed in several of the campus computer labs. However, if you want to work from home, you can purchase the MATLAB & Simulink Student Version R2012a online at *http://www.mathworks.com/academia*

- If you wish to have a hardcopy of the projects, these are available at *http://www.lulu.com*, and then search on the words **csi math**. A booklet will be sent to you for a small fee.

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