The City College of New York

2010 Science, Technology, Engineering and Mathematics (STEM) Institute

Calculus I

Syllabus

Calculus I

Program Duration: Six weeks, Class meets fifteen hrs/week, three elective High School credits
Instructor: Prof. Dario Cardenas, Mathematic Department, CCNY
TAs: Mr. Isaiah Yim

Lesson Objectives

1. Pre-test to gauge students’ educational background of subject material.
   Locate students into Calculus, Pre-Calculus, and Advanced Algebra session.

2. Section: 1.1 Functions and their representations.
   1.2 A catalog of essential functions.

3. Section: 1.3 The limit of a function.
   1.4 Calculating limits.

4. Section: 1.5 Continuity.
   1.6 Limits involving infinity.

5. Section: 2.1 Derivatives and rates of change.
   2.2 A derivative as a function.

6. Section: 2.3 Basic differentiation formulas.
   2.4 Product and quotient rules.

7. Section: 2.5 The chain rule.
   2.6 Implicit differentiation.

8. Section: 2.7 Related rates.
   2.8 Linear approximation and differentials.
   Review chapter 1 and 2.

9. Review chapter 1 and 2.

10. Exam #1 (one hour)
    Review the exam and make sure students understand the material (theory and applications).

11. Section: 3.1 Maximum and minimum values.
    3.2 The mean value theorem.

12. Section: 3.3 Derivatives and the shapes of graphs.
    3.4 Curve sketching.

13. Section: 3.5 Optimization problems.
    3.7 Antiderivatives.

14. Section: 4.1 Areas and distances.
    4.2 The definite integral.

15. Section: 4.3 Evaluating definite integrals.
    4.4 The fundamental theory of calculus.
Section: 4.5 The substitution rule.
Review Chapter 3 and 4.

Exam # 2 (one hour)
Review exam and make sure students understand the material (theory and applications).

Section: 5.1 Inverse functions.

Section: 5.2 The natural logarithmic function.

Section: 5.3 The natural exponential function.

Section: 5.5 Exponential growth and decay.

Section: 5.4 General logarithmic and exponential functions.

Section: 5.6 Inverse trigonometric functions.

Section: 5.7 Hyperbolic functions.

Section: 5.8 Indeterminate forms and L’hospital’s rule.

Review Chapter 5.

Exam # 3 (one hour)
Review exam and make sure students understand the material (theory and applications).

Review for the Final exam.

Review for the Final exam.

Exam # 4- mock-final exam (one hour)
Review exam and make sure students understand the material (theory and applications).

Review for the Final exam.

Review for the Final exam.

Final Exam (2 hours)
Review of final exam and make sure students understand the material (theory and applications)


Instructor: Dario Cardenas
Email: dacardenas@ccny.cuny.edu

Grade computation:

Your class average is determined by:

Homework: 5%
Quizzes : 20%
In-class exams (3): 35%
Final Exam: 40%