Calculus I MATH 150
Department of Mathematics and Statistics
Hunter College
4.0 hours, 4.0 credits

Course Description: This is a one semester introduction to differential and integral calculus, suitable for all students majoring in science or mathematics, or any other course of study requiring calculus.

Goals:

The student will learn about functions of one variable, including the concepts of limit, continuity and the derivative. The student will be able to compute derivatives of various functions such as polynomials, rational functions, trigonometric functions, exponential sad logarithm functions, and inverse trigonometric functions. The student will learn the Mean Value Theorem and the Intermediate Value Theorem. These concepts will be applied by the student to various problems involving related rates, curve sketching and optimization, and linear approximation. The student will learn about antidifferentiation and the Riemann integral, and will be able to compute Riemann integrals of some simple functions using the Fundamental Theorem of Calculus. Finally, the student will apply these techniques to computing areas.

Prerequisites: Completion of MATH 125 or the equivalent with a grade of C or higher, or appropriate score on the CUNY math placement exam.

Textbook:

Single Variable Calculus, 7th Edition, Early Transcendentals, **Hunter College Custom Edition, with WebAssign,** James Stewart , Cengage Publishing.

Topics Covered:

Chapter 1:

1.1-1.6 Functions

Chapter 2:

2.1 The Tangent and Velocity Problems

2.2 The Limit of a Function

2.3 Calculating Limits Using the Limit Laws

2.5 Continuity

2.6 Limits at Infinity; Horizontal Asymptotes

2.7 Derivatives and Rates of Change

2.8 The Derivative as a function

Chapter 3:

3.1 Derivatives of Polynomials and Exponential Functions

3.2 The Product and Quotient Rules

3.3 Derivatives of Trigonometric Functions

3.4 The Chain Rule

3.5 Implicit Differentiation

3.6 Derivatives of Logarithm Functions

3.7 Rates of Change in the Natural and Social Sciences

3.8 Exponential Growth and Decay

3.9 Related Rates

3.10 Linear Approximation and Differentials

Chapter 4:

4.1 Maximum and Minimum Values

4.2 The Mean Value Theorem

4.3 How Derivatives Affect the Shape of a Graph

4.4 Indeterminate forms and 1'Hospital's Rule

4.5 Summary of Curve Sketching

4.7 Optimization Problems

4.9 Antiderivatives

Chapter 5:

5.1 Areas and Distances

5.2 The Definite Integral

5.3 The Fundamental Theorem of Calculus

5.4 Indefinite Integrals and the Net Change Theorem

5.5 The Substitution Rule

Chapter 6:

6.1 Areas Between Curves

Final Exam: This course has a uniform final exam. The final exam will be on the last day of class.

Suggested policy on Homework, Exams, and Grades:

Homework will be assigned on a regular basis and will count for 10% of your grade. We will use WebAssign, an online homework system. You will soon receive details about how to login to WebAssign.

There will be three exams and a cumulative final exam. Your final grade will be determined by 90% of your average on the exams plus your homework. The final will be worth two of the other exams.

Your lowest exam grade will be dropped. (If the final is the lowest grade it will be counted as one exam.) If you miss an exam, that will count as your lowest grade, so it will be dropped. If you miss the final exam you will receive a grade of WU. If you miss two exams prior to the final then your status in the course will be in serious jeopardy. if you stop attending the course and do not withdraw, you will receive a grade of WU.

You may elect to take the course on a credit/no credit basis if you are eligible, but this is subject to the College's rules, which means you that you will not be eligible for credit/no credit grading unless you have taken all the exams, including the Final Exam, and completed most of the homework.

Academic Integrity: Hunter College regards acts of academic dishonesty (e.g., plagiarism, cheating on examinations, obtaining unfair advantage, and falsification of records and official documents) as serious offenses against the values of intellectual honesty. The college is committed to enforcing the CUNY Policy on Academic Integrity and will pursue cases of academic dishonesty according to the Hunter College Academic Integrity Procedures.

Disabilities: If you have a disability that you believe requires special accommodations: In compliance with the American Disability Act of 1990 (ADA) and with Section 504 of the Rehabilitation Act of 1973, Hunter College is committed to ensuring educational parity and accommodations for all students with documented disabilities and/or medical conditions. It is recommended that all students with documented disabilities (Emotional, Medical, Physical and/ or Learning) consult the Office of AccessABILITY located in Room E1214B to secure necessary academic accommodations. For further information and assistance please call (212- 772- 4857)/TTY (212- 650- 3230).