

# MATH 155 – Calculus with Analytic Geometry II

Department of Mathematics and Statistics Hunter College

4.0 hours, 4.0 credits

**Instructor:**

**Email:**

**Office Hours:**

**Department Office:**

**Course Description:** This is the second semester of our calculus sequence, suitable for all students majoring in science or mathematics, or any other course of study requiring at least two semesters of calculus.

**Mode of Instruction:** This is an in-person class. We will be using the online homework platform Lumen (see below). Information will be posted on the BlackBoard page for the course.

**Blackboard:** This is where I'll post the syllabus (this document), announcements, solutions to exams and various other problems, supplemental material, and other information relevant to the course. When I email announcements to the class it will be through BlackBoard, so make sure that your email address in the BlackBoard database is one that you check regularly. If the only email address that you check regularly is not the one that is in BlackBoard then that will be a problem.

**Lumen:** Lumen is the online homework platform that we will be using. There will be homework problems posted on Lumen. You will need to get a Lumen account if you don't already have one. There is a \$25 fee for accessing the class material. You can sign up for a Lumen account at <https://ohm.lumenlearning.com>.

**Dolciani Mathematics Learning Center:** The DMLC, located on the 7<sup>th</sup> floor of the library, is an extremely valuable resource to Hunter math students. They offer a wide range of services, including in-person and online tutoring in Calculus. Their web page is <https://www.hunter.cuny.edu/dolciani>, or better yet go in and check them out.

**Expected Learning Outcomes:**

The student will learn to

- Differentiate and manipulate transcendental functions, such as inverse trigonometric functions and the natural exponential and logarithm.
- Evaluate definite and indefinite integrals using substitution, integration by parts, trigonometric substitution, and partial fractions,
- Approximate definite integrals using numerical techniques
- Compute arc lengths of curves and areas of surfaces of revolution in rectangular and polar coordinates.
- Evaluate the convergence of infinite series, and compute and manipulate power series representations of functions.

**Prerequisites:** MATH 15000, Calculus with Analytic Geometry I, or its equivalent, with a grade of C or better.

**Required Textbook:** Essential Calculus (Second Edition) by James Stewart, Cengage Publishing. You can buy the hardcover version and/or the electronic version. Hardcover editions are available at the campus bookstore which is online, or at other bookstores. Here is a link for purchasing the electronic version of the textbook.

**Online Homework:** This course will use Lumen, an online homework and exam system.

## Topics Covered:

### Chapter 5:

- 5.1 Inverse Functions
- 5.2 The Natural Logarithm Function
- 5.3 The Natural Exponential Function
- 5.5 Exponential Growth and Decay
- 5.6 Inverse Trigonometric Functions
- 5.8 Indeterminate Forms and L'Hospital's Rule

### Chapter 6:

- 6.1 Integration by Parts
- 6.2. Trigonometric Integrals and Substitutions
- 6.3 Partial Fractions
- 6.5 Approximate Integrals (Simpson's Rule only)
- 6.6 Improper Integrals

### Chapter 7:

- 7.4 Arc Length
- 7.5 Area of a Surface of Revolution
- 7.6 Applications to Physics and Engineering (Hooke's Law only)

## **Chapter 8:**

- 8.1 Sequences
- 8.2 Series
- 8.3 The Integral and Comparison Tests
- 8.4 Other Convergence Tests
- 8.5 Power Series
- 8.6 Representing Functions as Power Series
- 8.7 Taylor and Maclaurin Series
- 8.8 Applications of Taylor Polynomials

## **Chapter 9:**

- 9.1 Parametric Curves
- 9.2 Calculus with Parametric Curves
- 9.3 Polar Coordinates

**Exams:** There will be three midterm exams and a comprehensive final exam. The first exam will be approximately a third of the way through the course, the second exam will be approximately two thirds of the way, and the third exam will be near the end of the semester, before the last class meeting. The final exam will be after the last class meeting, on the date scheduled by Hunter College for this particular section.

**Grading:** Homework will count for 10% of your course grade, the exams will count for 90%. The final exam will be worth twice as much as the midterm exams. Your lowest exam score will be dropped entirely, if it is a midterm exam. If your lowest exam score is the final exam, then it will be worth only one of the midterm exams.

If you stop attending the course and do not withdraw, you will receive a grade of WU. The last day to drop a course with a 25% tuition refund and nothing appearing on your record is Thursday September 14. The last day to drop the course with no tuition refund and a grade of W appearing on your record is Monday December 11.

**NOTE:** P/NC grading is not permitted for this course.

**Hunter College Policy on 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.

**ADA Policy:** 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 or (212) 650-3230.

**Hunter College Policy on Sexual Misconduct.** In compliance with the CUNY Policy on Sexual Misconduct, Hunter College reaffirms the prohibition of any sexual misconduct, which includes sexual violence, sexual harassment, and gender-based harassment retaliation against students, employees, or visitors, as well as certain intimate relationships. Students who have experienced any form of sexual violence on or off campus (including CUNY-sponsored trips and events) are entitled to the rights outlined in the Bill of Rights for Hunter College.

**a. Sexual Violence:** Students are strongly encouraged to immediately report the incident by calling 911, contacting NYPD Special Victims Division Hotline (646-610-7272) or their local police precinct, or contacting the College's Public Safety Office (212-772-4444).

**b. All Other Forms of Sexual Misconduct:** Students are also encouraged to contact the college's Title IX Campus Coordinator, Dean John Rose (jtrose@hunter.cuny.edu or 212-650-3262) or Colleen Barry (colleen.barry@hunter.cuny.edu or 212-772-4534) and seek complimentary services through the Counseling and Wellness Services Office, Hunter East 1123.

**Changes:.** Except for changes that substantially affect implementation of the evaluation (grading) statement, this syllabus is a guide for the course and is subject to change with advance notice.