

# **Axiomatic Geometry – Math 633**

## **Instructor Information**

## **Office Hours**

## **Course Description**

This course is designed as a proof-based course on the axioms of geometry. It approaches geometry assuming that the students already have a high-school level knowledge of Euclidean geometry, but the precise axioms of Euclidean geometry will be built up using rigorous proofs. From this proof-based perspective, students will learn more detail and history about the axioms of Euclidean geometry- bringing their knowledge of geometry to the graduate level. Towards the end of the course, we will introduce some non-Euclidean geometry (hyperbolic geometry) and three-dimensional geometry.

## **Learning Objectives**

1. Students will develop their skills with geometric proofs.
2. Students will be able to demonstrate fluency in the axioms of Euclidean geometry and the interesting properties that arise from assuming these axioms.
3. Students will be able to apply their knowledge of geometry to examples in three dimensions.
4. Students will be able to recognize the distinguishing features of non-Euclidean geometries.

## **Textbook Information**

College Geometry: A Discovery Approach, Second Edition; Kay, David C.; Addison Wesley Longman, Inc., 2001.

## **Blackboard**

Though this is an in person course, we will use a Blackboard site for homework and additional resources. I will send out announcement and reminder emails through Blackboard, so make sure your email address is correct. There will be a folder on Blackboard for each week containing all the materials for that week including slide presentations, videos, outside links, and homework. The videos are from when I taught this class online and should be considered an additional resource, not a replacement for in person lectures or reading the textbook.

## **Homework**

Each week has an associated list of homework problems as indicated in the schedule. These problems are from the textbooks. Homework will be due every week by 7pm Tuesday (or Thursday if we don't meet on Tuesday), see Blackboard for specific dates. You are expected to at least attempt all the problems. You can either handwrite your work and take photos or scan it into a PDF or write directly into a PDF with a tablet and stylus. Then upload your work to Blackboard. The class(es) after homework is due, students will present their solutions to the problems on the board for discussion and/or discuss the problems in small groups. Solutions will be posted to Blackboard the Friday after the due date (except exam weeks when solutions will be posted the week prior). No late homework will be accepted.

## **Exams**

We will have two in class exams, exam 1 covering weeks 1-6 and exam 2 covering weeks 8-12 not including section 6.2, plus a final exam which covers weeks 1-15. A study guide will be provided for each exam. The exams are based on classwork and the examples from the homework. A calculator is permitted but not required. All exams will be held in person. The final exam will count twice. Of the four scores (exam 1, exam 2, final exam, final exam), the lowest score will be dropped. There are no make-ups for in class exams. If an in class exam is missed, a score of zero will be recorded and dropped. If you need to miss the final exam, please contact me as soon as possible.

## **Grading**

75% Exams  
20% Homework  
5% Participation

## **Student Resources**

Counseling and Wellness Services offers free and confidential short-term counseling services and referrals to all Hunter College students. Visit <http://www.hunter.cuny.edu/cws/counselingservices> for more information.

Counseling and Wellness Services also offers free workshops on topics such as stress management, healthy relationships, anxiety, and procrastination, as well as support groups. Visit <http://www.hunter.cuny.edu/cws/counselingservices/Workshops> for more information.

Visit <https://ww2.hunter.cuny.edu/students/student-life/emergency-support-and-resources/> for links to resources such as food pantries, emergency funding sources, and technology access.

## **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.”

### **Office of AccessABILITY**

“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 Accessibility.” Call (212-772-4857)/TTY (212-650-3230) or visit <http://www.hunter.cuny.edu/access> for more information. Students are welcome to speak with me privately about any accommodations.

### **CUNY Statement 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](mailto:jtrose@hunter.cuny.edu) or 212-650-3262) or Colleen Barry ([colleen.barry@hunter.cuny.edu](mailto:colleen.barry@hunter.cuny.edu) or 212-772-4534) and seek complimentary services through the Counseling and Wellness Services Office, Hunter East 1123.”

CUNY Policy on Sexual Misconduct Link:

<http://www.cuny.edu/about/administration/offices/la/Policy-on-Sexual-Misconduct-12-1-14-with-links.pdf>