

ADVANCED GEOMETRY 11:00AM-NOON MWF SPRING 2021 SH309

- Instructor: Jonathan White
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Office: Stuart 311
Office Hours: 9:30-10am MWF, 10-10:30am TTh, and by appointment (Link on web page)
Office Phone: 399-8280
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Text: The main text will be *Foundations of Geometry, Second Edition*, by Gerard A. Venema.
Problem Sets: There will be several problem sets through the semester. Together these will be worth 100 points.
Participation: Since in-class interactions and activities will constitute such a significant part of this class, credit will be included for at least one activity per class period, generally worth 2 or 3 points each depending on the day and adding up to 100 points possible for the semester. The score will normally be -1 for any missed work.
Projects: Students will undertake three major projects during the semester, which will each normally include a paper of at least 3-5 page length. Topics will be selected in consultation with the instructor, with considerable freedom to fit individual interests within the scope of the class. Projects will be worth 100 points each, and can be revised for more credit where appropriate. At least one project must be submitted by the end of the fifth week and a second by the end of the tenth week of the term.
Math Culture: Up to 50 Math Culture Points may be earned by participating in various activities outside of class, as detailed elsewhere.
Exams: There will be three small in-class examlets administered during class time. The dates of these are indicated in the schedule on the back side of this sheet. These examlets will be worth 50 points each.
The final exam will be held during finals week at the date and time indicated on the back side of this sheet. The final will be worth 100 points.
Grading: Grading will approximately follow a [92.0%, +∞) → A, [90%, 92%) → A-, [87%, 90%) → B+, [82%, 87%) → B, [80%, 82%) → B-, [77%, 80%) → C+, [72%, 77%) → C, [70%, 72%) → C-, [67%, 70%) → D+, [62%, 67%) → D, [60%, 62%) → D-, (-∞, 60%) → F scale.
Makeups: For fairness to those who follow the schedule, makeups for exams will be allowed only in extenuating circumstances, with documentation and advance notice when humanly possible. Late problem sets and papers will normally be penalized 20% of points possible for each day late, and only accepted until others are returned.

This class is intended to serve a variety of different goals. It certainly is intended to provide deep knowledge of elementary geometry for future teachers, but it also should be a valuable course for pure math majors and others curious about the subject. In order to serve those various groups well, several aspects of the class will be individualizable, particularly the projects. I hope you will make the most of the opportunities this presents.

The format of this course will generally be more collaborative, exploratory, and discussion-based than a traditional math class. This can only be successful if all students come to class well-prepared, so please hold up your part. Remember that I'm around to help.

Tentative Schedule

1/25 Chapter 1 – Euclid’s Elements	1/27 §2.1 & §2.2 Axiomatics	1/29 §2.3 & §2.4 Postulates
2/1 §2.5 & §2.6 Theorems	2/3 §3.1 Starting & §3.2 Distance	2/5 §3.3 Separation
2/8 §3.4 Angles	2/10 §3.5 Crossbars and Linear Pairs	2/12 §3.6 SAS
2/15 §3.7 Parallels and Models	2/17 Review	2/19 Examlet 1
2/22 §4.1 Exterior Angles	2/24 No Class – Break	2/26 §4.2 Triangle Congruence
3/1 §4.3 Triangle Inequalities	3/3 §4.4 Alternate Interior Angles	3/5 §4.5 Saccheri-Legendre
3/8 §4.6 Quadrilaterals	3/10 §4.7 Alternate Parallel Postulates	3/12 §4.8 Rectangles & Defect
3/15 §4.9 Universal Hyperbolic	3/17 Examlet 2	3/19 §5.1 Euclidean Basics
3/22 §5.2 Parallel Projection	3/24 §5.3 Similarity	3/26 §5.4 The Pythagorean Theorem
3/29 §5.5 Trigonometry	3/31 §5.6 Exploring Triangles	4/2 §6.1 Hyperbolic Basics
4/5 §6.2 Common Perpendiculars	4/7 No Class – Research Symposium	4/9 §6.3 Angle of Parallelism
4/12 §7.1 Neutral Area Postulate	4/14 §7.2 Euclidean Area	4/16 §Dissection Theory
4/19 Examlet 3	4/21 §8.1 Neutral Circles	4/23 §8.2 Neutral Triangles
4/26 §8.3 Euclidean Circles	Final Exam – 3:30pm Wednesday 4/28	

Any students with disabilities which might affect their performance in this class should contact me as soon as possible to arrange accommodations.

Coe’s faculty has adopted an academic integrity policy. It is your responsibility to understand and follow it.

Diversity, in all its forms, is valuable.

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Course Objectives: By the end of the course, students should have practiced...

- writing mathematical proofs
- thinking about axiomatic systems
- distinguishing Euclidean from hyperbolic systems a million times
- other life skills that are more impactful for students to ponder than to enumerate here

College-wide Policies:

Mission Statement: Coe College is a national, residential liberal arts college offering a broad array of programs in the arts, sciences, and professions. Our mission is to prepare students for meaningful lives and fulfilling careers in a diverse, interconnected world. Coes success will be judged by the success of our graduates.

Academic Integrity At Coe College, we expect academic integrity of all members of our community. Academic integrity assumes honesty about the nature of ones work in all situations. Such honesty is at the heart of the educational enterprise and is a precondition for intellectual growth. Academic dishonesty is the willful attempt to misrepresent ones work, cheat, plagiarize, or impede other students academic progress. Academic dishonesty interferes with the mission of the College and will be treated with the utmost seriousness as a violation of community standards. Please refer to the Coe College Academic Catalog for complete information regarding Academic Integrity: www.coe.edu/academics/academic-resources/provosts-office/academic-integrity-policy

FERPA Students should be aware of their rights regarding the privacy of their educational records. Detailed information about your rights can be found under the FERPA (Family Educational Rights and Privacy Act of 1974) section in the Academic Catalog and online here: <https://www.coe.edu/academics/academic-resources/registrar/ferpa> In line with FERPA restrictions, students should be aware that an instructor cannot publicly post grades by student name, institutional student identification number, or social security number without first having obtained students written permission.

The Definition of a Course Credit & Expected Workload One course credit at Coe College constitutes 180 hours worth of student work over the course of the term. "The Department of Education has defined one hour to be 50 minutes, so 150 60-minute hours is equivalent to 180 50-minute hours." This figure includes both the time spent in class and out of class completing course work. In other words, students are expected to devote a considerable amount of time outside of class to this course. For courses that meet in a standard MWF or T-Th slot, students should be expected to work seven hours a week outside of the three hours in class. Even with the 13.3 week term, the same number of contact hours (in person or remote) will be achieved with longer class meetings. Contact hours are per credit and do not change with modality. A credit is a credit.

Requesting Academic Accommodations Coe College is committed to creating a learning environment that meets the needs of its diverse student body. If you anticipate or experience any barriers to learning in this course, please visit my office hours to discuss these concerns with me. If you have a medical, physical, psychological, or learning need documented by a healthcare provider, or experience an unforeseen obstacle during the semester, you can make an appointment with Laura Hayes, Accessibility Services Coordinator, to request an official accommodation under the Americans with Disabilities Act. You can find more information about the Accessibility Services Office by visiting the Learning Commons website or by emailing accessibility@coe.edu. If you have already been approved for accommodations through Accessibility Services, please meet with me so we can develop a plan for your success together.

Reporting of Sexual Assault or Misconduct As an instructor, one of my responsibilities is to help create a safe learning environment on our campus. I also have a mandatory reporting responsibility related to my role as a faculty member. It is my goal that you feel able to share information related to your life experiences in classroom discussions, in your written work, and in any one-on-one meetings. I will keep the information you share with me private to the greatest extent possible. However, I am required to share information regarding sexual misconduct or students who may be in danger to themselves or to others. Students may speak to someone confidentially by contacting Student Life at 319-399-8843 or emailing titleix@coe.edu, Safety, and Security at 319-399-8888, Emily Barnard (college counselor) at 319-399-8843, or visit Coe's Title IX website for more information.

Face coverings will be required in all indoor public spaces, which includes the classrooms, labs, and between classes. Any students without a face covering will be asked to leave the classroom or lab. Anyone who is not compliant with the classroom and lab protocols will be asked to leave the classroom until compliance can be maintained. If a student refuses to follow college guidelines upon request, the faculty member should cancel class and contact the Provost immediately. Refusal to comply with classroom protocols will be considered as deliberately impeding other students work and will be addressed by the Provosts Office.