

ADVANCED GEOMETRY 11:00-11:50AM MWF SPRING 2017 SH309

- Instructor: Jonathan White
- E-Mail: JWhite@Coe.Edu
- Web Page: <http://public.coe.edu/~jwhite/>
- Office: Stuart 316
- Office Hours: MWF 10:00-10:50am and by appointment
- Office Phone: 399-8280
- Home Phone: 362-3350 (between 7am and 10pm)
- 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 scoring a value from $\{-1, 1, 2, 3\}$ depending on the day and adding up to 100 points possible for the semester.
- Projects: Students will undertake three major projects during the semester, which will 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 completed by the end of the sixth week and a second by the end of the tenth week of the term.
- Math Culture Points: Up to 50 Math Culture Points may be earned by participating in various activities outside of class, as detailed on page 3 of this syllabus.
- Examlets: 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 $[92.0\%, \infty) \rightarrow A$, $[90\%, 92\%) \rightarrow A-$, $[87\%, 90\%) \rightarrow B+$, $[82\%, 87\%) \rightarrow B$, $[80\%, 82\%) \rightarrow B-$, $[77\%, 80\%) \rightarrow C+$, $[72\%, 77\%) \rightarrow C$, $[70\%, 72\%) \rightarrow C-$, $[67\%, 70\%) \rightarrow D+$, $[62\%, 67\%) \rightarrow D$, $[60\%, 62\%) \rightarrow D-$, $(-\infty, 60\%) \rightarrow F$ scale.
- Makeups: For fairness to those who follow the schedule, makeups for examlets will be allowed only in extenuating circumstances, with documentation and advance notice when humanly possible. Late problem sets will generally not be accepted, and if accepted due to extenuating circumstances will generally be subject to a penalty of 20% of the possible points for each day past due.

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

Monday 1/9 Chapter 1 – Euclid’s <i>Elements</i>	Wednesday 1/11 §2.1 & § 2.2 Axiomatics	Friday 1/13 §2.3 & §2.4 Postulates
Monday 1/16 No Class – MLK Day	Wednesday 1/18 §2.5 & § 2.6 Theorems	Friday 1/20 §3.1 Starting & §3.2 Distance
Monday 1/23 §3.3 Separation	Wednesday 1/25 §3.4 Angles	Friday 1/27 §3.5 Crossbars and Linear Pairs
Monday 1/30 §3.6 SAS	Wednesday 2/1 §3.7 Parallels and Models	Friday 2/3 Review
Monday 2/6 Examlet 1	Wednesday 2/8 §4.1 Exterior Angles	Friday 2/10 §4.2 Triangle Congruence
Monday 2/13 §4.3 Triangle Inequalities	Wednesday 2/15 §4.4 Alternate Interior Angles	Friday 2/17 – Project 1 Due §4.5 Saccheri-Legendre
Monday 2/20 §4.6 Quadrilaterals	Wednesday 2/22 §4.7 Alternate Parallel Postulates	Friday 2/24 § 4.8 Rectangles & Defect
Monday 2/27 §4.9 Universal Hyperbolic	Wednesday 3/1 Examlet 2	Friday 3/3 §5.1 Euclidean Basics
Spring Break		
Monday 3/13 §5.2 Parallel Projection	Wednesday 3/15 §5.3 Similarity	Friday 3/17 §5.4 The Pythagorean Theorem
Monday 3/20 §5.5 Trigonometry	Wednesday 3/22 §5.6 Exploring Triangles	Friday 3/24 – Project 2 Due §6.1 Hyperbolic Basics
Monday 3/27 §6.2 Common Perpendiculars	Wednesday 3/29 §6.3 Angle of Parallelism	Friday 3/31 §7.1 Neutral Area Postulate & §7.2 Euclidean Area
Monday 4/3	Wednesday 4/5 §7.3 Dissection Theory	Friday 4/7 Examlet 3
Monday 4/10 §8.1 Neutral Circles	Wednesday 4/12 §8.2 Neutral Triangles	Friday 4/14 §8.3 Euclidean Circles
Monday 4/17 §9.1 Constructions	Wednesday 4/19 §10.1 Isometries	Friday 4/21 §10.2 Rotations, Translations, Glide Reflections
Monday 4/24 §10.3 Classification	Wednesday 4/26 Review	
Final Exam – 11am on Friday 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.

Math Culture Points

A portion of the grade for this course will take the form of Math Culture Points. These will be earned through activities outside of class including, but not necessarily limited to, those listed below. Note that none of these are mandatory – there are far more opportunities than necessary to earn full credit. You should be able to select activities that are particularly relevant to you.

Activity	Points	Max #
Colloquium Attendance	5	–
Colloquium Presentation	5-15	2
Meeting Attendance		2
Nebraska Conference for Undergraduate Women in Mathematics (February 3-5)	15	
SIGCSE Technical Symposium (March 8-11)	15	
Midwest Undergraduate Mathematics Symposium (March 31-April 1)	15	
Mathematics/CS Competition Participation		2
Mathematical Contest in Modeling (January 19-23)	15	
Iowa Collegiate Mathematics Competition (March 4)	15	
Hack-a-thon (February 24-26)	15	
MICS Programming Competition (April 7-8)	15	
Math Culture Reading		
Some weeks specific readings will be posted on the course web page	5	–
Articles from Math Horizons	5	3
With approval, articles from <i>Math. Magazine</i> , <i>The College Math. Journal</i> , etc.	5	3
Math Club Activities (when appropriate)	5-10	5
Winter Break Book, Movies, Pi Day celebration, Speakers, Workshops, etc.		
Other Appropriate Coe or Outreach Activities		
Contemporary Issues Forum (February 28)	5	–
WinSTEM meetings or activities	5-15	?
Chess Club Meeting	5	3
Attending a Quantitative Research Symposium Presentation	5	3
Job Shadowing in any relevant field	10	1
Other Volunteer Outreach (talk to Jon for details)	5	5

You should plan to spread your participation through the semester. In each case, credit assumes both full participation and posting a brief summary/response on Moodle **in a timely manner**. These reflections should generally be between 100 and 300 words, and include both a brief summary and your personal thoughts on the event, and **must be submitted within one week of the event**, or within the specified time window for other activities. Up to three units of credit may be submitted after normal deadlines in the “Math Culture – Late” category on Moodle, but otherwise exceptions will not be made without serious extenuating circumstances.

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the following policy statements need to be on your syllabi:

? Academic Integrity

o At Coe College, we expect academic integrity of all members of our community. Academic integrity assumes honesty about the nature of one's work in all situations. Such honesty is at the heart of the educational enterprise and is a pre-condition for intellectual growth. Academic dishonesty is the willful attempt to misrepresent one's 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.

o Please refer to the Coe College Academic Catalog for complete information regarding Academic Integrity:

<http://www.coe.edu/academics/dean/academicintegrity>

? FERPA

o 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: <http://www.coe.edu/academics/registrar/ferpa>.

o In line with FERPA restrictions, students should be aware that your 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:

o One course credit at Coe College constitutes 150 hours' worth of student work over the course of the term. This figure includes both the time spent in class and the time spent 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 M-W-F or T-Th slot, students should be expected to work seven hours a week outside of the three hours in class.

? Students with Disabilities:

o Coe College will make reasonable accommodations for persons with documented disabilities. If you have a disability which may have some impact on your work in this course, please contact the Learning Commons' Academic Coach and ADA Coordinator (Kim Pierson, x8844).

o Please note that all arrangements for accommodations must be handled through the Learning Commons. Faculty must give the opportunity of an accommodation to every student in the course or only to those students for which it is determined as a need by the Academic Coach and ADA Coordinator (Kim Pierson, x8844).

? Reporting of Sexual 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 seek to keep 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 Development at 319-399-8843 or Safety and Security at 319-399-8888.