

## Course Syllabus

**Course:** Mathematics 3061.001.

**Course Title:** Modern Geometry.

**Time:** Wednesdays, 17:30-20:00.

**Place:** Barton B-401.

**Instructor:** Conrad, Bruce P.

**Instructor Office:** Wachman Hall, room 616.

**Instructor Email:** bruce.conrad@temple.edu

**Instructor Phone:** 215-204-2896.

**Office Hours:** Tuesdays, Thursdays 11:40-12:30; Wednesdays 16:30-17:20. Please make an appointment to see me if you can't make it to these office hours.

**Prerequisites:** Linear algebra. This is needed in our study of transformational geometry. You need some basic familiarity with the properties of orthogonal matrices.

**Textbook:** *Geometry: Euclid and Beyond*, by Robin Hartshorne. Springer Verlag New York, ISBN 0-3879865-0-2. We will also refer to *The Elements*, by Euclid. This text is online at

<http://aleph0.clarku.edu/~djoyce/java/elements/toc.html>

**Course Goals:** Geometry is a broad area, and we cannot touch upon every aspect. In this course you will be introduced to synthetic and transformational geometry. Our goal is to understand what these are, and to become familiar with major results. In the process, we explore the role of models for axiom systems. A second goal is to become proficient with *The Geometer's Sketchpad* software and its use in exploring Euclidean, non-Euclidean, and projective geometry.

### Topics Covered:

- Synthetic geometry (Euclidean, and non-Euclidean)
- Analytic geometry
- Transformational geometry
- Hyperbolic geometry
- Projective geometry

**Course Grading:** Homework, 20%; **WEEKLY** Quizzes based on homework, 10%; Midterm, 20%; Final, 20%; Presentation, 20%, Class participation, 10%.

**Exam Dates:** Midterm: October 21. Final: December 16.

**Attendance Policy:** Please attend each class. You can't afford to miss a whole week. If missing a class is unavoidable, send me an email, and plan to spend some extra time catching up. You will need to visit me in my office for a bit of guidance.

**Blackboard:** This course is on Blackboard. You can see my entries for you in the gradebook, and I will post important information in Course Documents. All assignments will be posted in Assignments, and links to useful web sites will be found in Course Links.

**Homework:** The class will be divided into groups of three or four students; each group hands in its solution to the weekly homework exercises. All students in a group will receive the same grade. One group will be selected each week to present its solutions to the homework to the class.

**Group project:** Each homework group will do an extended project. The last class of the semester (Dec. 9) will be a symposium for the presentation of these projects. Each student must present part of his/her group's project. The quality of presentation, as well as the project results, is evaluated. No written report of the project is to be submitted. PowerPoint is available if your group wishes to use it. A list of suggested projects will be placed in "Course Documents," but if a group proposes a project that is not listed, I'm willing to consider it. No two groups will be allowed to select the same project—first come, first served!

**Calendar adjustment:** There will be no class in November 25 (the day before Thanksgiving). This is in accordance with the official University academic calendar.

**Incompletes:** This information is in addition to the boiler plate appearing below. To be eligible for an I grade you need a good reason, and to have missed not more than two of the first nine classes. You must also have passed the midterm exam, and have a passing average on the quizzes that you have taken. If you were unable to take part in your group project, you will have to do a project on your own and write it up for grading. If you missed a quiz, you will have to write up the solutions for that week's homework. Of course, if you missed the final, you'll have to take a makeup exam.

Any student who has a need for accommodation based on the impact of a disability should contact me privately to discuss the specific situation as soon as possible. Contact Disability Resources and Services at (215) 204-1280, 100 Ritter Annex, to coordinate reasonable accommodations for students with documented disabilities.

Freedom to teach and freedom to learn are inseparable facets of academic freedom. The University has adopted a policy on Student and Faculty Academic Rights and Responsibilities (Policy # 03.70.02) which can be accessed at <http://policies.temple.edu>.

Students will be charged for a course unless a withdrawal form is processed by a registration office of the University by the Drop/Add deadline date given below. For this semester, the crucial dates are as follows:

- The first day of classes is Monday, August 31.
- Labor Day is Monday, September 7.
- The last day to drop/add (tuition refund available) is Monday, September 14.
- Thanksgiving is Thursday, November 26.
- The last day to withdraw (no refund) is Monday, November 2.
- The last day of classes is Wednesday, December 9.

During the first two weeks of the fall or spring semester or summer sessions, students may withdraw from a course with no record of the class appearing on the transcript. In weeks three through nine of the fall or spring semester, or during weeks three and four of summer sessions, the student may withdraw with the advisor's permission. The course will be recorded on the transcript with the instructor's notation of "W," indicating that the student withdrew. After week nine of the fall or spring semester, or week four of summer sessions, students may not withdraw from courses. No student may withdraw from more than five courses during the duration of his/her studies to earn a bachelor's degree. A student may not withdraw from the same course more than once.

*Students who miss the final exam and do not make alternative arrangements before the grades are turned in will be graded F.*

The grade I (an “incomplete”) is reserved for extreme circumstances. It is necessary to have completed almost all of the course with a passing average and to file an *incomplete contract* specifying what is left for you to do. To be eligible for an I grade you need a good reason and you should have missed not more than 25% of the first nine weeks of classes. If approved by the Mathematics Department chair and the CST Dean’s office, the incomplete contract must include a default grade that will be used in case the I grade is not resolved within 12 months.