

Syllabus Math 355

Geometry I

Winter 2005

Instructor: Mark Oursland
Office: 107D Bouillon Hall
Office Hours: 10 AM-12 PM MWF or by Appointment

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Text: *Euclidean and Non-Euclidean Geometries*
By M. Helena Noronha

Course Description and Rationale: This course is the first of a two-course sequence. It mixes the basic principles of geometry with concept connection to other disciplines. First, Euclidean geometry, the type we will consider most here, has been well understood in good part for the last 2000 years and it ostensibly evolved from practical "sensory" applications. Second, because most of the literature (and some common sense) stipulates a "constructive" development of the content of geometry—there is much literature to support this type of development—a discovery approach. Third, and very importantly, much of what will be modeled here, both processes and content, has direct applications to the secondary mathematics classroom.

Content and Process Learner Outcomes: Through assignments, in-class work, and exams, students will demonstrate knowledge of content and process objectives that include the following:

- The learner will be able to define geometric concepts critical to the intuitive and logical development of geometry.
- The learner will be able to construct geometric figures using multiple technologies and methods, including those classical straight edge and compass techniques.
- The learner will be able to conjecture, prove, give counterexamples, and evaluate conjectures, proofs, and counterexamples for correctness, elegance, and utility.
- The learner will be able to make connections among geometry, other areas of mathematics, real world phenomena, and science.
- The learner will be able to communicate geometric and pedagogical ideas with others in a clear and concise manner, properly using the language of mathematics, specifically, and geometry.
- The learner will contribute to the class knowledge base in a professional manner that includes preparation, courtesy, and respect for others.

In-class Presentations: Nearly every class-period, someone will give brief presentations of problems or proofs. Note that your presentations must be brief outlines, rather than detailed solutions, that focus on the critical issues of a problem. Usually you will have several minutes at the most for your presentations. You will receive 10 points for each presentation. You need to present at least twice to get full credit. I will allow people to earn extra points if no one else wants to present.

Homework: Homework problems will be assigned every weeks, and collected when I am in Lynnwood. You will be encouraged to work in teams. Your homework will be worth 10 points for each week assignment.

Exams: There will be two 100-point tests and a comprehensive 200-point final.

Projects: There will be two project papers worth 25 points each. These projects will an explanation of your solution to an open-ended geometry problem.

Grading: Grades will be determined by the following percents:

93-100% = A, 90-93% = A-, 87-90% = B+, 83-87% = B, 80-83% = B- , 77-80% = C+, 73-77% = C, 70-73% = C-, 67-70% = D+, 63-67% = D, 60-63%, 0-60% = F.

Attendance: Attendance will not taken but late work and tests are not accepted unless the absence is for unavoidable reasons.

Schedule/Rules: The instructor has a class schedule for the quarter but it is subject to change depending on the needs of the students. Attendance is essential to complete many of the course activities and is dependent on you ability work toward the stated course outcomes.

How to succeed: Take the responsibility for your own achievement of these performance objectives. Use the activities, assignments, projects and people such as the instructor to insure that you understand the mathematical and pedagogical concepts in the form of the performance outcomes. Students who have special needs or disabilities that may affect their ability to access information and or material presented in this course are encouraged to contact the office of student assistance on campus 963-2171.

