

Instructor: Dr. Chris Black  
Office: Snoqualmie Hall #302B  
Office Hours: M 2:00 - 3:00, Th 10:15 - 11:45, and by arrangement  
Office Phone: x3871  
Email : blackc@cwu.edu

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Required Text: *Geometry with Geometry Explorer*, Michael Hvidsten, McGraw Hill, 2005

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Required Materials: Straight-edge and compass. The dynamic geometry software program *Geometry Explorer* which comes bundled with the text.

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#### COURSE PHILOSOPHY:

In this course, we will explore geometric ideas through experimentation with dynamic geometry software to develop and expand your geometric intuition. Conjectures developed through interaction with the software will be supported by rigorous mathematical proof. In this course, we focus on Euclidean geometry, but we also lay the foundation for the exploration of non-Euclidean geometry that is the focus of Math 455 (College Geometry II). While I will lecture briefly, the majority of in-class time will be spent working either independently or in groups on exercises from the text, either using the Geometry Explorer software, or pencil and paper, or even compass and straightedge. It is expected that you will have read the relevant section of the text before coming to class, and that you will arrive prepared to think, discuss & explore.

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#### GOALS FOR COURSE:

MATH 355 students will:

- ...further develop facility with proof based on a given set of axioms.
  - ...use a dynamic software package to illustrate results from Euclidean geometry and to investigate properties of geometry in the plane.
  - ...use a straight-edge and compass to carry out basic constructions, leading to a study of constructible numbers and historical construction problems.
  - ...be able to describe geometric transformations using algebraic language.
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#### PROBABLE COURSE TOPICS:

- ▷ Geometry and the Axiomatic Method
- ▷ Euclidean Geometry
- ▷ The Complex Plane
- ▷ Compass and Straightedge Constructions
- ▷ Transformational Geometry

GRADING:

Homework:	Scale to 300 points
Projects:	140 - 150 points (5 of varying values)
Take-Home Exams:	200 (2 at 100 pts)
Final Exam:	100 points
Participation, Attendance & Citizenship:	30 points

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HOMEWORK & PROJECTS:

The homework sheet will specify a number of problems, all of which will be collected but only two or three from each set will be graded. You may work with other students to solve individual problems, but solutions to problems must be written up individually. As always, you (individually, or in a group) are invited to come see me for hints on homework problems if you get stuck. Homework problems may be rewritten **one time** if resubmitted within one week of being returned to you.

In addition to standard homework problems, you will explore geometric ideas through 5 projects, submitting project reports for each one. The points for these reports vary between 25 - 35 points based on the length of the assignment.

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TAKE-HOME EXAMS AND FINAL EXAM:

The two take-home exams will cover material as specified on the course schedule. You have roughly one week to complete each of these exams. The only allowable references during these exam periods are the professor and your textbook. The 2-hour timed final exam will take place during the week of 3/15 - 3/19 at a time & location to be determined. Each of these three exams is worth 100 points.

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PARTICIPATION, ATTENDANCE & CITIZENSHIP:

Discussion, interaction, and group problem solving will all be important aspects of this course, which necessitate your attendance. Citizenship addresses your behavior and comportsment with class members and the instructor. We each need to be respectful of other students, other cultures, and differing ideas within our learning community.

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HONOR AND RESPECT:

Each of us should consider our placement at this institution to be a privilege. We need to have respect for one another, and for ourselves. In light of these facts, cheating in any form will not be tolerated. You are encouraged to work together on homework problems, however anything you turn in with your name on it should have been written by you alone. In a course where much of your grade is determined by your proof writing and take-home exams, plagiarism is a concern. The word "plagiarize" is defined by Merriam-Webster as "to steal and pass off [the ideas or words of another] as one's own: use [another's production] without crediting the source." This is a very serious offense.

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DISABILITY SERVICES:

Students with disabilities may arrange for academic adjustments by providing the instructor with a copy of the "Confirmation of Eligibility for Academic Adjustments" from the Disability Support Services Office. To obtain this form, contact Bree Callahan, the coordinator of Disability Support Services for the westside centers, at bcallaha@cwu.edu or 206-439-3800 ext 3866.