

Cincinnati Christian University
Math 120 Geometry and Measurement
Fall 2018 | 3 semester credit hours | MWF 11:00 a.m. – 11:50 a.m.
Worship & Ministry Building 147

Instructor: Dr. Julie Bedi	Office Location: PH 267
Email: julie.bedi@ccuniversity.edu	Office Hours: MWF 9:00 – 11:00 TR 11:00 – 12:00

Foster School of Biblical Studies, Arts & Sciences

The mission of Cincinnati Christian University is to teach men and women to live by biblical principles and to equip and empower them with character, skills, insight, and vision to lead the church and to impact society for Christ.

Course Description

Inductive and deductive reasoning; sets; the study of two- and three-dimensional geometry; transformations, the coordinate plane; and measurement with standard and nonstandard units.

Prerequisite: Satisfactory performance on a placement examination or successful completion of MATH 010.

Course Rationale

Since some understanding of mathematics will enhance the study of every discipline, as well as develop skill in mathematical reasoning and competence in real world situations, this class will be particularly relevant to an informed and aware Christian citizenry.

Learning Objectives (connected to Arts & Sciences Outcome #4 below):

Students will...

1. use multiple problem solving strategies.
2. understand and apply numerical computation, mental math, and estimation techniques.
3. understand and apply the process of measurement to solve problems.
4. use geometric definitions, postulates, and theorems to describe, contrast, and reason.
5. communicate mathematical ideas in written and oral form, using every day and mathematical language between student and student and between student and instructor.
6. make connections among ideas in mathematics, and connect mathematics to other disciplines and real world situation.

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Arts & Sciences Departmental Outcomes

CCU's Arts & Sciences program is designed to prepare students to

1. communicate effectively in both oral and written forms in a variety of rhetorical contexts, including Standard English,
2. adeptly utilize modern research and writing tools,
3. identify decisive events and ideas in the human experience and assess their influences on modern culture and thought,
4. employ critical and creative thinking and mathematic and scientific principles for problem solving, literary and socio-cultural analysis, intercultural understanding, and research in the sciences and humanities,
5. demonstrate the integration of academic insights and experiences by constructing and employing a personal framework in which ethical decisions can be made in light of societal values and a Christian worldview.

Required Text

Geometry. Elayn Martin-Gay. Pearson, 2016. ISBN-10: 0-13-417365-1

Grading Policy

Letter grades will be assigned based on the published grade point system in the CCU Academic Catalog. Grades will be comprised of the following:

Tests	(5 Tests - 10% each)	50%
Final Exam		20%
Quizzes	(5 Quizzes - 4% each)	20%
Homework	(5 Assignments - 2% each)	10%

Quizzes/Tests/Exam

Quizzes, tests, and exams assess whether the objectives are being met. If a student misses a scheduled quiz or test without making prior arrangements with the instructor, it cannot be made up unless the instructor makes an exception. Even then, a penalty may be given. It is the responsibility of the student to take the quiz/test early or schedule a makeup quiz/test date with academic support.

Homework

One homework assignment will be given per unit and will be due on the test day for that unit. Students are strongly encouraged to work on the assignment throughout the unit as daily practice or problem-solving challenge.

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Late Assignments

An assignment will be considered late if it is not submitted by the beginning of the class session on which it is due. 20% will be deducted from the score per day for late assignments. Assignments that are late due to severe illness or an emergency situation *may* be accepted depending on the circumstances. If you find yourself in a situation that prohibits you from turning in your assignment on time, it is in your best interest to address that issue with your instructor **prior** to the due date. Students who are absent because of CCU extracurricular activities should turn in the assignment early when possible or the first day back to class.

Academic Integrity

This class will follow CCU's regulations pertaining to academic integrity. A copy may be found in CCU's Student Handbook.

Disability Services: Students who require academic accommodations due to any documented physical, psychological, or learning disability should request assistance from the Student Services Department within the first two weeks of class. The Student Services Department is located on the upper level of the Presidents Hall. You may also contact the office by phone (513.244.8150).

Attendance

You are expected to attend all class sessions and actively participate in class activities. If you exceed the absentee policy set forth by CCU, it will result in a grade of FA (failure due to absences). If a student is present for less than half of a class period, it is considered an absence.

If you *must* be absent for a CCU extracurricular activity, you will be responsible for e-mailing the professor, in advance, stating why you will be absent, turning in any assignments **prior** to the class, and obtaining any notes or assignment details you missed from Canvas, the professor, and/or other students.

Course Outline

Details regarding assignments and due dates will be announced during class time once week in advance of the due date as well as posted on Canvas. The *Geometry* textbook will be used as the base outline for the course topics.

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Fall 2018 Course Outline*
Unit 1: Introduction to Basic Geometry, Reasoning, and Proofs (Sections 1.1-1.8, 2.1, 3.1, 3.3, 3.5-3.7)
<ul style="list-style-type: none">• Points, lines, planes• Segments and their measures• Angles and their measures; angle pairs and their relationships• Basic geometry constructions, including parallel and perpendicular lines• Perimeter, circumference, and area• Lines and angles• Parallel lines and angles formed by transversals• Coordinate geometry: midpoint and distance formulas, slope of a line, equations of lines
TEST #1 & Homework #1 Due
Unit 2: Introduction to Reasoning and Proofs (Sections 2.2-2.7, 3.2, 3.4)
<ul style="list-style-type: none">• Patterns and inductive reasoning• Conditional statements, biconditional statements• Deductive reasoning• Properties of equality• Writing two-column proofs• Proving theorems about angles• Proving lines are parallel• Proving theorems about parallel and perpendicular lines
TEST #2 & Homework #2 Due
SPECIAL TOPIC: INTRODUCTION TO SET THEORY
Unit 3: Triangles (Chapters 4, 5, and 9)
<ul style="list-style-type: none">• Types of triangles, including isosceles, equilateral, and right• Congruent figures; congruent triangles by SSS, SAS, ASA, AAS with proofs• Perpendicular and angle bisectors; bisectors of a triangles• Medians, altitudes, and midsegments of a triangle• Indirect proofs and inequalities in one and two triangles• Pythagorean Theorem and its converse• Special right triangles, trigonometric ratios, and solving right triangles• Vectors
TEST #3 & Homework #3 Due
Unit 4: Quadrilaterals, Similarity, and Transformations (Chapters 6, 7, and 8)
<ul style="list-style-type: none">• Polygons, parallelograms, trapezoids, kites• Proving a quadrilateral is a parallelogram• Ratios, proportions, proportion properties, problem solving• Similar polygons; proving triangles are similar• Geometric mean and similarity in right triangles• Rigid transformations, translations, reflections, rotations, dilations, compositions of reflections
TEST #4 & Homework #4 Due

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SPECIAL TOPIC: MEASUREMENT WITH STANDARD AND NONSTANDARD UNITS
(including rounding error, reasonableness, and the effect of measurement errors on calculations)

Unit 5: Circles, Area, Surface Area, and Volume
(Chapters 10, 11, and 12)

- Angle measures of polygons and regular polygon tessellations
- Areas of triangles, quadrilaterals, regular polygons, and similar figures
- Arc measures, circumferences, and arc lengths of circles
- Tangent lines, chords, arcs, inscribed angles, locus
- Coordinate plane - circles
- Areas of circles and sectors
- Geometric probability
- Solids and cross sections
- Surface areas of prisms, cylinders, pyramids, cones, spheres, and similar solids
- Volumes of prisms, cylinders, pyramids, cones, spheres, and similar solids

TEST #5 & Homework #5 Due

**The instructor reserves the right to change or amend any part of this course plan as deemed necessary.*