

Math 1312: Introduction to Math Reasoning Course Syllabus

Section number: This information applies to ALL face-to-face sections

Delivery format: face-to-face lecture

Prerequisite: credit for or placement out of [MATH 1310](#) or [MATH 1311](#)

Textbook: *Elementary Geometry for College Students* by
Alexander and Koeberlein, 6th edition

The information contained in this class outline is an abbreviated description of the course. Additional important information is contained in the departmental policies statement at <http://www.math.uh.edu/~dog/13xxPolicies.doc> and at your instructor's personal webpage. You are responsible for knowing all of this information.

A student in this class is expected to complete the following assignments:

- 1 3 Regular Exams
- 2 Final Exam
- 3 Online Quizzes
- 4 Homework – on each section of the textbook covered in class
- 5 Poppers – in-class quizzes given daily starting the 3rd week of classes

- Homework 10%
- Poppers 10%
- Quizzes 10%
- Tests 51% (17% each)
- Final Exam 19%

Total: 100%

Some learning materials are found online on the CourseWare site at www.casa.uh.edu.

Introduction to Mathematical Reasoning Topic List

Chapter 1 —Line and Angle Relationships

1.1 Sets, Statements and Reasoning

1.2 Informal Geometry and Measurement

- 1.3 Early Definitions and Postulates
- 1.4 Angles and Their Relationships
- 1.5 Introduction to Geometric Proof
- 1.6 Relationships: Perpendicular Lines
- 1.7 The Formal Proof of a Theorem

Chapter 2 — Parallel Lines

- 2.1 The Parallel Postulate and Special Angles
- 2.2 Indirect Proof
- 2.3 Proving Lines Parallel
- 2.4 The Angles of a Triangle
- 2.5 Convex Polygons
- 2.6 Symmetry and Transformations

Chapter 3 — Triangles

- 3.1 Congruent Triangles
- 3.2 Corresponding Parts of Congruent Triangles
- 3.3 Isosceles Triangles
- 3.4 Basic Constructions Justified
- 3.5 Inequalities in a Triangle

Chapter 4 — Quadrilaterals

- 4.1 Properties of a Parallelogram
- 4.2 The Parallelogram and Kite
- 4.3 The Rectangle, Square and Rhombus
- 4.4 The Trapezoid

Chapter 5 — Similar Triangles

- 5.1 Ratios, Rates and Proportions
- 5.2 Similar Polygons
- 5.3 Proving Triangles Similar
- 5.4 Pythagorean Theorem
- 5.5 Special Right Triangles
- 5.6 Segments Divided Proportionally

Chapter 6 — Circles

- 6.1 Circles and Related Segments and Angles
- 6.2 More Angle measures in a Circle

- 6.3 Line and Segment Relationships in the Circle
- 6.4 Some Constructions and Inequalities for the Circle

Chapter 8 — Areas of Polygons and Circles

- 8.1 Area and Initial Postulates
- 8.2 Perimeter and Area of Polygons
- 8.3 Regular Polygons and Area
- 8.4 Circumference and Area of a Circle
- 8.5 More Area Relationships in the Circle

Chapter 9 — Surfaces and Solids

- 9.1 Prisms, Area and Volume
- 9.2 Pyramids, Area and Volume
- 9.3 Cylinders and Cones
- 9.4 Polyhedrons and Spheres