**Math 230 Introduction to Euclidean Geometry**

**Credit Hours**:    3
**Scheduled hours per week**
    Lecture: 3
    Lab: 0
    Other:  0

**Catalog Course Description:** Fundamental concepts of plane and solid Euclidean geometry including points, lines, space, constructions, transformations, area and volume formulas, polygons, circles, and coordinate geometry.

**Pre-requisites:** C or better in Math 126

**Co-requisites:** None

**Course Learning Outcomes:**
1. Analyze characteristics and properties of two and three dimensional geometric objects.
2. Use different representational systems, including coordinate geometry and graph theory to represent and analyze geometric objects.
3. Use transformations and symmetry in analyzing geometric relationships.
4. Will be able to use both inductive and deductive arguments to prove theorems involving geometric relationships.
5. Use geometric models to represent and explain numerical and algebraic relationships.
6. Will be able to use congruence and similarity to analyze geometric relationships.


**Topics to be studied:**
1. Geometric Foundations including, point, line, plane, segment, ray and angle.
2. Proofs and constructions involving lines and angles.
3. Study and triangles including, classification, congruence, proofs, constructions, and properties of altitudes and medians.
4. Study of parallels lines and polygons including Parallel postulate, transversals, angles, classification of polygons, and area of polygons.
5. Study of ratio proportions and similarity for polygons and triangles.
6. Properties of right triangles including The Pythagorean Theorem.
7. Study of circles including proofs and constructions involving arcs, cords, secants, tangents, sectors, arc length, and area.
8. Study of geometric inequalities involving triangles and circles.
9. Study of solid geometry including proofs, surface area, volume, and constructions of polyhedra, prisms, pyramids, cylinders, cones, and spheres.
10. Study of geometric loci and concurrency theorems.
11. Study of slope, distance formula, midpoint formula, circles, and proofs involving polygons all related to the coordinate plane.


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12.     Study of geometric transformations including, flips, slides, and rotational transformations.

**Relationship of Course to Program or Discipline Learning Outcomes:**
          (What program outcomes are being met by this course?
          For general education courses, a listing of the general education competencies that are met.)

| Relationship of Course to Mathematics (MATH) Student Learning Outcomes: | |
| --- | --- |
| **Demonstrate understanding** of the language of mathematics, by their use of symbols, definitions, word phrases, and representations. | x |
| **Display proficiency** in mathematical computations. | x |
| **Implement mathematical techniques** to solve applied problems. | x |
| **Employ appropriate technology** to demonstrate knowledge of mathematical concepts. | x |
| **Exhibit mastery** of core course competencies. | x |
| **10/20/2017** | |

| Relationship of Course to General Education Learning Outcomes: | |
| --- | --- |
| **Composition and Rhetoric** Students illustrate a fundamental understanding of the best practices of communicating in English and meet the writing standards of their college or program-based communication requirements. | |
| **Science & Technology** Students successfully apply systematic methods of analysis to the natural and physical world, understand scientific knowledge as empirical, and refer to data as a basis for conclusions. | |
| **Mathematics & Quantitative Skills** Students effectively use quantitative techniques and the practical application of numerical, symbolic, or spatial concepts. | x |
| **Society, Diversity, & Connections** Students demonstrate understanding of and a logical ability to successfully analyze human behavior, societal and political organization, or communication. | |
| **Human Inquiry & the Past** Students interpret historical events or philosophical perspectives by identifying patterns, applying analytical reasoning, employing methods of critical inquiry, or expanding problem-solving skills. | |
| **The Arts & Creativity** Students successfully articulate and apply methods and principles of critical and creative inquiry to the production or analysis of works of art. | |
| **5/3/2016** | |

**Special requirements of the course:** None

**Additional information:** None

**Prepared by:** Chris Cunningham

**Date:** 10/20/2017