Course Name: Geometry in Construction-Geometry	
Department: Math	Grade Level(s): 10-12
Duration/Credits: 1 year/ 1.0 credit	Prerequisites: Any Algebra II Course
BOE Approval Date:	Course Code:

Course Description:

NOTE: The student must also be concurrently enrolled in Geometry in Construction- Construction course.
This course is one part of the combined Geometry in Construction course. The student is engaged in exploring complex geometric situations and deepening their understanding of geometric relationships in the context of a construction project. They will prove theorems and solve problems about triangles, quadrilaterals, and other polygons; establish triangle congruence criteria based on analyses of rigid motions and formal constructions; apply similarity in right triangles to understand right triangle trigonometry; and use a rectangular coordinate system to verify geometric relationships. They will extend their knowledge of two-dimensional and three-dimensional objects to include informal explanations of circumference, area and volume formulas and consider the shapes of cross-sections. The student will prove basic theorems about circles, and create and graph the equation of a circle. They will use the languages of set theory to expand their ability to compute and interpret theoretical and experimental probabilities. This contextual learning experience allows the student to see a variety of geometry concepts used in a real-world setting. The student will be enrolled in two courses and receive both a Geometry and a practical arts credit.

Course Rationale:

The demand for critical thinkers with the ability to communicate their ideas continues to increase. More specifically, the student that can model situations involving mathematics and explain their findings are in demand. The ability to analyze situations produces significant enhanced the opportunities and options for shaping their futures. Mathematical competence opens doors to productive futures.

Course Objectives:

1. The student will experiment with transformations to understand congruence and similarity.
2. The student will produce valid written arguments of various forms to prove geometric theorems. (A+ Writing)
3. The student will make geometric constructions through hands on application of construction concepts.
4. The student will define trigonometric ratios and solve problems involving right triangles and apply them to construction contexts.
5. The student will understand and apply theorems about circles, including deriving how to find the measure of an arc or sector of a circle.
6. The student will translate between the geometric description and the equation for a conic section.
7. The student will research and visualize relationships between 2D and 3D objects, specifically as it applies to the construction of a 3-D structure.   (A+ Research)
8. The student will apply geometric concepts in modeling situations and review the rationale of others. (A+ Reading)
9. The student will understand independent and conditional probability and use them to interpret data and verbally defend their rationale. (A+ Speaking and Listening)