

**Eastern WV Community & Technical College
Master Course Record**

Course Prefix and Number: MTH 200
Course Title: Geometry and Measurement
Recommended Transcript Title (if over 40 characters) Geometry and Measurement
Date Approved/Revised: 10/16/13; 11/13/14; 10/13/16; 3/15/17; 10/5/17
Credit Hours: 3 Contact hours per week (Based on 15 week term): Lecture: 3 Lab:
Prerequisite: MTH 102 or MTH 121 or minimum acceptable placement test scores (Math ACT score 19 or higher; SAT math score 500 or higher; or ACCUPLACER Elementary Algebra score of 76 or higher). Corequisite: Pre/Corequisite:
Grading Mode: Letter Grade
Catalog Description: This course explores the fundamental ideas of planar and spatial geometry. Content includes the analysis and classification of geometric figures; the study of geometry transformations; the concepts of tessellation, symmetry, congruence, and similarity; connection of geometry to other mathematical topics and to nature and art; and an overview of measurement. The course also includes concrete models and an introduction to the use of computers in the teaching and learning of informal geometry.
Course Outcomes: <ol style="list-style-type: none"> 1. Explain and apply the fundamental ideas of planar and spatial geometry 2. Classify geometric figures 3. Demonstrate and use geometry transformations 4. Recognize and apply the concepts of tessellation, symmetry, congruence, and similarity 5. Use geometric concepts to find length, area, volume, and angle measures 6. Compare Euclidean and non-Euclidean geometries 7. Use geometric concepts to solve problems related to other mathematical topics, nature, art, and other applications 8. Discuss the historical development of measurement systems and compare measurement systems 9. Use concrete models and technology to explore geometric concepts and solve geometric problems
Implementation Cycle: Spring
Role in College Curriculum: (Check all that apply) <input checked="" type="checkbox"/> General Education Core: Mathematics <input checked="" type="checkbox"/> Technical Core: Elementary Education – Shepherd University 2+2 Agreement <input type="checkbox"/> Restricted Elective <input type="checkbox"/> General Elective

<input type="checkbox"/> Workforce Education <input type="checkbox"/> Other
Course Fee: None
Instructor's Qualifications: Master's Degree with 18 graduate hours in Math
<p>Expanded Course Description</p> <p>Shepherd University has adopted goals from the American Association of Universities and Colleges (AAC&U) Liberal Education and America's Promise (LEAP) initiative (http://www.aacu.org/leap/index.cfm) with minor modifications. Shepherd University has adopted learning outcomes (often referred to as "Intended Student Outcomes") that pertain to each LEAP Goal.</p> <p>This course is part of the curriculum for the Shepherd University 2 + 2 Agreement for Elementary Education.</p> <p>Expanded Course Outcomes:</p> <ol style="list-style-type: none"> 1. Explain and apply the fundamental ideas of planar and spatial geometry <ol style="list-style-type: none"> a. Describe the undefined terms of geometry (point, line, plane) b. Explain the basic axioms of geometry and use them to construct proofs for other statements c. Define various geometric terms including collinear, coplanar, segment, congruent, ray, angle, perpendicular, parallel, simple closed curve, polygon, circle, transversal, bisect, inscribed, circumscribed, similar d. Classify parts of a circle 2. Classify geometric figures <ol style="list-style-type: none"> a. Classify angles based on size b. Classify polygons based on the number of sides c. Classify triangles based on sides and angles d. Classify pairs of angles e. Classify quadrilaterals f. Differentiate among quadrilaterals based on given attributes g. Classify three-dimensional shapes 3. Demonstrate and use geometry transformations <ol style="list-style-type: none"> a. Define transformation and isometry b. Recognize and perform translations, rotations, reflections, glide reflections, size transformations c. Construct proofs using transformations 4. Recognize and apply the concepts of tessellation, symmetry, congruence, and similarity <ol style="list-style-type: none"> a. Recognize whether two figures are congruent and if so write a congruency statement b. Prove that two figures are congruent c. Write and solve a proportion d. Recognize whether two figures are similar and if so write a similarity statement e. Recognize reflection symmetry and rotation symmetry f. Identify an axis of symmetry g. Identify a center of rotational symmetry

- h. Define tessellation
- 5. Use geometric concepts to find length, area, volume, and angle measures
 - a. Find lengths and areas associated with circles
 - b. Find the perimeter and area of plane figures
 - c. Find the circumference and area of a circle
 - d. Find the surface area and volume of a solid
 - e. Apply postulates and theorems to find missing lengths and angle measures
 - f. Find missing lengths in similar polygons
 - g. Identify and apply the properties of the real numbers
 - h. Use scientific notation for writing small and large values
- 6. Compare Euclidean and non-Euclidean geometries
 - a. Explain the differences in the Parallel Postulate for Euclidean, elliptic, and hyperbolic geometries
 - b. Identify how planes, lines, triangles, circles, etc. differ in non-Euclidean geometries
- 7. Use geometric concepts to solve problems related to other mathematical topics, nature, art, and other applications
- 8. Discuss the historical development of measurement systems and compare measurement systems
- 9. Use concrete models and technology to explore geometric concepts and solve geometric problems

Prepared by: Andrea Williams, Mathematics Faculty

10/5/17

Name, Title

Date

Course Outcomes approved by Shepherd 3/20/17

Approved Per LOT Minutes

Dean of Teaching and Learning

Date