El Paso Community College
Syllabus
Part II
Official Course Description

SUBJECT AREA	**Mathematics**
COURSE RUBRIC AND NUMBER	**MATH 1351**
COURSE TITLE	**Mathematics for Teachers II**
COURSE CREDIT HOURS	**3 3 0**
	Credits Lec Lab

I. Catalog Description

Addresses the concepts of geometry and measurement. Includes topics on the classification of angles, curves, polygons: identification of polyhedral; Euler paths and circuits; conversions of measurement within different systems; perimeter, area, surface area, and volumes for geometric figures; transformations such as translations, rotations, reflections; similarities, congruence, symmetries of figures; explorations and justifications of geometric relationships and constructions using compass, straightedge, and technology. Focuses on spatial reasoning, logical reasoning, and making connections among geometric ideas and measurement, number concepts, and algebra. **Prerequisite: MATH 1314 or MATH 1324 or MATH 1342 with a "C" or better. (3:0).**

II. Course Objectives

A. Unit I. Geometry Figures

1. Classify angles as acute, right, obtuse, straight, or reflex.
2. Determine the measure of angles when lines intersect based on whether they are corresponding angles, alternate interior angles, alternate exterior angles, or vertical angles.
3. Illustrate, define, and classify curves as simple, closed, simple closed, concave, convex, and /or polygonal.
4. Classify polygons by the number of sides.
5. Illustrate, define, and classify triangles as scalene, isosceles, equilateral, acute, right, or obtuse.
6. Illustrate, define, and classify convex quadrilaterals as trapezoids, parallelograms, rhombuses, rectangles, or squares.
7. Determine the measure of the interior, central, and exterior angles of a regular N-gon.
8. Illustrate, define, and classify polyhedra by shape, including prisms, pyramids, and the five regular polyhedera.
9. Identify and calculate the number of vertices, faces, and edges of a polyhedron using Euler's formula.
10. Illustrate and define spheres, cylinders, and cones.
11. (optional) Solve network problems by using Euler paths.

B. Unit II. Measurement

1. Make conversions of measurements within the U.S. customary systems.
2. Make conversions of measurements within the metric system.
3. Make conversions between measurements for both U.S. and metric systems.
4. Derive and compute the perimeter and area for geometric figures, including rectangles, parallelograms, triangles, and trapezoids.
5. Derive and compute the circumference and area of a circle.
6. Derive and compute the perimeter and area of lattice polygons and composite figures.

7. Use the Pythagorean theorem to determine whether a given triangle is a right triangle.
8. Use the Pythagorean theorem to find the sides of a right triangle.
9. Derive and calculate the surface area for right prisms, right regular pyramids, cylinders, cones, and spheres.
10. Derive and calculate the volume of prisms, cylinders, cones, right regular pyramids, and spheres.
11. Use the similarity principle to describe the relationship between measurements of similar figures.

C. Unit III. Transformations, Symmetries, Congruence, and Similarities

1. Identify and perform rigid transformations, including translations, rotations, and reflections.
2. Define and classify figures according to the symmetries they demonstrate, including refection, rotation, and point symmetry.
3. (optional) Define and create tilings using triangles, quadrilaterals, pentagons, and hexagons.
4. Determine whether given triangles are congruent.
5. Use congruence properties to solve problems with triangles.
6. Construct geometric figures using a compass and straightedge.
7. Determine whether given triangles are similar.
8. Identify and perform non-rigid transformation (scale).
9. Use the properties of similarity and scale factors to solve triangles.

D. Unit IV. Coordinate Geometry

1. Represent locations in a Cartesian coordinate system using ordered pairs.
2. Calculate the distance between two points.
3. Determine the midpoint of a line segment.
4. Determine the slope of a line.
5. Write the equation of a line in general form or in slope-intercept forms.
6. Sketch the graph of an equation.

III. THECB Learning Outcomes (ACGM)

Upon successful completion of this course, students will:
1. Apply fundamental terms of geometry such as points, lines, and planes to describe two and three dimensional figures.
2. Make and test conjectures about figures and geometric relationships.
3. Use a variety of methods to identify and justify congruency and similarity of geometric objects.
4. Perform geometric transformations.
5. Demonstrate fundamental probability techniques and apply those techniques to solve problems.
6. Explain the use of data collection and statistics as tools to reach reasonable conclusions.
7. Recognize, examine, and utilize the basic principles of describing and presenting data.
8. Perform measurement processes and explain the concept of a unit of measurement.
9. Develop and use formulas for the perimeter, area, and volume for a variety of figures.

IV. Evaluation

A. Pre-assessment

Instructors will verify each student's prerequisites during the first week of class; those who do not qualify will be required to withdraw from the course.

B. Challenge Exam

There is no challenge exam for this course.

C. Articulation

Students planning to transfer to a four-year institution to complete an undergraduate degree for teacher certification will need to earn a minimum course grade of C.

D. Graded Assignments

Individual or group projects may be assigned at the instructor's discretion. These may include, but are not limited to, exploration of teaching methodologies, developing hands-on projects, or research on specific topics, at least one. There will be at least three in class exams (100 points each) and one required in class comprehensive final exam to evaluate student learning for the course. This exam should include questions that require students to demonstrate mastery of both computational and critical thinking skills.

E. Grading Percentages

Grade percentages for determining the course grade will be determined by the individual instructor. The final exam should count no more than 25% of the overall course grade.

F. Remediation

Students may seek additional assistance from tutoring centers at any campus or from on-line tutorial materials available for the course. At the instructor's discretion, students may be allowed the option to re-test for higher grades.

G. Grading Scale*:*

A: 90-100
B: 80-89
C: 70-79
D: 60-69
F: Below 60 or Cheating
W: Withdraw
I: Incomplete

Note: I and **W** grades will be assigned whenever the appropriate assignments and deadlines have been met. To receive an I, the student must have completed at least 80% of the course with at least a 75 average. The proper forms must also be signed by both the student and the instructor before being submitted to the registrar.

V. Disability Statement (Americans with Disabilities Act [ADA])

EPCC offers a variety of services to persons with documented sensory, mental, physical, or temporary disabling conditions to promote success in classes. If you have a disability and believe you may need services, you are encouraged to contact the Center for Students with Disabilities to discuss your needs with a counselor. All discussions and documentation are kept confidential. Offices located: VV Rm C-112 (831-2426); TM Rm 1400 (831-5808); RG Rm B-201 (831-4198); NWC Rm M-54 (831-8815); and MDP Rm A-125 (831-7024).

VI. 6 Drop Rule

Students who began attending Texas public institutions of higher education for the first time during the Fall 2007 semester or later are subject to a 6-Drop limit for all undergraduate classes. Developmental, ESL, Dual Credit and Early College High School classes are exempt from this rule. All students should consult with their instructor before dropping a class. Academic assistance is available. Students are encouraged to see Counseling Services if dropping because exemptions may apply. Refer to the EPCC catalog and website for additional information.