I. COURSE DESCRIPTION

Course Title and Number: Mathematics 60

Descriptive Title: Elementary Geometry

Discipline: Mathematics

Division: Mathematical Sciences

Course Length: ☒Full Term ☐Other (specify): ______

Hours Lecture: 4  Hours Laboratory: _____  Course Units: 4

Grading Method: ☒Letter ☐Credit/No Credit ☐Both ☐No Grade

Course Type: ☒Credit, Degree Applicable ☐Credit, Not Degree Applicable ☐Non-Credit

Transfer CSU: ☐Yes  Effective Date ________________  ☒No

Transfer UC: ☐Yes  Approval Date ________________  ☐Pending  ☒No

Conditions of Enrollment:
Specify Prerequisite Corequisite, Recommended Preparation, Enrollment Limitation or None.

Prerequisite: Mathematics 40 or Mathematics 41B or Mathematics 43 with a minimum grade of C in prerequisite or qualification by testing (El Camino College Mathematics Placement Test) and assessment

Catalog Description:

This is an introductory course in geometry. Topics include properties of geometric figures (including circles, triangles and other polygons), congruence and similarity, and elementary logical reasoning. Formal proof is introduced and used within the course.

Note: This course is equivalent to one year of high school geometry.

II. COURSE OBJECTIVES

List the major objectives of the course. These must be stated in behaviorally measurable terms.

1. Identify properties of basic geometric figures and use these properties to solve problems.
2. Perform constructions using a compass and straightedge.
3. Formulate and prove conjectures using deductive reasoning.
4. Use both deductive and inductive arguments to explain conclusions.
5. Use the properties of right triangles to solve problems.
6. Determine the perimeter and area of common two-dimensional figures, as well as the surface area and volume of common three-dimensional figures.
7. Use proportional reasoning, as well as congruence and similarity, in problem solving.
8. Solve problems involving triangles and other polygons inscribed within or circumscribed about circles.
III. OUTLINE OF SUBJECT MATTER

The topics should be detailed enough to enable an instructor to determine the major areas that should be covered and so that the course may have consistency from instructor to instructor and semester to semester.

<table>
<thead>
<tr>
<th>Approximate Time in Hours</th>
<th>Major Topics</th>
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<tbody>
<tr>
<td></td>
<td>I. Fundamental concepts</td>
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<tr>
<td></td>
<td>A. Undefined terms and basic definitions</td>
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<td></td>
<td>B. Angles, supplementary, complementary and vertical angles</td>
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<tr>
<td>10</td>
<td>C. Lines, parallel &amp; perpendicular</td>
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<td></td>
<td>D. Inductive and deductive reasoning</td>
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<td></td>
<td>E. Geometric constructions</td>
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<td>F. Introduction to direct proof</td>
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<td>II. Triangle concepts</td>
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<td>A. Congruent triangles</td>
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<td>B. Isosceles triangle properties</td>
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<td></td>
<td>C. Special right triangles</td>
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<td></td>
<td>D. Pythagorean Theorem</td>
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<tr>
<td>13</td>
<td>E. Triangle Inequality Theorem</td>
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<td>F. Proving triangles are congruent and corresponding parts of congruent triangles are congruent</td>
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<td>G. Sum of angles in a triangle</td>
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<td>H. Perimeter and area of triangles</td>
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<td>III. Quadrilateral concepts</td>
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<tr>
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<td>A. Characteristics of parallelograms, trapezoids, rectangles, rhombi, kites &amp; squares</td>
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<td>10</td>
<td>B. Sum of the angles in a quadrilateral</td>
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<td>C. Perimeter and area of quadrilaterals</td>
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<td>D. Proving characteristics of quadrilaterals</td>
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<td>IV. Polygon concepts</td>
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<td>A. Vocabulary associated with polygons</td>
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<td>B. Sum of the angles in a polygon</td>
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<td>C. Perimeter and area of regular polygons</td>
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<td>D. Properties of polygons inscribed within and circumscribed about circles</td>
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<td></td>
<td>V. Three-Dimensional shapes</td>
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<td>A. Vocabulary associated with 3-D shapes</td>
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<td>9</td>
<td>B. Surface area</td>
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<td>C. Volume</td>
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<td>VI. Similarity</td>
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<td>A. Ratio and proportion</td>
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<td>B. Similar figures with emphasis on similar triangles</td>
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<td>8</td>
<td>C. Basic trigonometric ratios</td>
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<td>D. Relationship of area and volume in similar figures</td>
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</table>
VII. Circles
A. Vocabulary associated with circles
B. Circumference and area of circles
C. Proving basic concepts of circle theorems (involving chords, tangents & secants)

VIII. Analytic geometry
A. Cartesian coordinate system
B. Midpoint and distance formula
C. Basic Coordinate proofs

Total: 72 hours

IV. METHODS OF EVALUATION

A. CREDIT, DEGREE APPLICABLE AND CREDIT, NOT DEGREE APPLICABLE COURSES
   Check the PRIMARY method of evaluation for this course.
   - Substantial writing assignments
   - Problem solving demonstrations (computational or non-computational)
   - Skills demonstrations

   A minimum of one response in the categories 1, 2, or 3 below, as applicable, is required. However, you may check all that apply.

1. Indicate the types of writing assignments used as primary or secondary methods of evaluation for this course.
   - Essay exams
   - Written homework
   - Term or other papers

2. Indicate the types of problem-solving demonstrations used as primary or secondary methods of evaluation for this course.
   - Exams
   - Laboratory reports
   - Quizzes

3. Indicate the types of skill demonstrations used as primary or secondary methods of evaluation for this course.
   - Class performance
   - Performance exams

4. If objective exams are also used, check all that apply.
   - Multiple choice
   - Completion
   - Matching items

B. NON-CREDIT COURSE
   Indicate the methods of evaluation that will be used to determine that stated objectives have been met.
V. COURSEWORK

A. TYPICAL ASSIGNMENT
Provide an example of a typical assignment. This assignment must correspond to the PRIMARY method of evaluation indicated in Section IV, Methods of Evaluation. That is, it must be a writing assignment or, if more appropriate, an assignment involving problem solving or skill demonstration.

Draw three angles of different measures on a piece of paper using a straightedge. At least one of the angles should be obtuse. Use a compass and straightedge to construct a congruent angle for each of the angles you drew.

B. COLLEGE-LEVEL CRITICAL THINKING ASSIGNMENTS
Cite two specific assignments that demonstrate college-level critical thinking. (Required for degree applicable courses only.)

1. Explain why a triangle cannot have more than one right angle. Use complete sentences.

2. Given a right triangle ABC with a right angle at C, AC = 7 inches and BC = 5 inches. The triangle PQR is also a right triangle with a right angle at R, PR = 7 inches and QR = 5 inches. Write a short paragraph explaining why $\overline{AB} = \overline{PQ}$.

C. WORK OUTSIDE OF CLASS
Two hours work outside of class are required for each hour of lecture or equivalent. Each student in this course will be required to participate in the following work outside of class time. Check all that apply.

- [ ] Study
- [ ] Answer questions
- [ ] Skill practice
- [ ] Required reading
- [ ] Problem solving activity
- [ ] Written work (such as essay/composition/report/analysis/research)
- [ ] Journal (done on a continuing basis throughout the semester)
- [ ] Observation of or participation in an activity related to course content (such as theatre event, museum, concert, debate, meeting)
- [ ] Course is lab only - minimum required hours satisfied by scheduled lab time
- [ ] Other (specify) Geometrical constructions using only a straightedge and compass.

VI. INSTRUCTIONAL METHODOLOGY

A. Check all planned instructional activities that apply:

- [ ] Lecture
- [ ] Lab
- [ ] Discussion
- [ ] Multimedia presentations
- [ ] Demonstration
- [ ] Group Activities
- [ ] Role play/simulation
- [ ] Guest Speakers
- [ ] Field trips
- [ ] Other (specify)

Note: In compliance with Board Policies 1600 and 3410, Title 5 California Code of Regulations, the Rehabilitation Act of 1973, and Sections 504 and 508 of the Americans with Disabilities Act, instructional delivery shall provide access, full inclusion, and effective communication for students
VII. TEXTS AND MATERIALS

If multiple selection is offered, only representative texts need be listed. An up-to-date list of required and recommended materials is maintained in the division office.

A. REQUIRED TEXTS (title, author, publisher, year)


B. REQUIRED SUPPLEMENTARY READINGS

C. OTHER REQUIRED MATERIALS

Scientific or graphing calculator, straightedge, compass and protractor

VIII. CONDITIONS OF ENROLLMENT

If this course has a Prerequisite or Corequisite, complete section A. If this course has an Enrollment Limitation complete section B.

A. PREREQUISITE AND/OR COREQUISITE

1. Indicate if this course has a prerequisite or corequisite or both.
   ✓ Prerequisite    □ Corequisite    □ Both

2. Indicate Type. Check all that apply.

   ✓ Sequential    □ Computational/Communication Skills
   □ Health and Safety    □ Non-Course
   □ Standard (If this is a Standard prerequisite or corequisite, attach CCC Form D.)

3. Entrance Skills/Knowledge

   List the required skills and/or knowledge without which a student would be highly unlikely to receive a grade of A, B, C, or Credit (or for Health and Safety, would endanger self or others) in this course.

   1. Manipulate algebraic expressions, including expressions with fractions and radicals
   2. Solve quadratic equations and systems of linear equations
   3. Graph systems of linear equations
   4. Solve application problems using linear and quadratic equations
B. ENROLLMENT LIMITATION

1. Indicate the category which describes the Enrollment Limitation for this course.
   - Band/Orchestra
   - Theater
   - Speech
   - Chorus
   - Journalism
   - Dance
   - Intercollegiate Athletics
   - Honors Course
   - Blocks of Courses
   - Other (specify)

2. List Degree and/or Certificate requirements that are met by this course.

3. List all El Camino College courses that also satisfy the requirements listed above in Section B.2.

Originator: L. Bodman  Submittal Date: May, 1974

BOARD APPROVAL DATE: ________________

Reviewed and/or Revised by:

Robert L Horvath  Date: December, 1993

Robert L Horvath  Date: April, 2000

Robert L Horvath  Date: November, 2001

Susan Tummers Stocum  Date: August, 2007

REQUIRED SIGNATURES FOR NON-CREDIT COURSE

College Curriculum Committee Chair

Vice-President - Academic Affairs

CCC Form 1, 5/2006