COLLEGE OF THE DESERT

Course Outline of Record

1. Course Code: MATH-044
2.   a. Long Course Title: College Geometry
      b. Short Course Title: COLLEGE GEOMETRY
3.   a. Catalog Course Description:
         This course includes fundamentals of plane geometry, including topics in coordinate geometry, developed by both inductive and deductive processes.
      b. Class Schedule Course Description:
         The fundamentals of plane geometry with topics in coordinate geometry,especially as developed through logical deduction.
      c. Semester Cycle (*if applicable*): fall & spring
      d. Name of Approved Program(s):
4. Total Units: 4.00   Total Semester Hrs: 108.00
   Lecture Units: 3   Semester Lecture Hrs: 54.00
   Lab Units: 1   Semester Lab Hrs: 54.00
      Class Size Maximum: 35   Allow Audit: No
      Repeatability No Repeats Allowed
      Justification 0
5. Prerequisite or Corequisite Courses or Advisories:
   Course with requisite(s) and/or advisory is required to complete Content Review Matrix (CCForm1-A)
   Prerequisite: MATH 054 with a minimum grade of C
6. Textbooks, Required Reading or Software: *(List in APA or MLA format.)*
      a. Stakkestad, James & Wyant, Lin (1986). *Introduction to Geometry* (1st/e). cengage. ISBN: 0-12-766140-9
         College Level: Yes
         Flesch-Kincaid reading level: *N/A*
      b. Lial,Brown, Steffensen, Johnson (2004). *Essentials of GEometry For College Students, Vol 1 gooks I and II* (2nd edition/e). Pearson/Addison Wesle. ISBN: 0-201-74882-7
         College Level: Yes
         Flesch-Kincaid reading level: 8.8
7. Entrance Skills: *Before entering the course students must be able:*
   a.
   Identify, recognize and classify real numbers, as integers, rationals, or irrationals and locate their approximate positions on the real number line.

   • MATH 054 - Identify, recognize and classify real numbers, as integers, rationals, or irrationals and locate their approximate positions on the real number line.
   b.
   Understand the concept of variables and how variables can be used to represent and unknown wquantitiy of a range of quantities.

   • MATH 054 - Understand the concepts of variables and how variables can be used to represent an unknown quantity or a range of quantities.
   c.
   Use variables to create algebraic expressions that model quantities in an application problem.

- MATH 054 - Use variables to create algebraic expressions that model quantities in an application problem.

d.

Apply the commutative, associative, distributive, identity and inverse axioms to simplify algebraic expressions involving polynomial, rational and radical expressions-perform arithmetic operations with algebraic expressions using the order of operations.

- MATH 054 - Apply the commutative, associative, distributive, identity, and inverse properties to simplify algebraic expressions involving polynomial, rational and radical expressions - perform arithmetic operations with algebraic expressions using the order of operations.

e.

Use the properties of integer exponents to simplify algebraic expressions, including expressions involving scientific notation.

- MATH 054 - Use the properties of integer exponents to simplify algebraic expressions, including expressions involving scientific notation.

f.

Analyze the concept of algebraic equation and demonstrate the meaning of a solution to the equation, including integer, non-integer rational, decimal and radical solutions.

- MATH 054 - Analyze the concept of an algebraic equation and demonstrate the meaning of a solution to the equation, including integer, non-integer rational, decimal and radical solutions.

g.

Employ variables to create algebraic equations or inequalities that model an application problem.

- MATH 054 - Employ variables to create algebraic equations or inequalities that model an application problem.

h.

Solve equations and inequalities that model application problems and interpret these solutions.

- MATH 054 - Solve equations and inequalities that model application problems and interpret these solutions.

i.

Use properties of equality to solve linear equations in one variable and describe the solution using set notation.

- MATH 054 - Use properties of equality to solve linear equations in one variable and describe the solution using set notation.

j.

Convert between the geometric (Cartesian) and algebraic representations of a linear relation in two variables. Make use of point-slope and slope-intercept forms.

- MATH 054 - Convert between the geometric (Cartesian) and algebraic representations of a linear relation in two variables. Make use of point-slope and slope intercept forms.

k.

Solve linear systems of two equations in two variables both algebraically and graphically.

- MATH 054 - Solve linear systems of two equations in two variables both algebraically and graphically.

l.

Use the properties of inequality to solve linear inequalities in one variable and describe the solution set in set notation & graphically.

- MATH 054 - Use properties of equality to solve linear equations in one variable and describe the solution using set notation.

m.

Add, subtract, multiply and divide polynomials.

- MATH 054 - Add, subtract, multiply and divide polynomials.

n.

Factor the greatest common divisor from a polynomial expression and factor quadratic binomials and trinomials with integer coefficients.

- MATH 054 - Factor the greatest common divisor from a polynomial expression and factor quadratic binomials and trinomials with integer coefficients.

o.

Solve quadratic equations in one variable by factoring and apply the zero product property.

- MATH 054 - Solve quadratic equations in one variable by factoring and applying the zero product property.

p.

Demonstrate use of the method of completing the square to solve quadratic equations of the form where the coefficients are integers.

- MATH 054 - Demonstrate use of the method of completing the square to solve quadratic equations of the form where p and q are integers.

q.

Add, subtract, multiply, divide and simplify rational expressions.

- MATH 054 - Add, subtract, multiply, divide and simplify rational expressions.

r.

Solve rational equations that simplify to linear or quadratic equations.

- MATH 054 - Solve rational equations that simplify to linear or quadratic equations.

s.

Interpret square roots and solve square root equations.

- MATH 054 - Interpret square roots and solve square root equations.

t.

Interpret the meaning of the slope of a line as a constant rate of change.

- MATH 054 - Interpret the meaning of the slope of a line as a constant rate of change.

u.

Apply learned principles and skills to novel situations in addition to situations that mimic those on the homework and those form class.

- MATH 054 - Apply learned principles and skills to novel situations in addition to situations that mimic those on the homework and those shown in class.

v.

Use mathematical language to communicate ideas, especially in writing.

- MATH 054 - Use mathematical language to communicate ideas, especially in writing.

w.

Deduce right triangle side lengths using the Pythagorean Theorem and square roots.

- MATH 054 - Deduce right triangle side lengths using the Pythagorean Theorem and square roots.

x.

Use formulas from geometry to find perimeter, area and volume of basic figures.

- MATH 054 - Use basic formulas from geometry to find perimeter, area and volume of basic figures.

<u>y.</u>
Use proportionality to discover side lengths of similar triangles.

- MATH 054 - Use proportionality to discover side lengths of similar triangles.

<u>z.</u>
Use dimensional analysis appropriately in applications.

- MATH 054 - Use dimensional analysis appropriately in applications.

8. Course Content and Scope:

Lecture:

Lecture:
1) Formal Proofs
2) Lines, Plans & Space
3) Angles
4) Triangles & Polygons (quadrilaterals)
5)Perpendicular and consequences of the Parallel postulate
6)Area and Volume
7) Similarity and Proportionality
8) Circles and Triangle Centers
9) Lines and Conic sections in coordinate Geometry

Lab: *(if the "Lab Hours" is greater than zero this is required)*

1) Lab assignments performed individually or in groups.
2) Hands on use of a ruler, protractor & compass to make geometric constructions.
3) Hands on use of ruler, protractor & compass to make measurements.
4) Use instruments to measure lenghts indirectly.

9. Course Student Learning Outcomes:

1.
Develop the practice of defining terms with precision, thinking logically, and establishing conclusions through deductive reasoning.

2.
Develop critical and logical thinking in the context of Geometry.

3.
Use deductive reasoning skills in the axiomatic theory of geometry.

4.
Value the importance of using disciplined thinking: recognize & formulate a valid decutive argument.

5.
Use Geometry in real-world situations-hand on labs & geometric constuctions.

10. Course Objectives: *Upon completion of this course, students will be able to:*
    a. Realize how axioms and postulates are assumed without proot.
    b. Realize how theorems are built on postulates, definitions, undefined terms and previously proved theorems.
    c. Understand lines and subsets of lines: rays,half lines & line segments.
    d. Understand how to measure a line segment & congruent line segments.
    e. Understand angles: measuring angles & congruent angles.

f. Analyze tiangles: congruent triangles, problem solving withe triangles, special line segments & triangles, & inequalities and triangles-indirect proof.

g. Analyze parallel lines: proving lines parallal, the parallel postulate and consequences.

h. Analyze quadrilaterals: parallelograms, trapezoids, rhombus, rectangels, squares and proofs involving special quadrilaterals.

i. Analyze polygons: regular and convex polygons & proofs.

j. Analyze circles: central angles,arcs, chords, inscribed angles, tangents, secants and triangle centers.

k. Calculating & analyzing the concept of area & perimeter as a quantity related to a geometric figures: parallelograms, triangels, trapezoids, polygons & circles.

l. Analyze similarity: similar triangles, right tiangles, circles & sectors with applications.

m. Understand solid geometry: calculate & understand the concept of volume, surface area for planes, polyhedrons, prisms, pyramids, cylinders, cones,& spheres.

n. Topics in analytic coordinate geometry including linear models and quadratic models of conic sections using coordinate geometry.

o. Communicate effectively with the instructor and mathematical community using proper perminology and correct notation.

p. Independently analyze and set up application problems, thus applying problem solving techniques to new situations. Also anticipate and check their proposed solutions.

11. Methods of Instruction: *(Integration: Elements should validate parallel course outline elements)*
    a. Activity
    b. Demonstration, Repetition/Practice
    c. Laboratory
    d. Lecture

12. Assignments: *(List samples of specific activities/assignments students are expected to complete both in and outside of class.)*
    In Class Hours: 108.00
    Outside Class Hours: 108.00
    a. Out-of-class Assignments

    > a. Reading textbook and suplementary assignments.
    > b. Completing assigned homework including probem solving, exercises to improve skills and mathemmatical understanding.

    b. In-class Assignments

    > a. Attending classroom lectures and taking notes.
    > b. Participate in classroom discussions to review, analyze, diagnose and evaluate various methods of solution aused on their homework.
    > c. Complete examinations involving problems that apply studied principles to new situations.
    > d. Use the lab to solidify concepts & eliminate misconceptions by working on group proects.

13. Methods of Evaluating Student Progress: *The student will demonstrate proficiency by:*
    - Written homework
      1) Problems should be done in a clearly displayed vertical format showing an understanding of each mathematical step. 2)Read geometric diagrams & use notation to represent the assumptions in the diagram. 3) Reverse step #2. 4) Demonstrate the ability to write a 2 column proof.
    - Computational/problem solving evaluations
      1) Quizzes 2) Exams 3) Homework
    - Mid-term and final evaluations
      1) Comprehensive Final

14. Methods of Evaluating: Additional Assesment Information:

1)Communicate effectively with the instrutor and mathematical community using proper terminology and correct notation-grading HW, quizzes & Exams. 2) Realize how theorems are built on postulates, definitions, undefined terms and previously proved theorems-grading HW, quizzes & Exams.

15. Need/Purpose/Rationale -- *All courses must meet one or more CCC missions.*
PO-GE C1-Natural Sciences
  Use college-level mathematical concepts and methods to understand, analyze, and explain issues in quantitative terms.
PO-GE C4.b - Language & Rationality (Communication & Analytical Thinking)
  Apply logical and critical thinking to solve problems; explain conclusions; and evaluate, support, or critique the thinking of others.
IO - Scientific Inquiry
  Analyze quantitative and qualitative information to make decisions, judgments, and pose questions.
IO - Global Citizenship - Scientific & Technological Literacy
  Synthesize, interpret, and infer, utilizing information, data, and experience to solve problems, innovate, and explore solutions.

16. Comparable Transfer Course

University System	Campus	Course Number	Course Title	Catalog Year

17. Special Materials and/or Equipment Required of Students:

18. Materials Fees: ☐ Required Material?

Material or Item	**Cost Per Unit**	**Total Cost**

19. Provide Reasons for the Substantial Modifications or New Course:

This course will now provide an alternate way for the students to demonstrate they have the apppropriate mathematical & quantitative knowledge to earn an AA degree. Students may meet AA and /or AS degree requirements by either: Intermediate Algebra or College Geometry. In addition, the students that successfully pass College Geometry are eligible to take Math 13-Liberal Arts and Math 14-Statistics

20. a. Cross-Listed Course *(Enter Course Code)*: *N/A*
  b. Replacement Course *(Enter original Course Code)*: *N/A*

21. Grading Method *(choose one)*: Letter Grade Only

22. MIS Course Data Elements
  a. Course Control Number [CB00]: CCC000551073
  b. T.O.P. Code [CB03]: 170100.00 - Mathematics, General
  c. Credit Status [CB04]: D - Credit - Degree Applicable
  d. Course Transfer Status [CB05]: C = Non-Transferable
  e. Basic Skills Status [CB08]: 2N = Not basic skills course
  f. Vocational Status [CB09]: Not Occupational
  g. Course Classification [CB11]: Y - Credit Course
  h. Special Class Status [CB13]: N - Not Special
  i. Course CAN Code [CB14]: *N/A*
  j. Course Prior to College Level [CB21]: A = 1 Level Below
  k. Course Noncredit Category [CB22]: Y - Not Applicable
  l. Funding Agency Category [CB23]: Y = Not Applicable
  m. Program Status [CB24]: 2 = Stand-alone

Name of Approved Program *(if program-applicable)*: *N/A*
Attach listings of Degree and/or Certificate Programs showing this course as a required or a restricted elective.)

23. Enrollment - Estimate Enrollment
    First Year: 35
    Third Year: 70

24. Resources - Faculty - Discipline and Other Qualifications:
    a. Sufficient Faculty Resources: Yes
    b. If No, list number of FTE needed to offer this course: *N/A*
25. Additional Equipment and/or Supplies Needed and Source of Funding.
    1) Straight edge, compass, protractor
26. Additional Construction or Modification of Existing Classroom Space Needed. *(Explain:)*
    N/A
27. FOR NEW OR SUBSTANTIALLY MODIFIED COURSES
    Library and/or Learning Resources Present in the Collection are Sufficient to Meet the Need of the Students Enrolled in the Course: Yes
    Copies of the appropriate course text available for student use.
28. Originator Steve Dostal   Origination Date 10/08/13