SAN DIEGO COMMUNITY COLLEGE DISTRICT
CONTINUING EDUCATION
COURSE OUTLINE

SECTION 1

SUBJECT AREA AND COURSE NUMBER

HSEP 401

COURSE TITLE

HSEP FOR MATHEMATICS 2

TYPE COURSE

NON-FEE   BASIC SKILLS

CATALOG COURSE DESCRIPTION

The HSEP for Mathematics 2 course provides instruction in critical thinking in the context of algebra and geometry. This course is designed to prepare students to pass a high school equivalency examination in mathematics. (FT)

LECTURE/LABORATORY HOURS

90

ADVISORIES

HSEP FOR MATHEMATICS 1

RECOMMENDED SKILL LEVEL

Grade level equivalent in math of 8.0 or above

INSTITUTIONAL STUDENT LEARNING OUTCOMES

1. Social Responsibility
   SDCE students demonstrate interpersonal skills by learning and working cooperatively in a diverse environment.
2. Effective Communication
   SDCE students demonstrate effective communication skills.

INSTITUTIONAL STUDENT LEARNING OUTCOMES (CONTINUED)

3. Critical Thinking
   SDCE students critically process information, make decisions, and solve problems independently or cooperatively.
4. Personal and Professional Development
   SDCE students pursue short term and life-long learning goals, mastering necessary skills and using resource management and self-advocacy skills to cope with changing situations in their lives.

COURSE GOALS

1. Learn to use number operations and number sense problems
2. Learn to calculate exponents, powers and roots
3. Learn to calculate measurement and geometry problems
4. Learn to solve data analysis, statistics, and probability problems
5. Learn to solve algebra, functions, and patterns problems
6. Learn to use techniques procedural, conceptual, application/modeling/problem solving
7. Learn to use a calculator
8. Gain the knowledge and skills needed to pass a high school equivalency (HSE) exam in the area of mathematics.

COURSE OBJECTIVES

1. Use properties of operations with real numbers, including rational and irrational numbers

2. Rewrite expressions involving radicals and rational exponents using the properties of exponents
3. Reason quantitatively and use units to solve problems
4. Choose a level of accuracy appropriate to limitations on measurement
5. Solve multistep mathematical problems involving rational numbers and irrational numbers including proportional relationships
6. Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures
7. Know properties of polygons and circle
8. Understand and apply the Pythagorean Theorem
9. Understand transformations in the plane
10. Demonstrate that two triangles are similar or congruent from criteria that are given
11. Use volume formulas and problem-solving techniques to solve for the volume or surface area of 3-dimensional figures
12. Apply concepts of density based on area and volume in modeling situations.
13. Solve problems involving supplementary, complementary, vertical, and adjacent angles
14. Summarize and interpret data

15. Use equations, graphs, and tables to understand, represent, interpret and summarize data, and to solve problems
16. Identify line of best fit from a scatter plot
17. Understand how to use statistics
18. Interpret parts of an expression, such as terms, factors, and coefficients in terms of its context
19. Perform arithmetic operations on polynomials and rational expressions

SECTION II

COURSE CONTENT AND SCOPE

1. Number operations and number sense
   1.1. Representing and using numbers in a variety of equivalent forms in real world mathematical problem situations
   1.2. Applying whole numbers, fractions, decimals, integers and rational numbers
   1.3. Selecting appropriate operations to represent problem situations
   1.4. Using order relations for whole numbers, fractions, decimals, integers and rational numbers
   1.5. Analyzing, explaining, and applying ratios, proportions, and percent in a wide variety of situations
   1.6. Computing with whole numbers, fractions, decimals, and integers (with a calculator, with no restrictions, and mentally or with pencil and paper with certain restrictions)
   1.7. Making estimations
   1.8. Using estimations to solve problems
2. Measurement and geometry
   2.1. Modeling and solving problems using concepts of perpendicularity, parallelism, congruence, and similarity of geometric figures
   2.2. Using spatial visualization to describe and analyze geometric figures
   2.3. Using Pythagorean theorem
   2.4. Finding slope, y-intercept, intersection of lines
   2.5. Using coordinates
   2.6. Identifying appropriate units of metric and customary measures
   2.7. Solving and estimating solutions involving perimeter, area, volume, surface area, angle measurement, capacity, mass, weight
   2.8. Converting metric and customary measures
   2.9. Predicting impact of changes in linear dimension
3. Data analysis, statistics, and probability
   3.1. Constructing, interpreting, and drawing inferences from tables, charts, and graphs
   3.2. Making inferences and arguments that are based on data analysis
   3.3. Evaluating arguments based upon data analysis
   3.4. Representing data graphically
   3.5. Applying measures of central tendency (i.e., mean, median, mode)
   3.6. Making predictions based upon experimental or theoretical probabilities

COURSE CONTENT AND SCOPE (CONTINUED)

3.7. Comparing and contrasting different sets of data
4. Algebra, functions and patterns
    4.1. Analyzing and representing situations involving variable quantities with tables, graphs, verbal descriptions and equations
    4.2. Recognizing problem situation by function
    4.3. Converting between different representations such as tables, graphs, verbal descriptions and equations
    4.4. Creating and using algebraic expressions and equations to model situations and solve problems
    4.5. Evaluating formulas and functions
    4.6. Solving equations and systems of linear equations
    4.7. Recognizing and using direct and indirect variation
    4.8. Analyzing tables and graphs to identify and generalize patterns and relationships
    4.9. Analyzing and using functional relationships to explain how a change in one quantity results in change in the other quantity, including linear, quadratic, and exponential functions
5. Strategies for test taking
    5.1. Recognizing the difference in procedural, conceptual, application/modeling/problem solving cognitive levels
    5.2. Practice in different formats(e.g., number grid, coordinate plane grid)
    5.3. Practice in potential "real life"/contextual questions
    5.4. Appropriate use of calculator

APPROPRIATE READINGS

Reading assignments may include, but are not limited to, assigned textbooks and online resources regarding related to algebra and geometry.

WRITING ASSIGNMENTS

Writing assignments may include, but are not limited to, include appropriate math practice problems with written explanations and translating algebraic language and into an equation.

OUTSIDE ASSIGNMENTS

Outside assignments may include, but are not be limited to, studying classroom topics, practicing math test items, and using supplemental materials such as web based sites as appropriate to be successful in the course.

APPROPRIATE ASSIGNMENTS THAT DEMONSTRATE CRITICAL THINKING

Assignments which demonstrate critical thinking may include, but are not limited to, practicing critical thinking skills (analysis, synthesis, evaluation) to succeed on tests. An example of an appropriate assignment which demonstrates critical thinking would be solving math problems in multiple ways and providing explanations of the process.

EVALUATION

1. Pre-and post-tests
2. Informal evaluation based upon observation
3. Official HSE practice tests (current version) proctored by the course instructor, or designee; or documented proof of a passing score obtained on an official HSE exam.

Upon successful completion of the course a Certificate of Course Completion will be issued. Upon successful completion of all courses included in the program a Certificate of Program Completion will be issued.

METHOD OF INSTRUCTION

Lectures are supplemented with individualized instruction, class discussion, small group work and a variety of practice, including online materials, and field trips.

This course, or sections of the course, may be offered through distance education.

TEXT AND SUPPLIES

Official Guide to the HiSet® Exam, Educational Testing Service*,* McGraw-Hill
  Education*, current edition*
Contemporary GED Math, Contemporary, McGraw Hill, current edition
Steck Vaughn GED Skills Book, Steck Vaughn, current edition
GED 21st Century, Steck Vaughn, current edition

PREPARED BY ___Natalie Lindenberg_ DATE _____

Instructors must meet all requirements stated in Policy 3100 (Student Rights, Responsibilities and Administrative Due Process), and the Attendance Policy set forth in the Continuing Education Catalog.

REFERENCES:

San Diego Community College District Policy 3100
California Community Colleges, Title 5, Section 55002
Continuing Education Catalog