Course Title: IMP-2A (P)

Replacing an existing course? Updating IMP-Course 2A

To be submitted for A-G? Yes

Department   Mathematics

Career Path – (if any)

Description of Target Group

IMP-2A is for students who have successfully completed IMP-1 or Algebra-1.

Purpose
    a)   Length of course: one term/one semester
    b)   Units: 5

IMP is a fully integrated, four-year college preparatory sequence of courses in mathematics designed to replace the traditional Algebra I, Geometry, Algebra II sequence. The sequence of topics is herein being rearranged between IMP-1 and IMP-2 in order to allow students to meet state math requirements for graduation in a single course and to facilitate a more natural transition from 8th-grade algebra to IMP-2. All Algebra-1 standards are being moved down into IMP-1, and the geometry, statistics, probability and trigonometry topics are being moved from IMP-1 to IMP-2.The topics listed below are covered in IMP-2A in a unified fashion, in the context of meaningful larger mathematical problems.

    From Geometry:
    • Working with similar polygons
        • Developing criteria for similarity
        • Using properties of similar polygons to solve concrete problems
        • Using ratio and proportion in problem situations
        • Developing equivalent equations for proportions
    • Defining and using trigonometric functions for right triangles
    From Trigonometry:
    • Developing and applying right triangle trigonometric functions and their inverses.
    From Probability and Statistics:
    • Constructing area models to represent probabilistic situations
    • Developing basic methods for calculating probabilities
    • Understanding, calculating, and interpreting expected value
    • Distinguishing between theoretical and experimental probabilities
    • Planning and carrying out experiments
    • Collecting and analyzing data
    • Constructing frequency bar graphs
    • Learning about normal distributions and properties of the normal curve
    • Calculating mean and standard deviation, and applying these concepts to concrete situations
    • Using simulations to estimate probabilities
    • Drawing inferences from statistical data
    • Designing, conducting and interpreting statistical experiments
    • Making and testing statistical hypotheses
    • Solving problems that involve conditional probability

From Logic:
- Making and testing conjectures
- Constructing sound logical arguments
- Formulating counterexamples
- Developing and describing algorithms and strategies
- Understanding the idea of proof
- Working with indirect proof and proof by contradiction
- Using "if..., then" statements

Prerequisites – Completion of IMP-1 or Algebra-1 with a grade of C or better.

Standards of Expected Student Achievement

- Problem-solving
    Working on long-term problems
    Drawing on diverse knowledge and methods to solve problems
    Applying appropriate technology to problem solving
    Posing questions related to a problem
    Generalizing problems
- Group work
    Working cooperatively with others
    Sharing ideas
    Asking for assistance
    Subdividing a task so that group members can work independently on different parts of it
- Writing and communication
    Reading and understanding complex problems
    Summarizing the essential ideas of a problem
    Describing methods used to approach a problem
    Explaining reasoning used in solving a problem
    Evaluating and improving the quality of written work
    Making oral presentations

Methods of Assessment of Student Learning

Students will be assessed using a combination of individual and cooperative group tests and quizzes, class work and homework assignments, Problems of the Week, oral presentations and portfolios.

Instructional Materials

Refer to: Secondary Adopted Texts and Approved Supplementary Books Used in the Santa Maria Joint Union High School District

Activities

This course will be presented as determined by the methods and techniques of the instructor and will utilize lecture, demonstration, group work, cooperative learning, investigations, manipulatives, graphing calculators, oral and written communication, study, drills, quizzes, and examinations.