FOLSOM CORDOVA UNIFIED SCHOOL DISTRICT

Final Course Outline
Geometry

Date: January 2002 **Subject Area: Mathematics**

Proposed Grade Level(s): 8-12 **Course Length: 1 Year**

Grading: A-F **Number of Credits: 5/semester**

Prerequisites: 'C' or better in Algebra 1 or Year 2; or 70% or better in district Algebra 1 final

COURSE DESCRIPTION:

Students will perform basic constructions with a straightedge and compass, write geometric proofs including proofs by contradiction, and have what is likely their first encounter with an axiomatic system. Students will also know, derive, and solve problems involving a variety of geometric figures in the plane as well as in space. Students will be introduced to the basic foundations of right triangle trigonometry. Students will also work with coordinate geometry as well as work with the transformations of figures in the coordinate plane and space.

Geometry is also offered as an online course. Instruction in the online course takes place in both synchronous and asynchronous environments. Students attend real time virtual class meetings, view recorded lectures and communicate with their teacher and peers via email and discussion boards. The same coursework is required as in the traditional environment

GENERAL GOALS/PURPOSES:

According to the state standards, the main purpose of the geometry curriculum is to develop geometric skills and concepts and the ability to construct formal logical arguments and proofs in a geometric setting.

In the online course, the explanations and visual displays necessary to communicate the geometry concepts translate well to the tools of the electronic whiteboard and demonstration software. Participation via virtual class meetings and discussion boards emphasizes the need to communicate concepts, questions and arguments clearly.

STUDENT READING COMPONENT:

Students will receive instruction on the effective use of their textbook. Geometry includes many applications where effective reading and analysis are taught as part of the course. Geometry places a heavy emphasis on vocabulary and its role in developing an axiomatic system. As students develop their ability to create a formal logical argument, they will also be developing their ability to read analytically.

STUDENT WRITING/ORAL COMPONENT:

One of the primary skills to be developed in Geometry is the ability to construct formal logical arguments and proofs. The development of this skill is a critical part of a student's ability to create a persuasive argument in any setting and in any subject. Additionally, students will have opportunities to express their understanding of a variety of geometric concepts in writing as well as orally presenting work to the class. All written work will

follow standard rules of English. Any research projects will follow MLA format, which has been distributed at all secondary sites.

FINAL ASSESSMENT:

District Geometry Final sent to the school sites from Granite Center in June. It is also recommended but not required that each school site generate a common trimester 1 & 2 or Semester 1 final for that site.

DETAILED UNITS OF INSTRUCTION:

(CA state standards for geometry indicated in parenthesis)

Geometric Proofs (1.0, 2.0, 3.0, 4.0, 5.0)

- Deductive reasoning
- Inductive reasoning
- Logic
- Congruence
- Proofs by contradiction

Measurement of two- and three- dimensional figures (6.0, 8.0, 9.0, 10.0, 11.0)

- Perimeters and circumference
- Areas, surface area, and lateral surface area
- Volume
- Effects of dimensional changes
- Similarity

Properties of geometric figures (7.0, 12.0, 13.0, 21.0)

- Properties of triangles, quadratics and other polygons
- Lines and angle properties
- Circle properties

Geometric Constructions (16.0)

- Tools of geometry
- Bisections
- Perpendiculars

Pythagorean Applications (14.0, 15.0, 17.0)

- Distance
- Problem solving
- Coordinate Geometry

Trigonometry and Special Right Triangles (18.0, 19.0, 20.0

- Basic right triangle trigonometric ratios
- Applications of trigonometry

Rigid Motions on Geometric Figures (22.0)

- Rotations
- Translations
- Reflections
- Combinations of transformations

THIS COURSE WILL PREPARE STUDENTS FOR THE CAHSEE AND/OR FCUSD EXIT EXAM IN:

Math

LAB FEE, IF REQUIRED: None

SUBJECT AREA CONTENT STANDARDS TO BE ADDRESSED:

See "Detailed Units of Instruction".

DISTRICT ESLRs TO BE ADDRESSED:

When students exit a secondary mathematics course, they will be:

- **Self-directed Learners** who will be able to use notes and a textbook to assist them in continuing their learning outside of the classroom setting.
- **Efficient Communicators** who can explain mathematical concepts to others and use mathematics to organize and explain data.
- **Quality Producers** who understand the importance of neat, organized work that demonstrates their thinking and understanding of the solution they've formed to solve a problem.
- **Constructive Thinkers** who are able to attack problems with organization, logic, and mathematical skills they've developed in a systematic fashion.
- **Collaborative Workers** who can work in a variety of settings in culturally diverse groups. They will be able to form and use study groups to strengthen their own understanding in addition to providing the same service for classmates.
- **Responsible Citizens** who accept the consequences of their actions and who demonstrate their understanding of their role in the learning process.