

**Course Title: Understanding Geometric Concepts: *Looking at Geometry*,
Grades 6-9**

Instructor's Name: Sheldon Erickson, AIMS Education Foundation

Course Number: MAT 950

Number of Credit Units: 3 semester units

Course Content/Description:

This course seeks to build a foundation for teaching and understanding geometry from a new perspective. It is supported by classroom lessons/activities written and compiled within the *AIMS* publication *Looking at Geometry* which forms the nucleus of the course.

From hands-on experiences, students construct an understanding of geometric formulas that allows them to work backwards and forwards to solve problems of measurement. These hands-on experiences also provide a rich understanding of dimensions and their relationships to each other.

Primary Learning Outcomes

Students will:

1. Participate in opportunities for implementation and sustained use of hands-on experiences in mathematics in a classroom setting
2. Engage in reflective practice through the use of instructional planning, focused questions, and reflective responses
3. Make connections for conceptual understanding by showing alignment of instructional experiences with national reform documents and state content standards for mathematics
4. Develop positive attitudes and confidence in teaching and learning
5. Expand their knowledge base of mathematics education
6. Will make connections to professional literature regarding content, theory and practice
7. Will identify State or National Standards that apply to the selected AIMS activities by aligning learning goals with State or National Content Standards

Course Materials

AIMS Book – *Looking at Geometry*

An Overview of AIMS (online- PDFs;

<http://www.aimsedu.org/downloads/pdf/download.php?file=sps.pdf>)

with required reading and application of ideas from the following:

A Model of Learning

The Skills for Thinking

(If Internet is not available to download the pdfs, AIMS can mail copies of these pages. Please email spscourses@AIMSedu.org or call 1-888-733-2467 ext 120 to request copies.)

Focus questions and guidelines for responses based on understanding and application of materials and ideas.

- Overall plan for Implementation
- Summary of Alignment with State Content Standards
- Application of the Model of Mathematics
- Application of Thinking Skills and Alignment with Standards and Learning Goals
- Reflective Response and Focus Questions
- Integrated Curriculum Form
- Professional Growth and Reflection: A Response to Articles and Experience

Course Requirements/Schedule of Topics and Assignments

Option A with a Classroom of Students

Text: *Looking at Geometry*

Familiarize yourself with the entire book.

1. Students will read completely the related *AIMS* publication, *Looking at Geometry*.
2. Students will read the selected articles in **An Overview of AIMS** (online- PDFs; <http://www.aimsedu.org/downloads/pdf/download.php?file=sps.pdf>) with required reading and application of ideas from the following:
 - A Model of Learning*
 - The Skills for Thinking*(If Internet is not available to download the pdfs, AIMS can mail copies of these pages. Please email spscourses@AIMSedu.org or call 1-888-733-2467 ext 120 to request copies.)
3. Students will design a plan for implementation of ten (10) experiences from *Looking at Geometry* including a summary of and rationale for the selection of *AIMS* lessons.
4. Students will choose one lesson from *Looking at Geometry* and describe how it addresses the four learning environments of the **Model of Mathematics/Learning**.
5. Students will implement ten (10) lessons in the classroom with students over a three to four week period.
6. Prior to teaching each lesson, students will apply the *Skills for Thinking* to the design of tasks and discussion questions reflecting important concepts, skills and processes integral to each lesson. Students will record these on pages labeled **Applying Thinking Skills**. Students will also record the Learning Goal and appropriate State Standards on pages labeled Applying Thinking Skills.
7. After each lesson, students will reflect upon their teaching by responding to the Reflective Response focus questions.
8. Show summary of alignment of learning goals with **State Content Standards**. Content Standards for each state may be found at this Web-site address:
US Department of Education has links to the state department of education for each state.
http://wdcrobcolp01.ed.gov/Programs/EROD/org_list.cfm?category_ID=SEA
9. Complete a **Professional Growth and Reflection** form describing how the selected articles (see number 2 above) and the teaching experience impacted you and your teaching.

Method of Assessment:

Provide evidence of the design, implementation, evaluation and reflection of the collective experiences by returning the completed assignments.

Unless otherwise indicated, students successfully completing this course will earn a Credit/No credit grade or where a letter grade is requested by checking the appropriate box on the Fresno Pacific University grade form, a letter grade of B will be issued. In order to earn a letter grade of A, additional work beyond what is described will be required.

The discernment between an A or a B is at the discretion of the instructor of record based on the quality of the evidence submitted.

Additional requirement for an earned letter grade of A

1. Adapt, modify, or use one of the investigations in the book as a final performance assessment of understanding of *Looking at Geometry*.
2. Submit a summary of how the activity was used and/or modified explaining the rationale for using the activity in this way.
3. Include at least four examples of student work on the final performance assessment, which demonstrate the variety of student successes.

Option B - Without a Classroom of Students

Text: *Looking at Geometry*

Familiarize yourself with the entire book.

1. Students will read completely the related *AIMS* publication, *Looking at Geometry*.
2. Students will read the selected articles in **An Overview of AIMS** (online- PDFs; <http://www.aimsedu.org/downloads/pdf/download.php?file=sps.pdf>) with required reading and application of ideas from the following:
A Model of Learning
The Skills for Thinking
(If Internet is not available to download the pdfs, AIMS can mail copies of these pages. Please email spscourses@AIMSedu.org or call 1-888-733-2467 ext 120 to request copies.)
3. Students will design a plan for implementation of all 20 experiences from *Looking at Geometry* including a summary of and rationale for the selection of *AIMS* lessons.
4. Students will choose one lesson from *Looking at Geometry* and describe how it addresses the four learning environments of the **Model of Mathematics/Learning**.
5. Prior to teaching each lesson, students will apply the *Skills for Thinking* to the design of tasks and discussion questions reflecting important concepts, skills and processes integral to each lesson. Students will record these on pages labeled **Applying Thinking Skills**. Students will also record the Learning Goal and appropriate State Standards on pages labeled Applying Thinking Skills.
6. Show summary of alignment of learning goals with **State Content Standards**. Content Standards for each state may be found at this Web-site address:
US Department of Education has links to the state department of education for each state.
http://wdcrobcolp01.ed.gov/Programs/EROD/org_list.cfm?category_ID=SEA
7. Complete a **Professional Growth and Reflection** form describing how the selected articles (see number 2 above) and the teaching experience impacted you and your teaching.

Method of Assessment:

Provide evidence of the design, implementation, evaluation and reflection of the collective experiences by returning the completed assignments.

Unless otherwise indicated, students successfully completing this course will earn a Credit/No credit grade or where a letter grade is requested by checking the appropriate box on the Fresno Pacific University grade form, a letter grade of B will be issued. In order to earn a letter grade of A, additional work beyond what is described will be required.

The discernment between an A and a B is at the discretion of the instructor of record based on the quality of the evidence submitted.

Additional requirement for an earned letter grade of A

1. Develop a plan to adapt, modify, or use one of the investigations in the book as a final performance assessment of understanding of *Looking at Geometry*.
2. Submit a summary of how the activity would be used and/or modified explaining the rationale for using the activity in this way.

University Policy on Plagiarism

All people participating in the educational process at Fresno Pacific University are expected to pursue honesty and integrity in all aspects of their academic work. Academic dishonesty, including plagiarism, will be handled according to the procedures set forth on page 8 of the Fresno Pacific University Catalogue.