

Course Title: Geometry of the Circle

Grades 5-9

AIMS Publication: *The Amazing Circle*

Instructor's Name: Jim Wilson, AIMS Education Foundation

Course Number: MAT 941

Number of Credit Units: 3 semester units

Course Content/Description:

Learn to guide your students in the discovery of geometric properties, including medians, angle bisectors, radii, chords, and major and minor arcs, by folding a paper circle into equilateral triangles, trapezoids, tetrahedra, and more.

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 – The Amazing Circle

Manipulatives for one class to be used with lessons from text.

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 articles:

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 Learning
- 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

1. Read completely the related AIMS publication, *The Amazing Circle*.
2. 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. Design a plan for the implementation of the first 18 *Exploring the Amazing Circle* experiences from *The Amazing Circle* including a summary of and rationale for the selection of AIMS lessons.
4. Choose one lesson from *The Amazing Circle* and describe how it addresses the four learning environments of the **Model of Learning**.
5. Implement the first 18 lessons in the classroom with students over an eight-week period.
6. Prior to teaching each lesson, apply the *Skills for Thinking* to the design of tasks and discussion questions reflecting important concepts, skills and processes integral to each lesson. Record these on pages labeled **Applying Thinking Skills**. Also record the Learning Goals and appropriate State Standards on pages labeled Applying Thinking Skills.
7. After each lesson, reflect upon your 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.

Additional requirement for an earned letter grade of A

Complete *The Amazing Circle* Explorations 19 – 21. Make the 5 Platonic Solids and complete the faces-vertices-edges chart on page 55 of *The Amazing Circle*.

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.

Option B - Without a Classroom of Students

1. Read completely the related AIMS publication, *The Amazing Circle*.
2. 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. Design a plan for the implementation of the all the *Exploring the Amazing Circle* experiences from *The Amazing Circle* including a summary of and rationale for the use of the AIMS lessons.
4. Choose one lesson from *The Amazing Circle* and describe how it addresses the four learning environments of the **Model of Learning**.
5. Apply the *Skills for Thinking* to the design of tasks and discussion questions reflecting important concepts, skills and processes integral to each lesson. Record these on pages labeled **Applying Thinking Skills**. Also record the Learning Goals 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. Select 8 - 10 AIMS activities to integrate into the Language Arts/Reading, Science, Social Studies, or other topics in the mathematics curriculum. Design a plan including your rationale for your selection of activities and how you are going to connect these activities with other subject areas.
8. Complete a **Professional Growth and Reflection** form describing how the selected articles (see number 2 above) and the teaching experience will impact 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.

Additional requirement for an earned letter grade of A.

Make the 5 Platonic Solids (see *The Amazing Circle* Explorations 19-21) and complete the faces-vertices-edges chart on page 55 of *The Amazing Circle*.

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.

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.