

Saili Le Atamai

ACADEMIC AFFAIRS DIVISION

Office of the Dean of Academic Affairs

INSTRUCTIONAL COURSE APPROVAL FORM

Date	
Course Title ELEMENTARY MATHEMATICS METHODS	_
Course Code (Alpha and Number) ED 330	_
ROUTING SIGNATURES AND DATE	
1. Initiator	_
2. Academic Department Chair:	_
3. Dean, Academic Affairs:	_
4. Curriculum Committee:	
5. Dean, Academic Affairs:	
6. Vice President:	
\Box Approved \Box Disapproved \Box Approved with the following recommendations:	

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AMERICAN SAMOA COMMUNITY COLLEGE INSTRUCTIONAL COURSE APPROVAL FORM

Department:	Educat	tion	Instructor:	
Course Alpha/N	Jumber:	ED 330	Course Title:	Elementary Mathematics
-				Methods
Check One:	X New (Course Proposal	Course	Revision
Total Credits:	4	Lecture: <u>X</u> La	boratory X	Maximum Class Size: <u>25</u>

CATALOG COURSE DESCRIPTION:

ED 330 uses reading, case studies, instructional technology, and a school-based practicum to educate pre service and in service teachers about K-8 mathematics curriculum and pedagogy. The course seeks to help students develop an understanding and appreciation of mathematics and technology education, and the ability to help children acquire knowledge, attitudes, and skills essential to math and technology literacy. This course has as its focus the methods and materials for teaching elementary school mathematics. The purpose of this course is to help pre-service students become confident in their ability to do mathematics so that they can do the same for their future students. Emphasized are the content of elementary mathematics, and the methods and materials useful to teach it.

COURSE RATIONALE:

This is a mandatory "content" course for all prospective teachers and is designed to enhance the teacher's ability to provide quality mathematics instruction, based on National Standards, for K through 8 teachers. It is predicated upon a constructivist and Standards for School Mathematics (2000).

The course examines the nature of mathematics, history and goals of mathematics education, research on mathematical learning. Course readings, case studies, cooperative learning and class discussions are used to develop student's understanding. The class includes an instruction to using the internet as a research tool (to be integrated throughout the course) and an introduction to the National Standards for Mathematics Education.

The course uses this foundation to address curricular approaches, diversity and equity, professional resources, instructional technology, children's literature, classroom management, safety, and assessment. Here, students will apply, evaluate, and reflect upon elementary math teaching methods through class activities and field experience assignments. It will also include a continued focus on the application of internet resources as integral teaching and learning tools. Students will design and develop interactive classroom lessons and tools to apply mathematics to everyday situations, supported by standard lesson plans, to fulfill the practicum requirement for this course. All students will maintain field experience journals.

The goals are described through examples that demonstrate what the standard should look like in a grade band and what the teacher's role should be in achieving the standard. The instructor will provide an electronic syllabus with links to web resources. Links to websites that serve the course objectives will be provided in the course calendar according to the topics and objectives explored on a given day.

PRE-REQUISITE(S): AA Degree ED IDP, ED 300, ED 310, MAT 250

Textbook(s) / Reference book(s)	Special supplies / Equipment
<u>Elementary and Middle School Mathematics: Teaching</u> <u>Developmentally.</u> John A. Van de Walle. 4 th edition 2001 New York: Addison Wesley Longman, Inc.	Computer and internet access manipulative to demonstrate teaching methods.
How People Learn: Brain, Mind, Experience and School. John D. Bransford, Ann L. Brown, and Rodney R. Cocking. 1999 Committee on Developments in the Science of Learning. National Research Council. National Academy Press Washington, D.C.	
<u>Elementary Mathematics Links.</u> Organized by the Instructor and participants in the class.	
<u>Sunshine Math and the NCTM.</u> Sample problems (available on-line)	
<u>Assessing Mathematical Understanding Effectively.</u> Harvard Group-Balanced Assessment in Mathematics Education. (available on-line)	
Approval of Textbook	Approval for Supplies / Equipment
Department Chairperson	Department Chairperson
Curriculum Committee	Curriculum Committee
Dean of Academic Affairs	Dean of Academic Affairs

COURSE OBJECTIVES IN BEHAVIORAL TERMS

Student Competencies

Upon successful completion of this course, students will be able to:

- 1.1 The student will be knowledgeable about the learning theories (child, adolescent, early adult) that present a rationale for the hands-on/minds-on approach to learning mathematics.
- 1.2 The student will be able to analyze manipulative or adjunctive activities to determine if the activities allow for diversity in background, learning styles, abilities, and interests.

- 1.3 The student will be knowledgeable about resources of developmentally appropriate mathematics activities.
- 1.4 The student will be able to modify or develop instructional activities and apply current learning theories mathematics achievement.
- 1.5 An understanding of recent trends in mathematics education policy and goals.
- 1.6 An ability to design math lessons and units that are developmentally appropriate.
- 1.7 An ability to construct assessment plans that are compatible with teaching goals and methods and that allow for multiple ways of representing knowledge.
- An awareness of organizations and resources (human, environmental, and technological) that serve the professional development of elementary math teachers.
- 1.9 An understanding of the role of reflection in professional development and lifelong learning.

TOPICAL COURSE OUTLINE

Course Outline:

- 1.0 Introduction to the Internet
 - 1.1 "Googleing" for Teaching Resources
 - 1.2 On-Line Math Activities for Student Enrichment
- 2.0 Introduction to the National Council on Teaching Mathematics Principles and Standards, Pacific Regional and ASDOE Standards
 - 2.1 Standards for Primary, Elementary and Middle School Math Instruction
 - 2.2 Aligning Instruction with Standards
- 3.0 Equity, Diversity and Gender bias in the Math Classroom
 - 3.1 "No Child Left Behind"
 - 3.2 Learning Styles
 - 3.3 Designing Learning Activities to Include Diverse Learning Styles
 - 3.4 "Math Anxiety"

4.0	Children's Ideas in Math (Application to Everyday Life)				
	4.1	The World "By Numbers" (Measurements, Weights, Money, Time)			
	4.2	Sunshine Math-Integrating Classroom, Home and Community			
5.0	Cons	tructivism and the Nature of Mathematics: The Universal Language of			
	Math	ematics			
6.0	Math	ematics Content Standards for Grades K-8			
	6.1	Application of Primary Standards to Classroom Instruction			
	6.2	Application of Elementary Standards to Classroom Instruction			
	6.3	Application of Middle School Standards to Classroom Instruction			
7.0	Tech	niques for Bringing Mathematics into the Everyday World			
	7.1	Adapting and Applying Sunshine Math Activities			
	7.2	Exploring the World "By the Numbers" (Lesson Plans/Activities)			
8.0	Helping Children to Apply Mathematical Concepts and Techniques				
	8.1	Adapting Instruction and Activities to Different Learning Styles			
	8.2	Lesson Plans and Application Activities			
9.0	Lang	uage and Communication in Math Classroom			
	9.1	The Vocabulary of Mathematics			
	9.2	Building Math Understanding Through Discussion of Activities			
10.0	Asses	ssing Math Learning			
	10.1	Deciding What Should be Assessed			
	10.2	Teacher-Made Tests			
	10.3	Local and National Assessment Standards			
11.0	Integ	rated Curricula and Thematic Approaches			
	11.1	The Connection Between Math and Science			
	11.2	Developing Thematic Units With Lesson Plans			

11.3 Sample Unit: Social Studies Integration-Tuna Canneries

- 12.0 Using the Internet to Support Professional Development
 - 12.1 What You Know is Never Enough
 - 12.2 Internet Resources for Continuing Math Education
- 13.0 Instructional Technology
 - 13.1 Locating and Using Media Resources
 - 13.2 Integrating Computers and Other Technology Resources

ED 330P Elementary Mathematics Methods Practicum

The Practicum enables students to observe and interact with students and teachers, to develop and teach mathematics lessons, and to reflect upon the effectiveness of curricula and methods explored in course readings and class discussions. In pursuing the field experience, students are expected to be professional and to reflect upon and learn from their teaching, not to prepare or teach perfect lesson (assuming such things exist). To promote learning and reflection during the field experience, all students are required to maintain a practicum field experience journal, develop and teach an appropriate progression of math lessons, and submit revised lesson plans after reflecting upon their teaching and feedback they receive.

- All students should prepare lesson plans using the format shown in the lesson plan guide (provided by the instructor). Although lesson plans may be developed collaboratively, work is submitted and evaluated individually.
- Additional lesson plans and activities will be required throughout the semester.

Field Experience Journal

- The field experience journal is a professional conversation between instructor and student designed to help students integrate theory and practice in a coherent whole. The journal has several instructional purpose.
- To explore the relationships between practical and formal knowledge, conception and reality, and action and reflection.
- To learn strategies to manage these relationships productively;
- To learn how intentional reflection can play a role in the development of integrated, professional practice.

EVALUATION METHODS

Research Projects	20%
Exam 1	20%
Exam 2	20%
Practicum	30%
Field Experience	10%