AMERICAN SAMOA COMMUNITY COLLEGE
Teacher Education Department
Fall Semester 2010
Course Syllabus

Course Alpha/Number : ED 330/Ed 330 P Semester/Year: Fall 2010
Course Title: Elementary Mathematics Methods Days/Time: TR:4-5:20/(p)MWF: 10-10:50
Course Pre-Requisite: AA Degree ED IDP< ED 300, ED301, MAT 250
Credits: ED 330- 3 Credits/ED 330 P-1 Credit
Instructor: Letupu Moananu Department: School of Education
Office Hours & Location: 11:00-12:00 MWF , 11:30 -12:30 TR
Classroom: Room 9
Email Address: l.moananu@amsamoa.edu Contact Phone: 699-9155 ext 355

Required Textbook: Elementary and Middle School Mathematics Teaching Developmentally, 6th Edition, by John Vand de Walle published by Pearson Education, Inc. 2007
ISBN: 0-205-48392-5
Additional Supplements: All supplementary reading and handouts will be provided by instructor.

I. Course Description: ED 330 uses readings, 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 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 the 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.

II. Course Rationale: The intent of the course is to promote interest in learning and teaching mathematics, and also to assist candidates in constructing a framework based on theory, research, best practices, and practical experience.

III. Learning Objectives: Student will be able to:

a) Explore, understand, and be prepared to implement content standards for Elementary Mathematics:;[aligned to Education SLOa *Identify the important role effective teachers play in students' future, and b*Demonstrate knowledge of students applying critical thinking and problem solving skills. Aligned to Institution SLO: Communication skills-speak and write clearly to a variety of audience, and comprehend, interpret and evaluate information received through different media, and follow instructions, procedures and guidelines effectively. Aligned to Job skills-apply acquired knowledge and skills to assigned job or tasks, develop insights into human experience and apply to personal occupational and social relationship, and apply acquired knowledge and skills to real work situations. Aligned to Life skills under problem solving].

b) Examine personal assumptions, beliefs and values about elementary school mathematics instruction; [Aligned to Education SLO Identify the important role effective teachers play in students' future, and b*Demonstrate knowledge of students applying critical thinking and problem solving skills. Aligned to Institution SLO: *Communication skills*-speak and write clearly to a variety of audience, and comprehend, interpret and evaluate information received through different media, and follow instructions, procedures and guidelines effectively. *Aligned to Job skills*-apply acquired knowledge and skills to assigned job or tasks, develop insights into human experience and apply to personal occupational and social relationship, and apply acquired knowledge and skills to real work situations. Aligned to Life skills under problem solving].

c) Increase theoretical knowledge and practical experience in the planning, teaching, and assessment of mathematics; [Aligned to Education SLO Identify the important role effective teachers play in students' future, and b*Demonstrate knowledge of students applying critical thinking and problem solving skills. Aligned to Institution SLO: *Communication skills*-speak and write clearly to a variety of audience, and comprehend, interpret and evaluate information received through different media, and follow instructions, procedures and guidelines effectively. *Aligned to Job skills*-apply acquired knowledge and skills to assigned job or tasks, develop insights into human experience and apply to personal occupational and social relationship, and apply acquired knowledge and skills to real work situations. Aligned to Life skills under problem solving].

d) Broaden one's repertoire of practical teaching strategies and activities. ; [Aligned to Education SLO Identify the important role effective teachers play in students' future, and b*Demonstrate knowledge of students applying critical thinking and problem solving skills. Aligned to Institution SLO: *Communication skills*-speak and write clearly to a variety of audience, and comprehend, interpret and evaluate information received through different media, and follow instructions, procedures and guidelines effectively. *Aligned to Job skills*-apply acquired knowledge and skills to assigned job or tasks, develop insights into human experience and apply to personal occupational and social relationship, and apply acquired knowledge and skills to real work situations. *Aligned to Life skill*s under problem solving].

e) Become reflective about students, student learning, teaching beliefs, instructional strategies, and technological innovations as they relate to the teaching of mathematics. [Aligned to Education SLO Identify the important role effective teachers play in students' future, and b*Demonstrate knowledge of students applying critical thinking and problem solving skills. Aligned to Institution SLO: *Communication skills*-speak and write clearly to a variety of audience, and comprehend, interpret and evaluate information received through different media, and follow instructions, procedures and guidelines effectively. *Aligned to Job skills*-apply acquired knowledge and skills to assigned job or tasks, develop insights into human experience and apply to personal occupational and social relationship,

and apply acquired knowledge and skills to real work situations. *Aligned to Life skills*-Develop and apply ethical decision making in real life situations, recognize and respect the perspective of others, contribute to the solution of interpersonal problems or issues, formulate strategies and ideas and accept the use of ideas of other in solving problems, and apply technology to locate, interpret, organize and present information].

f) Become more confident in one's ability to do mathematics. [Aligned to Education SLO Identify the important role effective teachers play in students' future, and b*Demonstrate knowledge of students applying critical thinking and problem solving skills. Aligned to Institution SLO: *Communication skills*-speak and write clearly to a variety of audience, and comprehend, interpret and evaluate information received through different media, and follow instructions, procedures and guidelines effectively. *Aligned to Job skills*-apply acquired knowledge and skills to assigned job or tasks, develop insights into human experience and apply to personal occupational and social relationship, and apply acquired knowledge and skills to real work situations. *Aligned to Life skills*-Develop and apply ethical decision making in real life situations, recognize and respect the perspective of others, contribute to the solution of interpersonal problems or issues, formulate strategies and ideas and accept the use of ideas of other in solving problems, and apply technology to locate, interpret, organize and present information].

IV. Student Learning Outcomes (SLO): Identify learning outcomes (knowledge, skills, attitudes). Students will develop at the end of the course beyond the content or subject matter.

a. Identify the important role effective teachers play in students' future [Aligned to LO a, b,c ,d,e,& f.-Aligned to Institutional SLO: communication-speaking and writing, reading and listening; aligned to Life skills-Adaptive & job specific; Aligned to Life Skills-Personal responsibility, respect and diversity, problem solving and using technology.]
b. Demonstrate knowledge of students applying critical thinking and problem solving skills [Aligned to LO a,c,e,& f. Aligned to Institutional SLO: communication-speaking and writing, reading and listening;aligned to Life skills-Adaptive & job specific; Aligned to Life skills-Personal responsibility, respect and diversity, problem solving and using technology.]
c. Value technology and recognize how it is a tool to stimulate instruction and student learning[Aligned to LO c, d & e. Aligned to Institutional SLO: communication-speaking and writing, reading and listening; aligned to Life skills- Adaptive & job specific; Aligned to Life skills- Personal

responsibility, respect and diversity, problem solving and using technology.]

d. Identify children's developmental needs and provide appropriate teaching materials and strategies; [Aligned to LO b,d,e, & f. Aligned to Institutional SLO: communication-speaking and writing, reading and listening; aligned to Life skills-Transferable, Adaptive & job specific; Aligned to Life skills-Personal responsibility, respect and diversity, problem solving and using technology].

e. Promote children's questioning, exploring skills in order to develop life skills. [Aligned to LO b, c, d, e, & f. Aligned to Instituional SLO: communication-speaking and writing, reading and listening; aligned to Life skills-Transferable, Adaptive & job specific; Aligned to Life skills-Personal responsibility, respect and diversity, problems solving and using technology.]

V. Course Requirements:

I. Mathematical Autobiography; 20 points

Each class participant is required to write a mathematical autobiography. Contained in this autobiography should be a narrative describing past experiences with mathematics teaching and learning. Particular emphasis should be placed on experiences as children in elementary level classrooms. Autobiographies will be evaluated by the course instructor. DUE DATE: Week 2-Assessing SLO (a) and LO (d & f).

II. Course and Practicum Journal Reflections; (20 points)

Each class participant will be required to complete journal reflections during the semester. The format and focus of these reflections will change, but they will be based heavily on the reading in the text or on activities done in class. There may also be connections to events taking place in the practicum setting. Class participants may be asked to work several mathematics problems related to the current topics and readings, and as a follow-up, reflect on their work from a pedagogical perspective. Specific details for journal reflections will be given at the appropriate time. DUE DATE: vary (see topical outline)-Assessed SLO a, b, d, & e, and LO (a,b,c,e, & f).

III. Evaluation of a math lesson; 20 points

One of the easiest ways to think like a teacher is to observe an experienced teacher in action. In this assignment, you are asked to observe a math lesson in your practicum placement and write a 2-3 page paper describing the lesson and evaluating its success. Your paper should answer these questions: What were the goals of the lesson? Where the goals clear to the students? Were the students engaged? If they were, what captured their interest? If not, why not? How were manipulative used to aid understanding (if they were0? How did the teacher use classroom discussion to further learning and to assess students' skills and understanding? In your observation of the students, were you able to see those acquiring new concepts or skills or changes in their thinking about the math being covered? What were the strengths and

weakness of this lesson? How could you describe an activity you could add for enrichment or further practice of the concepts. DUE DATE:-Week 5-Assessing SLO (b, c, d, & e,) and LO (a, b, c, e, & f)

IV. Problem based lesson presentation (1) ; 40 points

Each class participant is required to prepare and present a problem-based activity lesson in the practicum placement class. The lesson must be grounded in an appropriate NCTM content standard as well as DON standards for elementary mathematics. The written portion of the assignment ahs three phases: 1) a written lesson plan; 2) a description of the lesson implementations; and 3) a reflection of the success of the lesson as well as plans for future improvements and/or alterations in the lesson. Although there is no formal evaluation of the lesson presentation itself, the course instructor evaluates the written components of the assignment. DUE DATE; Week 8-Assessing all SLO and Learning objectives provided.

V. Problem based lesson presentation (2); 40 points

Similar to the previous description, each class participant is required to prepare and present a second problem-based activity lesson in the practicum placement class. As was the case for lesson #1, the lesson must be grounded in an appropriate NCTM and/or DOE standards for elementary mathematics. Additionally, this lesson must utilize some form of hands-on activities for the children and/or a technological component (calculators, computer software, etc.). The written portion of the assignment has three phases: 1) a written lesson plan, 2) a description of the lesson implementation, and 3) a reflection on the success of the lesson as well as plans for future improvements and/or alterations in the lesson. Rubrics will be used and provided to assess presentations.

DUE DATE: Week 15-Assessing all Student Learning outcomes and Learning objectives.

VI. Content Strand Project (STANDARDS); 40 points

Class participants will work to compile a collection of important concepts, lesson ideas, and performance assessments for one of the ASDOE standards for mathematics strands. Each group prepares a handout and presents the strand to the class. Peers and the instructor evaluate the handout and presentation.

(DOE Strands of mathematics: 1) Number & Operations ; 2) Algebra; 3) Geometry, 4) Measurement, & 5) Data Analysis & Probability

DUE DATE: Week 13

VII. Assessment Profile: 40 points

For this assignment, you will be assessing one child's understanding of a particular content area (e.g. number sense, computation, spatial sense, etc…)You will need several week to develop your student profile, so be sure to get started on this activity well before it's due. Using the NCTM standards and DOE standards as well as the

text as a guide, you are to develop a series of questions and assessment tasks that will help you better understand your child's conceptual understanding and procedural knowledge of the area you selected.

You should use several sources of data for your assessment of the student's conceptual understanding. The development of the profile should include these steps:

- Early in your placement observe the class with this profile in mind. Carefully select one or two students whom you might work with. Discuss this profile assignment and these students with your practicum teacher, asking for his/her recommendations to help you make the final selection.
- Observe your student on at least two occasions. Take notes that will help you to better understand the student's performance, aptitude, cognitive development, and interest in mathematics.
- Develop a plan of written and interview questions that will help you assess the child's understanding in the area that you have selected. This set if questions/assessments tasks should include longer open-ended tasks as well as shorter performance tasks that ask the student to use problem solving in his/her work.
- When you have compiled your questions and assessment tasks, arrange with your practicum teacher for a time to work with the student. Depending on the age and the development of the child, you may need to divide your interview into two sessions. You should aim for around 30 minutes (minimum) of one-on-one time with your student. During your interview, use your time to probe the child's understanding by asking questions that elicit explanations of his/her thought processes. Look for possible misconceptions, conventions, creative thinking, strategies, etc…
- Write up a description of your interviews wit the child for your own use. Do you have a complete picture? If you still have questions about the student's understanding, strategies or attitudes, arrange a follow-up interview. Bring manipulative, questions, or other assessment tasks to clarify your understanding of the child's development.
- Written report should include:

a) A description of your interviews with the student (list questions, tasks, discussion)
b) An analysis of your student's performance on the content topic you've chosen
c) A summary of the student's strengths and weaknesses in that area which include misconceptions, procedural and concept knowledge, and problem solving ability/strategies
d) Your estimate of where your student is on a continuum leading to mastery
e) Your conclusions and recommendations (based on your evidence) of what additional learning experiences this child needs in order to more fully grasp the content strand under study DUE DATE: Week 15

Viii. Lesson Sampler, 30 points

The intent of this assignment is to begin to develop a data base of innovative lessons plans that will be accessible to this (and future) cohort of beginning teachers.

Specifically, each participant will find, develop, and/or write three lesson plans appropriate for implementation in k-8 classrooms. These lessons may be created from scratch, adapted from existing lessons, downloaded from the internet, etc. On the due date, participants must bring a copy of each lesson plan to class. In small groups, each participant will take 10-15 minutes to present one of the lesson plans to the group. At the conclusion of the group sharing, all lesson plans will be collected, organized, and placed on reserve in the library for future reference. More information will be given about this assignment as the due date approaches : DUE DATE: Week 14

VI. Methods of Instruction:

a) Lecture
b) Class Discussions
c) Group Presentations
d) Guest Speaker
e) Student Demonstration
f) Portfolio

VII. Grading:

1. Final grade will be determined based on the weight of the required assignments and exams.
    a) MIDTERM-EXAM (100 POINTS)
    b) FINAL-EXAM (100 POINTS)
    c) ASSIGNMENTS
        a) Mathematical Autobiography; (20 points)
        b) Course and Practicum-weekly Journal Reflections; (20 points)
        c) Evaluation of a math lesson; 20 points
        d) Problem based lesson presentation (1); 40 points
        e) Problem based lesson presentation (2); 40 points
        f) Content Strand Project; (40 points)
        g) Assessment Profile; (40 points)
        h) Lesson Sampler; (30 points)
    d) Portfolio (50 points)

Grading Scale:

		A	95-100%	A-	94-90%
B+	88-89%	B	84-87%	B-	83-80%
C+	78-79%	C	74-77%	C-	73-70%
D+	68-69%	D	64-67%	D-	63-60%

Viii. Last day to officially withdraw from the course
September 13 – October 22 Withdraw Period to receive a W

October 25- November 12 Withdraw Period to receive a W/F or W/NP

Ix. Attendance Policy:

Attendance is critical in passing this course. Students must comply with the ASCC Attendance Policy. All students attending ASCC are expected to attend all of their scheduled classes. Students with excessive absences during the first two (2) weeks of instruction will be administratively dropped. A student cannot exceed six (6) absences for Monday, Wednesday, and Friday classes: four (4) for Tuesday and Thursday classes. Students with excessive absences, in accordance to this policy will receive a lower or failing grade for the semester session.

A student can be excused from classes at the discretion or upon verification of the instructor, for the following reasons: medical reasons, family emergency, special curricular activities, military obligations, jury duty, and related official college sponsored activities. It is the responsibility of the student to make arrangements with his/her instructor (s) for work to be made up for absences due to legitimate reasons. Students are required to submit in writing justifications or provided appropriate documentation justifying absences to the Dean of Academic Affairs for approval. Since tardiness is a form of absenteeism, the instructor has come up with the following: 15 minutes late is considered a tardy and three tardies are considered one absent. Students must also respect the rights of other students to learn without distraction. Therefore, children are not allowed in the classrooms, and cellular phones, pagers, must be turned off or placed in silent mode. Food and drinks are not allowed in the classroom as well.

NOTE: The following topical outline is subject to change to accommodate unforeseen circumstances beyond the control of the instructor.

Dates	TOPICS, ASSIGNMENTS, ACTIVITIES	COURSE PROJECT	SLO	ASSIGNMENT AND EVENT	NOTES
8/24	Discussion of syllabus Finalizing Fieldwork site				
8/26	Teaching mathematics in the Era of the NCTM standards. Introduce the six principals and the five process standards and the five content standards. Alignment with DOE standards.			Chapter 1	
8/31	DOE GUEST SPEAKER				

	MATH SPECIALIST TO SHARE DOE STANDARDS				
9/2	The assessment standards for school mathematics. Influences and pressures on reform state standards and curriculum.	Mathematical Autobiography due		Chapter 1	
9/7	Developing Early number concepts and number sense.			Chapter 9	
9/9	Relationship for numbers 10 to 20	Journal reflection		Chapter 9	
9/14	Exploring what it means to do mathematics Contrasting perceptions of school mathematics What does it mean to do mathematics			Chapter 2	
9/16	What is basic in mathematics? An environment for doing mathematics An invitation to do mathematics			Chapter 2	
9/21	Developing meaning for the operations. Addition and subtraction problem structure Problems structure for multiplication.			Chapter 10	
9/23	Teaching multiplication and division. Strategies for solving contextual problems	Evaluation of a math lesson		Chapter 10	
9/28	Developing understanding in			Chapter 3	

	mathematics Constructivist view of learning Concepts and procedure knowledge.				
9/30	Classroom influences on learning and teaching developmentally			Chapter 3	
10/5	Helping children master the basic facts Approaches to fact mastery Strategies for addition facts Strategies for subtraction facts	Journal Reflection		Chapter 11	
10/7	Strategies for multiplication facts Effective drill Fact remediation with upper grade students			Chapter 11	
10/12	Teaching through problem solving Problem solving as a principal instructional strategy	Portfolio Due		Chapter 4	
10/14	Three-part lesson format Before-phase During –phase After phase Beginning and selecting effective tasks Importance of student writing Teaching about problem solving Developing problem solving strategies -metacognition	TAKE HOME MIDTERM		Chapter 4	

	-disposition				
10/19	Whole number place value development Pre-base ten concepts Basic ideas of place value Models for place value Investigations in number, data, and space Oral and written names for numbers Patterns and relationship with multidigit numbers Numbers beyond 1000			Chapter 12	
10/21	Planning the problem-based classroom Content and task decision Teaching actions Completed Plan Dealing with diversity	Problem based lesson presentation 1		Chapter 5	
10/26	Planning consideration for English language learners Drill or practices Homework and the role of textbook			Chapter 5	
10/28	Strategies for whole number computation Development of student-invented strategies Invented strategies for addition and subtraction			Chapter 13	
11/2	Building assessment into instructions Assessment standards Purpose of assessment What should be assessed Concepts and procedures Mathematical processes Disposition			Chapter 6	
11/4	Assessment tasks are learning tasks Rubrics and performance indicators;	Journal reflection		Chapter 6	

	Scoring-not grading Using observation in assessment				
11/9	Computational estimation with whole numbers Introducing computational estimation Estimation from invented strategies Computational estimation strategies Estimation exercise Estimating with fractions, decimals, and percents			Chapter 14	
11/11	Culturally and linguistically diverse students -culturally relevant mathematics instructions -ethno mathematics - specific strategies for teaching mathematics to English language learners Gender bias to gender equity	Content Strand Project		Chapter 7	
11/16	Algebraic thinking; generalizations, patterns and functions Algebraic thinking Generalization in number and operations Making structure in the number system explicit Repeating patterns Charts and other			Chapter 15	

	number patterns Growing patterns-a first look at functions Function concepts and representations Explorations with functional relationships				
11/18	Technology and school mathematics -calculators in the mathematics classroom -the computer as a tool in mathematics -electronic manipulative for numeration Instructional software Mathematics education resources on the internet	Lesson Sampler		Chapter 8	
11/23	Developing fraction concepts Sharing and the concept of fractional parts Models for fractions From fractional parts to fraction symbols Fraction number sense Equivalent fraction concepts	Problem Based lesson presentation (2)		Chapter 16	
11/25	Computation with fractions Number sense and fraction algorithm Addition and subtraction Multiplication and division of fractions Informal			Chapter 17	

	exploration; partition concept Developing the algorithm Informal exploration; measurement concept				
11/30	Decimal and percent concepts and decimal computation Connecting two different representations Developing decimal number sense	Assessment Profile		Chapter 18	
12/2	Introducing percent Computation with decimals Proportional reasoning Ratios, proportions, and proportional reasoning.	TAKE HOME FINAL PORTFOLIO DUE		Chapter 19	