University of La Verne
College of Education and Organizational Leadership
Department of Education and Teacher Development

EDUC 448
Mathematics for Teachers of Young Children

Winter 2012, 4 units

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Class Websites

- http://bb.laverne.edu/
- http://www.billselak.com/educ448
- http://educ448.collaborizeclassroom.com

About EDUC 448

This course covers math curriculum for children ages three to eight based on the standards set by the National Council of Teachers of Mathematics and the Guidelines of the California State Department of Education. Students will explore their own phobia, and the role teachers play in creating math phobia. They will study math with the goal of improving their own math skills, and learn to challenge and excite children in the study of math. This class is 4 units and includes 15 hours of fieldwork (1 unit).

Student Outcomes and Expected Competencies

The student will have the opportunity to:

First. Know, understand, and apply five math strands set by the National Council of Teachers of Mathematics.

Second. Develop and evaluate lesson plans using the five NCTM strands for ages three to eight.

Third. Demonstrate developmentally appropriate teaching strategies in a mathematical classroom environment.

Fourth. Challenge one's math anxiety and beliefs regarding an ability to teach math while developing positive dispositions towards the subject of math.

Fifth. Report and reflect on research as it relates to culture, socioeconomic status, gender, bilingual learners, and learning differences.

Sixth. Review current research as a means for understanding the purpose, methodologies, findings, and conclusions of the research method.

Seventh. Understand assessment and how it guides instruction.

Eighth. Assess an early childhood math environment for the characteristics of an effective math program.

Ninth. Understand the appropriate and effective use of technology to teach mathematical concepts.

Tenth. Understand the appropriate and effective use of children's literature to teach mathematical concepts.

Eleventh. Identify strategies to promote problem solving, reasoning, communication, connections, and representation by incorporating the processing strands into the unit lesson plans.

NAEYC Initial Licensure Standards

Standard 1a, 1b, and 1c: Promoting Child Development and Learning

Candidates use their understanding of young children's characteristics and needs, and of multiple interacting influences on children's development and learning, to create environments that are healthy, respectful, supportive, and challenging for all children.

Standard 3a, 3b, 3c, and 3d: Observing, Documenting, and Assessing to Support Young Children and Families

Candidates know about and understand the goals, benefits, and uses of assessment. They know about and use systematic observations, documentations, and other effective assessment strategies in a responsible way, in partnership with families and other professionals, to positively influence development and learning.

Standard 4a, 4b, 4c, and 4d: Using Developmentally Effective Approaches to Connect with Children and Families

Candidates integrate their understanding of and relationships with children and families; their understanding of developmentally effective approaches to teaching and learning; and their knowledge of academic disciplines to design, implement, and evaluate experiences that promote positive development and learning for all children.

Standard 5a and 5c: Using Content Knowledge to Build Meaningful Curriculum

Candidates use their knowledge of academic disciplines to design, implement, and evaluate experiences that promote positive development and learning for every child.

Standard 6c and 6d: Becoming a Professional

Candidates engage in continuous, collaborative learning to inform practice. Their practice is influenced by knowledgeable, reflective, and critical perspectives on early education.

Required Textbooks and Resource

Math: Facing an American Phobia
By Marilyn Burns, Math Solutions Publications 1998
ISBN: 0941355195
Available on Amazon.com at http://amzn.to/448burns

Teaching Mathematics in Early Childhood
By Sally Moomaw
ISBN: 1598571192
Available on Amazon.com at http://amzn.to/448moomaw

Principles and Standards for School Mathematics
NCTM 2000
Access online at http://standards.nctm.org

Pocket Guide to APA Style
By R. Perrin, Houghton Mifflin Company 2007
ISBN: 0547201931
Available on Amazon.com at http://amzn.to/448apastyle

Academic Accommodations Statement

A student with a disability, who would like to request an academic accommodation should contact the Students with Disabilities Office, located at 2147 "E" Street, La Verne, CA. 91750. The building is on the west side of "E" Street, between Second and First Avenues. For more information, call (909) 593-3511, ext. # 4441.

Academic Honesty

Each student is responsible for performing academic tasks in such a way that honesty is not in question. Unless an instructor specifically defines an exception, students are expected to maintain the following standards of integrity:

- All tests, term papers, oral and written assignments, recitations, and all other academic efforts are to be the work of the student presenting the material.
- Any use of wording, ideas, or findings of other persons, writers, or researchers requires the explicit citation of the source; use of the exact wording requires a "quotation" format.
- Deliberately supplying material to a student for purposes of plagiarism is also culpable. When academic honesty is in question, the following may occur:

1. A faculty member who has clear evidence that academic honesty has been violated may take appropriate disciplinary action. Appropriate disciplinary action may include, but is not limited to, requiring the student to rewrite a paper or retake a test, giving

the student an F on the assignment and/or in the course, and/or recommending expulsion. If the action includes giving a course grade of NCR or F and/or a recommendation for expulsion because of academic dishonesty, the faculty member must report the action to the Department Chair and/or Academic Dean (or to the Campus/Program Director for off-campus situations).

2. If a faculty member has reason to suspect academic dishonesty (even after having seen requested additional or revised work when appropriate) and the student denies the allegation, the faculty member may refer the matter to the Provost (through the Program Director for off-campus situations). Following due process an Academic Judicial Board may be formed to investigate the matter and make a recommendation to the Provost about whether academic honesty has been violated. The Provost will then take appropriate action, which may include, but is not limited to, academic probation, suspension, or expulsion. In this process, students may be asked to produce earlier drafts of their work and/or original notes and resources, other samples of writing, or documents deemed appropriate or necessary by the Board.
3. Grades of F or NCR received in courses due to academic dishonesty will be filed with appropriate documentation for future reference in the office of the Provost by the Department Chair, Academic Dean, or Campus/Program Director. Students receiving an F or NCR as a result of academic dishonesty will be sent a letter from the Provost noting that a second offense will result in expulsion.
4. Expulsion for academic dishonesty will be noted on the student's transcript by the words "Expelled for Academic Dishonesty."

Exams

Midterm and Final exams will consist of short answers and essays. The exams will cover the course material and will include application of knowledge. Students must be prepared to take the exam without the use of note cards or textbooks. Make-up exams will be given only for extreme, verifiable emergencies.

Readings and Written Assignments

There are reading assignments each week that students are expected to complete *prior to* each class. Participation in many of the activities will require background knowledge of concepts, as presented in the text, to be successfully practiced in the classroom. The student's participation grade will be affected if not prepared for each class.

All work submitted must be typewritten, double spaced, using no larger than 12-point font. Assignments are considered late if not submitted by the beginning of class on the due date. Late assignments will be penalized 10% of the total points available per assignment for each week late, or portion thereof. It is up to the discretion of the professor whether make-up exams will be allowed after the initial testing date. Specific arrangements must be made in advance of the exam.

Course Calendar:

Week	Topics	Reading	Assignments
1 Jan. 3	Syllabus Overview, explanation of responsibilities and assignment expectations, Math Anxiety, Research in Mathematics, Content Standards Introduction.	Burns Ch. 1 Moomaw Ch. 1	Sign up for Dropbox & Collaborize
2 Jan. 10	Read research-based article: Role of Maternal Beliefs in Predicting Home Learning Activities, Review fieldwork assignment, Review Dr. Nicoll's article.	Burns Ch. 2, 3 Moomaw Ch. 2	Bring copy of research article
3 Jan. 17 online	Number and Operations Strand (counting, comparing, place value, ordinal and cardinal numbers, connecting number words, numerals, quantities, rational numbers, addition and subtraction, computation tools), Number & Operations Activity Centers, Principles in Teaching.	Burns Ch. 4, 5 Moomaw Ch. 3	
4 Jan. 24	Mathematics for English Language Learners, Cultural Aspects of Children Mathematics, Processing Standards-Representation, Communication, Problem-Solving, Reasoning, Connections. Lesson Plan Format, pre- and post-assessment.	Burns Ch. 6, 7 Moomaw Ch. 4	Due: Summary of Research
5 Jan. 31 online	Algebra Strand (sort, classify, order, patterns, symbolic notation, qualitative and quantitative change), Algebraic Functions, Algebra Activity Centers.	Burns Ch. 8, 9 Moomaw Ch. 5	Due: Number and Operations Lesson Plan
6 Feb. 7 online	Geometry Strand (attributes of two and three dimensional shapes, composing and decomposing shapes, transformations, visualization, position, direction and distance; find and name locations), Geometry Activity Centers, Geometry Photo Assessment, Midterm review.	Burns Ch. 10, 11 Moomaw Ch. 6	Due: Algebra Lesson Plan
7 Feb. 14	Small Group meeting and planning, Review of lesson plan format, Storybook Math: Book Sharing, Midterm.	Burns Ch. 12,13 Moomaw Ch. 7	Midterm Exam Due: Geometry Lesson Plan

Week	Topics	Reading	Assignments
8 Feb. 21 online	Small Group meeting and planning, Measurement Strand (compare and order, standard and non-standard units, appropriate measurement tools), Data Analysis and Probability Strand (pose questions and gather data, classify according to attributes, parts of sets and data, likely and unlikely), Measurement and Data Analysis Activity Centers.	Moomaw Ch. 8	Due: Burns' Paper Due: Preschool Fieldwork Hours
9 Feb. 28 online	Literature/Math connections: Extend a math concept throughout the day (worksheet) Presentation of implemented lesson and peer evaluation on BlackBoard.		Due: Measurement Lesson Plan Due: School Age Fieldwork hours
10 March 6	Group Presentations, Final Exam.		Due: Data Analysis Lesson Plan submitted on TaskStream Final Exam

Course schedule, topics, evaluation, and assignments may be changed at the instructor's discretion. Modification of this syllabus may be made at any time at the discretion of the professor or the department. Check BlackBoard regularly for current schedule.

Assignments

All assignments must be completed in order to pass the class.

Refer to the rubrics on BlackBoard for detailed information regarding assignment content and grading procedures. All assignments must be submitted with the rubric, identified by the student ID number. No assignment will be accepted after the last class meeting. Journal entries will be required to earn and validate attendance and class participation.

Journal Responses 60 pts. Due weekly

There will be points given for each *in class journal response* completed. Points will be earned for thoughtful responses that focus on understanding of mathematical concepts, as well as how personal attitudes and teaching methods can affect children's learning and self-confidence.

Research Article Review 50 pts. Due Jan. 17 (week 3)

Read an empirical research article. The article will be current research related to the field of mathematics. Read the article thoroughly, and highlight important supporting information, findings, and conclusions. After you have read the article thoroughly, write a 2-3 page article summary that includes the following information. You must write in an essay format (no bullet points or lists).

Marilyn Burns Paper 50 pts. Due Feb. 21 (week 8)

Prepare a paper based on the Marilyn Burns book. The paper should be 3-4 pages in length and written in a narrative style. The paper should include, but is not limited, to:

- Critique and analysis of the book.
- Personal reflection.
- Application to mathematics education.
- Application to personal life.

Math Unit 140 pts

Number & Operations	Due Jan. 31 (week 5)
Algebra	Due Feb. 7 (week 6)
Geometry	Due Feb. 14 (week 7)
Measurement	Due Feb. 28 (week 9)
Data Analysis & Probability	Due March 6(week 10)

The math unit will be completed throughout the course, with a final grade at the end of the class. The final unit must include five complete lesson plans, with one lesson for each of strands: Number and Operations, Algebra, Geometry, Measurement, and Data Analysis.

Fieldwork & Presentation 125 pts. Due Mar. 6 (week 10)

Observe, document, and teach preschool and school-aged children for a total of 15 hours. Documentation of the hours must be completed on the provided form. Using the focus questions, write a 2-page reflection at the end of the 15 hours of observations.

The math unit assignment consists of understanding the NCTM mathematic content and processing standards and integrating them into pre-planned, developmentally appropriate mathematics lessons for young children. Two of your pre-planned lessons must be presented in your last five hours of fieldwork.

Construct one lesson for each mathematical content strand following the provided lesson plan format. You will develop five lessons. The NCTM strand and component must be identified on the lesson, as well as the lesson goal and objective. Lessons must be based on developmentally appropriate practices and must include a pre- and post-assessment. Integrate manipulatives/props into every lesson. Introduce or review three to six vocabulary terms. Also include four specific, open-ended questions that relate to the lesson objective. Include detailed instructions of the activity children participate in, as they discover the mathematical concept being introduced or practiced. The activity may be independent practice or teacher directed. Include four additional extension activities on the lesson plan. Extensions may teach the objective in a different way, scaffold on the presented objective, or incorporate the objective into other subject areas. The same objective must be explored in the extension activities. Differentiate instruction in the lesson plan. All materials and resources needed must be written on the lesson plan. Write the prepared lessons in a clear manner with the correct use of grammar, spelling, and language mechanics.

A final project in the form of a lesson plan presentation will be the culmination of the fieldwork. *All 15 hours and the culminating project must be complete in order to receive any credit in this class.*

Group Presentation 25 pts. Due Mar. 6 (week 10)

Make a collaborative effort to teach and present one textbook chapter or article to the class. Thorough coverage of the chapter content is expected, as is full participation from each member of the group. The group presentation must include a hands-on follow-up activity that highlights one math strand, supports the content of the chapter or article, and follows the lesson plan format.

Midterm & Final 150 pts. Feb. 14 & Mar. 6 (week 7 & week 10)

Demonstrate knowledge of the course content through written application.

Evaluation/Assessment Rationale for Grade Determination

Course grades will be compiled by the completion of the following assignments:

Journal Responses.....60
Math Unit 140
Fieldwork & Presentation 125
Research Article Review 50
Marilyn Burns Paper 50
Group Presentation 25
Midterm & Final 150
Total: 600 points

Grading Scale:

564-600 pts. .....A
546-563 pts. .....A-
528-545 pts. .....B+
504-527 pts. .....B
480-503 pts. .....B-
468-479 pts. .....C+
444-467 pts. C
420- 443 pts. .....C-
360-419 pts. .....D

A

Superior knowledge regarding details, assumptions, implications, history; superior thinking with information relevant to application, critique and relationship to other information.

B

More than adequate knowledge regarding technical terms, distinctions, and possesses an ability to use information.

C

Basic knowledge needed to function and carry on learning regarding major principles, central terms, major figures, also possesses an awareness of field or discipline.

Attendance & Participation

Attendance is mandatory. No points will be earned for attendance. There will be one absence allowed with no penalty, however, the second absence will constitute 20 points being deducted from the total points earned in the class. Any student who is more than 30 minutes late will be counted as absent for that class meeting. Students who are absent

two (2) times must make an individual appointment with the professor before the next class meeting to discuss future attendance requirements and the possibility of receiving a "non-passing grade" in the class. Students are responsible for all class materials and information. Much of the information presented in class will not be found in the text materials. Students will be expected to be punctual, stay the entire class session, and have required materials and assignments prepared for each class.

Grading

Grading will be assigned on a point basis. The point distribution takes into consideration diverse learning styles. The grading criteria consists of multiple forms of assessment to include: active/creative demonstration of course content through cooperative group work and verbal presentations, research skills in course content, communication of course content through written application, formal assessments structured as mid-term and final, and application of course content through in-class assignments, activities, and journal reflections. Papers, assignments, and exams will be graded on your ability to demonstrate your understanding of the material presented in the readings, discussions, and outside assignments. Quality work includes mastery of key concepts demonstrated through application in various contexts. A good command of standard written English is expected in all written work. If an assignment has many grammatical format or mechanical errors, the student may be asked to visit the Learning Enhancement Center. Appointments with tutors must be made 24 hours in advance. Call (909) 593-3511 x4342 for information.

Course Policies

Make up work and extra credit work is not accepted. All assignments for the course are to be completed and submitted on time in order to receive full credit. Late assignments will be penalized 10% of the total points available per assignment for each week late, or portion thereof. Permission for late work is granted only by special request. Incompletes are rare and are available only in "special or unusual circumstances" as negotiated with the instructor prior to the end of the term. See Student Handbook for policies regarding Withdrawals and grade record permanence.

It is the student's responsibility to officially withdraw from the class if no longer attending. Failure to do so will result in the grade of "F". Students are responsible for all information covered in every session. It is recommended that students exchange phone numbers with others so that in case of absence, information covered in class may be obtained. Students enrolled in this course are required to have computer and internet access. All work must be completed on a word processor. Students are expected to access the course website on a weekly basis. Cell phones must be in silent mode during class times. Out of consideration to your classmates and instructor, all calls must be taken out of class. It is expected that students will make responsible judgments to the importance of a call during class time.