University of West Georgia

Course Syllabus
Algebra for P-8 Teachers I (MATH 3803)
Summer 2019

Instructor: M. Yazdani, Ph.D.

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8:00-10:30 TUE THR Boyd 307

Conference Hours:

Tuesday	1:30-2:30
	By Appointment
	1:30-2:30
Thursday	By Appointment

Billstein, R., Libeskind, S., Lott, J., (2018)   A Problem Solving Approach to Mathematics for Elementary School Teacher , 12th Edition, Addison Wesley, Boston, MA.

Catalog Description:
Special emphasis for teachers of grades P-8. Broadens understanding of fundamental concepts of algebra with particular attention to specific methods and material of instruction.

Instructor's emphasis:
This research-based course provides the conceptual framework for understanding and applying properties, models and operations of number systems. Related topics are studied in problem solving settings. Most students in this course have learned mathematics through a rule-based, abstract instructional program. This course is designed to emphasize in-depth basic understandings of number systems and arithmetic patterns, which are core ideas in the elementary mathematics curriculum. Communicating concepts, processes or solutions effectively, in oral and written forms, will be emphasized.

Student Learning Outcomes

After completion of the course, the student will:

Algebra
1. Explain variables
2. Model Algebraic Expressions and Equations
3. Explore the concepts of Exponential Notation
4. Explore the concept of inequality
5. Model and solve linear equations
6. Graph Linear equations
7. Model and solve linear inequalities

Rectangular Coordinate System
1. Investigate the Cartesian Plane
2. Find the slope of a line
3. Model, write, and solve the equation of a line passing through two given points.
4. Model, write, and solve the equation of a line parallel with another line
5. Model, write, and solve the equation of a line perpendicular to another line

Exponents and Polynomials
1. Model and perform addition and subtraction of polynomials
2. Model and perform addition and subtraction of exponents
3. Model and perform multiplication and division of polynomials
4. Model and perform multiplication and division of exponents
5. Explore, model, and compute scientific notation to describe very large or very small numbers

Quadratic Equations
1. Model and solve quadratic equations by factoring
2. Model and solve quadratic equations using quadratic formula

In the context of the above expectations, a student will:

Mathematical processes
1. Make conjectures and use deductive methods to evaluate the validity of conjectures
2. Recognize that a mathematical problem can be solved in a variety of ways, evaluate the appropriateness of various strategies, and select an appropriate strategy for a given problem
3. Evaluate the reasonableness of a solution to a given problem
4. Use physical and numerical models to represent a given problem or mathematical procedure
5. Recognize that assumptions are made when solving problems and identify and evaluate those assumptions
6. Explore problems using verbal, graphical, numerical, physical, and algebraic representations

Mathematical Perspectives
1. Appreciate the contributions that different cultures have made to the field of mathematics and the impact mathematics has on society and culture
2. Understand and apply how mathematics progresses from concrete to representation to abstract generalizations

Communication
1. Communicate mathematical ideas and concepts in age-appropriate oral, written and visual forms for a class presentation
2. Use mathematical processes to reason mathematically, solve mathematical problems, make mathematical connections within and outside of mathematics, and communicate mathematically
3. Reflect on personal learning, change of attitude and beliefs, and growth in understanding through mathematical journaling
4. Translate mathematical statements among developmentally appropriate language, standard English, mathematical language, and symbolic mathematics

Technology
Use appropriate technology such as calculators, computer software, and the Internet to explore, research, solve, and compare mathematical situations and problems

Professional Development
Be familiar with the National Council of Teachers of Mathematics and the Principles and Standards for School Mathematics, the NCTM website, and NCTM journals

Instructional Methods and Activities:

Class lectures will include the following: presentation of material and concepts, activities, problem solving techniques, and class discussions. Quizzes will be given periodically through out the semester. **There is no make up for daily quizzes. There is no make up for the tests unless the student presents a legitimate excuse.**

Evaluation and grade Assignment: **Final grade will be determined by point accumulation as follows:**

Quizzes	80	Points	A	90% - 100%
Project	20	Points	B	80% - 89.99%
Test 1	100	Points	C	70% - 79.99%
Test 2	100	Points	D	60% - 69.99%
Test 3 (Final)	100	Points	F	0% - 59.99%

Class Policies:

Class Rules: You are not allowed to be late for the class more than 5 minutes and you may not leave the class early. You are to turn off your cellular phone during the class and not to text. You are not to use your phone as a calculator.

Attendance: Attendance is mandatory.
I expect each student to attend all classes and follow university policy. There are only 4 unexcused or excused absences allowed per semester. Attendance will be checked each class period and it is your responsibility to sign the attendance sheet.

Conferences: Conferences can be beneficial and are encouraged. All conferences should occur during the instructor's office hours, whenever possible. If these hours conflict with a student's schedule, then appointments should be made. The conference time is not to be used for duplication of lectures that were missed; it is the student's responsibility to obtain and review lecture notes before consulting with the instructor. The instructor is very concerned about the student's achievement and well-being and encourages anyone having difficulties with the course to come by the office for extra help.

Note: If you have a documented disability, which will make it difficult for you to carry out the course work as I have outlined and / or if you need special accommodation or assistance due to disability, please contact me as soon as possible.

Course Schedule

Week	Topic	Week	Topic
1	Algebra NCTM Standard	4	Linear Equations
1	Exponents and Roots	4	Solving Linear Equations Using Manipulative
1	Ratio and Proportion	4	Systems of Equations
2	Percent	5	Polynomials
2	Simple and Compound Interest	6	Quadratic Equations
3	Fundamental Concepts of Algebra	7	x and y Intercepts, Minimum and Maximum
3	Distance, Slope, and Midpoint	8	Equation of a Circle