

MATH 3803

Algebra For P-8 Teachers

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Office hours: 10:50-12:00 and 1:50-3:00 (T, Th)-Carrollton Campus
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Textbook:

Billstein, R., Libeskind, S., & Lott, J. (2012). *A Problem solving approach to mathematics for elementary school teachers*, 11th Edition. Pearson Addison-Wesley: Boston, MA.

Overview of the Course: This course is designed to help prospective P-8 teachers develop mathematical understanding of elementary mathematics through collaboration and problem solving. From this course, you will have opportunities to reconstruct elementary number concepts through problem solving and use those concepts to solve realistic mathematics problems. Although there will be some lecturing at times, there will be ample opportunities for you to reconstruct mathematical ideas by communicating and sharing your mathematical ideas with your classmates.

Goals and Objectives of the Course include, but not limited to,

- Explain the role of place value in the operations of decimal numbers and apply the idea in the computation.
- Convert terminating decimals to and from fractions and percents using the ideas of place value.
- Explain the difference between repeating and non-repeating nonterminating decimals and their connection to rational and irrational numbers and be able to convert repeating decimals to and from fractions.
- Be able to solve a system of linear equations to represent equations graphically, and to explain how the solution of a linear system can be interpreted geometrically.

- Explain the difference between quadratic functions and linear functions, be able to solve quadratic equations, and explain the relationship between equations and function graphs.
- Justify in what problem situations two quantities are proportional and use the proportional reasoning in problem solving.
- Explain difference between simple and compound interests and be able to apply the concepts in real life problem situations.

Attendance: You must be **punctual** and **always** attend class. There could be unforeseen emergencies that do come up. However, anyone missing classes **FIVE times or more** during semester **will not** receive credit for the course. **Students may not enter the classroom once the class starts and will be marked absent.**

Use of Calculator and Other Electronics: Calculator is the only electronic device students can use in the classroom. **Calculator as a phone accessory is NOT allowed.** In fact, in no circumstance are students allowed to use any types of electronics other than calculators. Students who do not abide this rule will be escorted to outside of the classroom, marked absent, and won't be allowed to return for the day.

Grading: Your final grade in the course will be based on your performance on quizzes, a mid-term exam, and a final exam.

Quiz	30 pts
Midterm	30 pts
Final Exam	40 pts
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	100 pts

* Quiz will be given every other week, starting from Week 2. Students will be allowed to drop one lowest score (**No makeup quiz in any case**).

* The midterm exam will be in Week 7. The final exam will be in the week of the final exam week. (Check the date and time in the UWG academic calendar.) No make-up exam is permitted except for medical emergencies that can be documented.

* Students are expected to do homework in a timely manner. However, homework will be neither collected nor graded.

* Final Course Grade:

A	90-100
B	80-89.99
C	70-79.99
D	60-69.99
F	Below 60

Overall Philosophy: You are required to provide detailed explanations of the mathematics on all group investigations, homework, quizzes, and exams. This course emphasizes the conceptual framework of mathematics and is designed to avoid the "turn the crank" style of computation that is typical of many mathematics courses. Just getting an answer is not enough. You are expected to explain your ideas. If you are stuck, work with classmates, bring questions to class meetings, or come and see me during my office hours. It is crucial that you explain what you are thinking. It is possible to receive a poor score for a correct answer if you do not explain your ideas. On the other hand, a clear exposition with a minor computational error can receive a good score.

What I expect from you as learners:

1. Attend every class. Since much of our class time will be spent to construct mathematical ideas through group work, it will be hard for you to catch up if you miss class.
2. You will construct mathematical ideas through your own mathematical investigation and collaboration with your classmates. Respect other students' ideas and be ready to justify your reasoning.
3. Keep up with the homework. You will deepen your understanding of mathematical concepts by working on extra problems on your own. It will also provide a good opportunity to locate where your misunderstandings are.
4. Be an advocate of your own learning. Seek assistance for help. Come and see me during my office hours if you have any questions. You can also go to Mathlab for assistance.

Common Language Link

As a student at UWG, you need to understand school policies and codes. Please read the information on <http://tinyurl.com/UWGSyllabusPolicies>.

Tentative Schedule

Week	Topics	Materials
1 & 2	<ul style="list-style-type: none">• Rational Numbers• Addition and Subtraction with Real Numbers	Exploration 1: Textbook-Ch. 6.1 & 6.2
3 & 4	<ul style="list-style-type: none">• Multiplication and Division with Real Numbers• Ratio & Proportion	Exploration 2: Textbook-Ch. 6.3 & 6.4
5 & 6	<ul style="list-style-type: none">• Decimals and Percents• Operations with Decimals	Exploration 3: Textbook-Ch. 7.1 & 7.2
7 & 8	<ul style="list-style-type: none">• Midterm• Nonterminating Decimals• Percents and Interests	Exploration 4: Textbook-Ch. 7.3 & 7.4
9 & 10	<ul style="list-style-type: none">• Real Numbers• Variables	Exploration 5: Textbook-Ch. 8.1 & 8.2
11 & 12	<ul style="list-style-type: none">• Equations• Functions	Exploration 6: Textbook-Ch. 8.3 & 8.4
13 & 14	<ul style="list-style-type: none">• Equations in a Cartesian Coordinate System• Review	Exploration 7: Textbook-Ch. 8.5
15	<ul style="list-style-type: none">• Final Exam	