

MTH 208 Syllabus
Numeracy for Teachers
University of Rhode Island
Fall 2010

Instructor Contact Information

Name: (Mrs.) Susan L. Osberg
Office: Lippitt 202A
Office Hours: Wednesdays 1:00-1:50 pm; other days by appointment
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Class time/location:

M-W-F 2 pm to 2:50 pm Pastore 122
Recitation M 3 pm to 3:50 pm Pastore 122

Course Materials:

Billstein, Libeskind, Lott. A Problem Solving Approach to Mathematics. 10th Ed.
National Council of Teachers of Mathematics (NCTM). Principles & Standards of School Mathematics 2000 (download at www.nctm.org)
Rhode Island Teaching Standards (Grade Span/Level Expectations)
(download at www.ride.ri.gov/Instruction/gle.aspx)

MTH 208 Catalog Description

Conceptual understanding supporting mathematical ideas presented in current, standards-based elementary mathematics education. An in-depth look at problem solving, number systems, functions, relations, and geometry

Goals

The goal of this course is to prepare you for the mathematical and analytical aspects of the world around you, and to help you develop a stronger, deeper mathematical knowledge as you embark on your teaching journey, so that you may understand the basic skills necessary to present to the diverse groups of students you encounter in your classrooms.

Learning Outcomes

By the end of this course you will:

- Develop a deeper mathematical knowledge required for your teaching career
- Become proficient in problem solving, probability theory, set theory, operations on integers and real numbers, functions and algebra, permutations and combinations, number theory and basic geometry.
- Learn techniques for the classroom such as mental mathematics, estimation methods, the four-step approach to problem solving and other algorithms.
- Have a better understanding of what standards you will be required to address as a teacher.

Expectations

- Attend each class. Come prepared and be punctual. If you must be absent, contact me prior to your absence and explain to me why you will miss class. Random attendance checks will occur
 - Ask questions when needed.
 - Try all the assigned problems. The problems assigned for each topic indicate what I feel are important about that topic and which skills you should focus on.
 - Doing well in this course requires effort on your part: come to class, be ready to learn, review your notes, and ask questions. We will devote some class time each day to addressing any problems or concerns you might have. You are also always welcome to email or stop by my office to ask questions.
 - Be respectful of yourself and your classmates. This means cell phones and iPods should be turned off during class time and the work that you submit must be your own (unless otherwise stated). In support of honest students, those discovered cheating on assignments or exams will receive a grade of zero on the assignment or exam.
 - Use of unauthorized aids such as cheat sheets or information stored in calculator memories will be considered cheating. The Mathematics Department and the University strongly promote academic integrity.
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Grading Policy:

You will be graded on quizzes, tests, homework, and a culminating portfolio throughout the course of the semester. Weights will be given as follows:

Homework/Quizzes	15%
Exam 1	20%
Exam 2	20%
Portfolio	20%
Final Exam	25%

Grading Scale

I will use the following scale for your grade in this course:

Percentage	Letter Grade
93-100	A
90-92	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
73-76	C
70-72	C-
69 and below	F

Make-Up Policy

- Exams **will not be made up** unless you have a documented emergency that you have told me about **prior to the date of the exam**. A make-up exam will be created for you that you must take within **one week** of the original exam date.
- Quizzes and homework assignments **will not be made up**.
- *Your **attendance** in class, therefore, is **critical**.*

University of Rhode Island's Civility Policy

The University of Rhode Island is committed to developing and actively protecting a class environment in which respect must be shown to everyone in order to facilitate the expression, testing, understanding, and creation of a variety of ideas and opinions. Rude, sarcastic, obscene or disrespectful speech and disruptive behavior have a negative impact on everyone's learning and are considered unacceptable. The course instructor will have disruptive persons removed from class if necessary.

Illness Due to Flu

The H1N1 Flu Pandemic may impact classes this semester. If any of us develop flu-like symptoms, we are being advised to stay home until the fever has subsided for 24 hours. So, if you exhibit such symptoms, please do not come to class. Notify me of your status, and will communicate by email or by phone. We will work together to ensure that course instruction and work is completed for the semester. The Centers for Disease Control and Prevention have posted simple methods to avoid transmission of illness. These include: covering your mouth and nose with a tissue when coughing or sneezing; frequently washing your hands to protect from germs; avoiding touching your eyes, nose and mouth; and staying home when you are sick. URI information on the H1N1 will be posted on the URI website at <http://www.uri.edu/news/h1n1>, with links to the <http://cdc.gov> site.

Accommodations

If you have a documented disability that may require individual accommodations, please make an appointment with me as soon as possible and provide written documentation so that, together, we may work out reasonable accommodations to support your success in this course. For further information or assistance, please contact URI's Disabilities Services for Students, Office of Student Life, Room 330 of the Memorial Union, or at (401) 874-2098.

Academic Enhancement Center

The fourth floor of Roosevelt Hall is dedicated to the Academic Enhancement Center. If you are having difficulty in this course, or any course on campus, please call (401)874-2367 to make an appointment with a tutor, or just stop by. They will provide you with academic support and advice free of charge, and have tutors available for many subjects. You can visit their website at <http://www.uri.edu/aec> for more information.

Homework Expectations

- Homework is an integral component to help you do well in this course. Each homework assignment is expected to reflect **your best work** and should either be typed or neatly written with answers clearly shown.
- Your portfolio should contain 15 – 20 samples from the homework or assessments. You will have the opportunity to choose which problems you discuss from the total of approximately 150 problems over the course of the semester.
- Homework will be due at the beginning of class. You will have about a week to complete each assignment, as problems will be posted on SAKAI a week in advance. I will return your homework to you, corrected with annotations, within a week of your handing it in.
- Each problem will be worth 3 points and will be graded as follows:
 - 3 points – completely correct, all work shown, clear and concise, method used is explicitly stated
 - 2 points – completely correct, most work shown, clear, method used is implied
 - 1 point – error in completing problem, work is hard to follow or not available, method used is unclear
 - 0 points – problem is incorrect and work is not available or does not follow, no clear method is used
- You will be expected to review the homework and the feedback I provide before you select your portfolio entries. You are welcome to talk to me during office hours about ambiguities or portfolio questions.
- I will continue to provide you with feedback on your writing for your portfolio entries. You will have the opportunity to hand in a rough draft of your work to me to go over with you before handing it in. We will spend some class time talking about how to formally write your portfolio essays, and you will be able to work in small groups to discuss your writing.

Recitation Hour

Once a week, we will meet for recitation. During this extra 50-minute session, you may expect the following:

- Each week, students will be randomly chosen to present homework problems to the class. While you will still be expected to individually complete and hand in all of the assigned problems, you will know which problem you are specifically assigned to present during recitation ahead of time.
- You will be presenting problems as you may appropriately present them to a class of middle school children. While the problems may include topics beyond the depts. Of knowledge of this age group, your presentation of the problem should address their needs.
- You will hand out copies of your problem and its solution, including the standards addressed, work involved, and connections made, to each of your classmates.
- For example: you may wish to bring in visual aids, manipulatives (blocks, rod, diagrams), or other activities to get your classmates involved in the lesson.

- You will also be responsible for explaining which standard your specific problem is addressing, and how. You may go into a brief description of how that standard would be appropriately addressed in the classroom.
- As time permits, we may also have time to address some of the portfolio tasks.
- During an exam week, we will focus on practice exam problems for our recitation.

During our first recitation, we will go over, in detail, the exact expectations and procedures for the rest of the semester. Presentations will begin in Week 2.

Portfolio Expectations

As we go through the semester, you will collect materials and we will cover skills that specifically address the Rhode Island Grade Span Expectations. As teachers, you will be required to concentrate on each of these standards in your own classroom.

Therefore, for your portfolio, you will be picking 15 – 20 standards and describing how those standards have been addressed throughout the semester. You will be asked to examine specific homework problems, exam questions, or quiz questions that represent each of these standards. Ten portfolio assignments will be provided with additional work and exercises that relate to what has been studied in class. These problems may be included in your final portfolio as representative of some of the standards. At the end of each of the portfolio assignment is a question regarding which standards have been addressed. As part of our recitation class, we can discuss some of these problems and the related standards.

- In a formal report, you will describe common mistakes made for each type of problem and give a detailed, step-by-step, annotated solution of each problem. In your portfolio report, you will talk about how each problem relates to the chosen standard or grade span expectation for Rhode Island students.
- With each homework assignment, you will be asked to note which standard is in focus so that I may follow up with you and ensure you understand how it is being addressed. This way, when you put your portfolio together, you will already have a list of problems with specific standards indicated. This portfolio is worth 20% of your grade, which is equivalent to an exam score. It will be graded rigorously. However, if you keep up with it throughout the semester, and come see me to work out specific details or questions you may have, there is no reason why you should not do well.
- This detailed report could be part of your School of Education portfolio, required for admission into the teaching program of the University of Rhode Island. It is something you will want to hold on to as a future educator. Use it to benefit yourself; add as many details as you can and describe any obstacles you ran into while solving the problems in your report. I will help you with it throughout the semester, as needed.

- More details will follow. For now, make sure you **keep all of the work** that you complete in the course, whether personal notes or graded work, so that when it comes time to create your portfolio, you will have all your materials collected and be prepared to put your report together.

Skill Areas Addressed

We will be addressing three main skill areas throughout this course:

- 1. Use of Quantitative Data**
 Course requires assignments which involve the analysis, interpretation, and/or use of quantitative data to test a hypothesis or illustrate and describe patterns. We will be exploring quantitative data on a daily basis.
- 2. Use of Qualitative Data**
 Course requires assignments which involve the analysis, interpretation, and/or use of qualitative data to test a hypothesis, build a theory, or illustrate and describe patterns. We will be exploring qualitative data throughout the course, building, testing, and proving methods and conjectures.
- 3. Write Effectively**
 Course requires written assignments designed to allow students to practice and improve communication skills with instructor and/or group feedback. Throughout the course, we will be working in groups to improve our mathematical literacy; a skill which you will present in your portfolio.

Proposed Calendar

This is a working timeline of what topics can be expected to be covered in class each week. Topics and/or topic dates **may change** based on level of interest, level of understanding, or other related issues. **Questions in bold will be collected 1 week after the day it is assigned (the date listed on the left of the problems) unless otherwise stated.**

Day	Date	Topics	Homework	Reminders
W	Sept 8 th	Review of Syllabus Intro to Problem Solving	1 problem due Friday	
F	Sept 10 th	Problem Solving	1.1 A: 1, 6, 8, 9, 13 , 15 B: 11, 14, 18	
M	Sept 13 th	Explorations w/ Patterns-1	1.2 A: 6, 9, 10, 16	
W	Sept 15 th	Exploration w/ Patterns-2	1.2 B: 7, 16 , 19	

F	Sept 17th	Describing Sets	2.2 A: 11, 12 B: 4 , 15	
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M	Sept 20 th	Set Operations	2.3 A: 1, 5, 9, 11, 17 , 23 B: 8, 16, 20	Quiz 1 Fri 9/24 1.1, 1.2, 2.2, 2.3
W	Sept 22 nd	Set Operations review Addition/Subtraction of whole Numbers	3.1 A: 3, 5 , 9, 11 B: 9	
F	Sept 24 th	Quiz 1 Addition/Subtraction Whole Numbers & Algorithms	3.2 A: 3, 5, 6, 8 , 12 B: 15, 20	
M	Sept 27 th	Continue +/- Algorithms Intro Multiplication/Division Of Whole Numbers	3.3 A: 3, 9, 11, 15 , 22, 23, 27	
W	Sept 29 th	Algorithms for Mult/Div	3.4 A: 13, 14, 15 16, 17, 21	
F	Oct 1	Mental Math Estimation	3.5 A: 5, 11, 13 , 19 B: 14, 18	
M	Oct 4 th	Variables Equations -1	4.1 A: 2, 3, 4 , 5, 7 B: 6, 7 , 9, 10	EXAM 1 Wed Ch 1, 2, 3 NO CLASS MON 10/11 CLASS MEETS TUES 10/12
W	Oct 6 th	EXAM #1	4.2 A: 1, 2, 3 , 6, 10 B: 4, 5 , 7, 9	
F	Oct 8 th	Equations/Functions -2	4.3 A: 2, 4, 7, 8, 9 10, 11, 15, 18 B: 9, 10, 13, 16	
M	Oct 11 th	NO CLASS – COLUMBUS DAY		
T	Oct 12 th	MONDAY CLASSES MEET Addition/Subtraction of Integers	5.1 A: 1, 2, 3, 8, 9 13, 14 , 15, 21, 27	
W	Oct 13 th	Multiply/Divide Integers	5.2 A: 5, 6, 11 , 13 19, 20, 21 B: 22, 24 , 25, 28	
F	Oct 15 th	Divisibility	5.2 A: 2 , 11, 12 B: 2, 12, 17	

M	Oct 18 th	Prime/Composite Numbers	5.4 A: 8, 10 , 20 B: 6, 7, 19	
W	Oct 20 th	GCD & LCM	5.5 A: 7, 8, 9, 10 , 16 B: 16, 17, 18, 24	
F	Oct 22 nd	Rational Numbers -1	6.1 A: 7, 8, 10 , 16	
M	Oct 25 th	Rational Numbers -2 Add/Subtract	6.2 A: 5, 13 , 15, 18 , 20, 21 , 23, 24	EXAM #2 Wed 11/3 Ch 4, 5, 6
W	Oct 27 th	Multiply/Divide Rational #s - 1	6.3 A: 3, 6 , 14 , 16, 17, 18 , 19 , 20	
F	Oct 29 th	Multiply/Divide Rational #s - 2	6.3 B: 19 , 20, 21, 27	
M	Nov 1 st	Ratio & Proportion & Review for Exam #2	8.1 A: 2, 4, 8 , 9, 23	
W	Nov 3 rd	EXAM #2		
F	Nov 5 th	Probability	9.1 A: 3, 4 , 8, 12, 16	
M	Nov 8 th	NO CLASS TODAY		
W	Nov 10 th	Tree Diagrams -1	9.2 A: 1, 5, 8 , 11, 12 , 14, 16	
F	Nov 12 th	Tree Diagrams-2 Conditional Probability	9.3 A: 3, 4, 5, 9 , 10 9.4 A: 3, 5, 7, 8 , 10 B: 11 , 12, 13 , 17	
M	Nov 15 th	Permutations & Combinations -1		
W	Nov 17 th	Permutations & Combinations -2	9.5 A: 1, 2, 4, 7, 8, 11 , 13 , 14 , 20	
F	Nov 19 th	Display Data	10.1 A: 1, 3, 4, 7, 8 , 10, 15, 16, 17 10.2 A: 1, 2, 5, 6 , 9 , 12, 13	

M	Nov 22 nd	Basic Geometry	11.1 A: 1, 2, 3, 4, 5, 6, 12	
W	Nov 24 th	Basic Geometry & Review	11.2 A: 1, 4, 5, 7, 8 11.4 A: 8, 9, 10, 12, 15 B: 2, 4	
F	Nov 26 th	NO CLASS – THANKSGIVING BREAK		
M	Nov 29 th	Basic Geometry Review Motion Geometry	14.1 A: 5, 6, 7, 12	QUIZ #3 Friday 8.1,, 9.2, 9.3, 9.4, 9.5
W	Dec 1 st	Motion Geometry	14.2 A: 1, 8, B: 8, 9 14.5 A: 4, 5, B: 17, 18	
F	Dec 3 rd	QUIZ #3		
M	Dec 6 th	Finalize Portfolio in Class		
W	Dec 8 th	LAST CLASS – Wrap up & Review		

FINAL EXAM CHAPTERS 1 – 11, 14 (WITHOUT CHAPTER 7)

FINAL EXAM MONDAY, DECEMBER 20, 2010; PASTORE 122; 11:30 AM – 2:30 PM