

MTH 208 Syllabus
Numeracy for Teachers
University of Rhode Island
SPRING 2019

Instructor Contact Information

Name: Meredith Boyajian
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Office Hours: Monday/Wednesday 1:15 - 2:15 pm; or by appointment
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Class time/location:

M-W 10 am to 10:50 am Quinn 314
Friday 9 am to 10:40 am Quinn 314

Course Materials:

- Freitag, Mark A. Mathematics for Elementary School Teachers: A Process Approach. Brooks/Cole Cengage Learning. 2014
- National Council of Teachers of Mathematics (NCTM). Principles & Standards of School Mathematics 2000 (available on Sakai)
- Common Core State Standards (download at <http://www.corestandards.org/Math/> or app)

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, operations on whole numbers, integers and real numbers, functions and algebra, and number theory.
- 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.

Mathematics Educational Objectives

- To apply arithmetic, algebraic, geometric, higher-order thinking and statistical methods to modeling and solving real-world situations.
- To represent and evaluate basic mathematical information verbally, numerically, graphically, and symbolically.
- To expand mathematical reasoning skills and formal logic to develop convincing mathematical arguments.

- To use appropriate technology to enhance mathematical thinking and understanding and to solve mathematical problems and judge the reasonableness of the results.
- To interpret mathematical models such as formulas, graphs, tables and schematics, and to draw inferences from them.
- To recognize the limitations of mathematical and statistical models
- To develop the view that mathematics is an evolving discipline, interrelated with human culture, and understand its connections to other disciplines.

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.
- 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 e 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.

Grading Policy:

You will be graded on quizzes, tests, homework, and a culminating portfolio throughout the course of the semester. There will be approximately 10 very short quizzes. Weights will be given as follows:

Homework	10%
Quizzes	15%
3 Exams	30%
Portfolio	25%
Final Exam	20%

Grading Scale

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

A	93 – 100	C	73 – 76
A-	90 – 92	C-	70 - 72
B+	87 – 89	D+	67 – 69
B	83 – 86	D	63 – 66
B-	80 - 82	D-	60 - 62
C+	77 - 79	F	< 60

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**.*

Illness due to Flu:

The nation is experiencing widespread influenza-like illness. 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 at ndhtennis@uri.edu of your status, and we will communicate through the medium we have established for the class. You will still be responsible to email me your homework due that day. 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 tissue when coughing or sneezing; frequent washing or sanitizing your hands; avoiding touching your eyes, nose, and mouth; and staying home when you are sick.

For more information please view www.cdc.gov/flu or flu.gov. URI Health Services web page, www.health.uri.edu, will carry advice and local updates.

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.

URI's Academic Honesty policy

Students are expected to be honest in all academic work. A student's name on any written work, quiz or exam shall be regarded as assurance that the work is the result of the student's own independent thought and study. Work should be stated in the student's own words, properly attributed to its source. Students have an obligation to know how to quote, paraphrase, summarize, cite and reference the work of others with integrity. The following are examples of academic dishonesty.

- Using material, directly or paraphrasing, from published sources (print or electronic) without appropriate citation
- Claiming disproportionate credit for work not done independently
- Unauthorized possession or access to exams
- Unauthorized communication during exams
- Unauthorized use of another's work or preparing work for another student
- Taking an exam for another student
- Altering or attempting to alter grades
- The use of notes or electronic devices to gain an unauthorized advantage during exams
- Fabricating or falsifying facts, data or references
- Facilitating or aiding another's academic dishonesty
- Submitting the same paper for more than one course without prior approval from the instructors.

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

Regular study and practice with the course material is imperative for success in this class. The Academic Enhancement Center's (www.uri.edu/AEC , 874-2367) Math & Physics Walk-In Tutoring will help you with this.

Math Walk-tutoring (located in Lippitt Hall 206,) is a no-appointment-needed tutoring center where you can work with tutors and other students in this and other math courses. They provide free support in all math courses up to MTH 243. Bring your book, notes, and questions with you.

Tutoring is a great place to practice with classmates and friends, prep for exams, and review what we're learning in class. Check the website address for an up-to-date schedule of tutors' hours:

<http://web.uri.edu/aec/tutoring/> .

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 8 - 10 samples from the homework, assessments, or certain tasks from in-class work. You will have the opportunity to choose which problems you discuss from the total of over 150 problems over the course of the semester.
- Homework will be due at the beginning of class. Homework assigned in one class is due at the start of the next class. I will return it to you as soon as possible (hopefully at the class following) with corrections and commentary.
- 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 or no homework is turned in.
- Homework should not be just a listing of answers; any homework assignment not showing full and complete work necessary to reach the solution will receive a zero (0).
- 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 & Portfolio

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

- You will work in groups to explore and complete problems from the Portfolio Entry Sheets.
- Your group will present one of these problems to the remainder of the class. This presentation will include
 - A statement of the problem
 - Method/strategy used to solve the problem
 - Complete solution to the problem
 - Statement of the NCTM and Common Core standards addressed in the problem
 - Indication of an appropriate grade level for this problem.
- Presentations will be graded as a quiz out of 10 points (2 points for each of the bullets above)
- The task and solution will be uploaded to a specific location on the MTH 208 course page on SAKAI so it is available to the entire class.
- You may wish to bring in visual aids, manipulatives (blocks, rods, diagrams), or other activities to get your classmates involved in the lesson.

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 National Council of Teachers of Mathematics Principles and Standards and the Common Core State Standards in Mathematics. As teachers, you will be required to concentrate on these standards in your own classroom.

Therefore, for your portfolio, you will be solving a variety of problems and matching them to the standards at different grade levels.

You will be asked to examine specific problems that represent each of these standards. Ten portfolio assignments will be provided with exercises that relate to what has been studied in class. These problems will 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 standards for Rhode Island students.
- The portfolio will be graded on a rubric and is worth 25% of your grade; it will be graded rigorously. To aid you in keeping up with the work, there will be three checkpoints throughout the semester. Dates for these checkpoints are listed on the suggested calendar at the end of the syllabus. 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. Checkpoints will be graded as a homework (for completion on time, not necessarily accuracy at that time).
- This detailed report 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.
- The NCTM Principles and Content Standards can be found online at on our Sakai site.

- The Common Core State Practice and Content Standards for mathematics can be found <http://www.corestandards.org/Math/> or download the app.
- Also to be included in the portfolio are four (4) reflection papers (short: 1-2 pages only), one for each article you will be asked to read and reflect upon. For your reflection papers:
 - Read the article first
 - Think of the mathematics content of the lesson discussed in the article – how were you taught that content? Did you learn it well? Did you understand it?
 - What was it about how you learned that content that caused problems or made it easy to learn? Or do you think the method(s) might make it more difficult to learn the content?
 - How would the methods mentioned in the article make it easier for children to master the content?
 - Do you think this is something you might try in your own classroom?
 - Describe how you might use this in your classroom or discuss why you wouldn't incorporate it at all
- Up to 10 homework tasks will also be included in your portfolio with indications of the standards they address. These homework tasks can be those that you found difficult but finally managed to complete, tasks that you found intriguing or tasks that you just “enjoyed” solving and wish to include. **For each of these, comment on why the particular task is included.**
- 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.

FINAL PORTFOLIO DIRECTIONS

Final Due Date: **April 22, 2018**

1. Portfolio will be uploaded into assignments on the MTH 208 page in SAKAI
2. Order of inclusion:
 - a. Standards Cover Sheet (optional)
 - b. Portfolio tasks
 - i. Each portfolio sheet
 - ii. Five tasks (including group tasks) on separate sheets w/ standards; clearly label the sheet number and problem number (as it appears on the sheet)
 - iii. Tasks done by groups – **be sure to have group names on them for identification purposes; explain what you liked and/or would do differently or change/modify.**
 - c. Homework – clearly labeled w/ assignment #, page # and problem #, WITH STANDARDS; **explain why you chose to include in your portfolio**
 - d. Reflections
3. Double-check your spelling and typos so all work is as professional looking as possible.
4. As you work, keep the rubric handy for reference so you are sure you have met all the conditions on it.
5. ********* Upload with the title: Your Name, Portfolio Checkpoint #

PORTFOLIO CHECKPOINT REQUIREMENTS:

CHECKPOINT 3	DATE	PORTFOLIO REQUIREMENTS
1	2/13	Problems from portfolio sheets 1, 2, & 3 2 problems from homework or in-class work Reflection on Reading #1
2	3/6	Problems from portfolio sheets 4 & 5 2 <i>new</i> problems from homework or in-class work Reflection on Reading 2
3	4/8	Problems from portfolio sheets 6, 7, & 8 2 <i>new</i> problems from homework or in-class work Reflection on Reading 3
FINAL PORTFOLIO	4/22	ALL PROBLEMS FROM CHECKPOINTS 1-3 Problems from portfolio sheets 9 & 10 2 <i>new</i> problems from homework or in-class work Reflection on Reading 4

SEE PORTFOLIO RUBRIC FOR DETAILS

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.

MTH 208 PROPOSED CALENDAR SECTION 1 SPRING 2018

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.

MTH 208 PROPOSED CALENDAR SPRING 2018					
DAY #	DAY	DATE	CHAPTER & SECTION	HOMEWORK ASSIGNMENT *due the following class	SPECIAL ANNOUNCEMENTS
1	Wed	1/23	Intro/ Syllabus review 1.1 Intro to problem solving – Banquet Tables	<i>A 1.1 pp 12-15 # 9, 10, 15, 20, 36</i>	
2	Fri	1/25	1.2 Patterns in Problem Solving Pascal’s Triangle Recitation: NCTM Process Standards & CCSSM Practice Standards Review of Requirements; Choose Groups/Names Choose problems	<i>A 1.2 pp 24-27 # 11, 14, 22, 30, 37</i>	
3	Mon	1/28	1.4 Problem Solving & Polya 10 Men in a boat/ Handshake	<i>A 1.4 pp 54-57 # 13, 17, 20, 41, 45</i>	
3	Wed	1/30	1.5 Further Problem Solving Bucket Problem	<i>A 1.5 pp 65-68 # 8, 9, 13, 16, 38</i>	
4	Fri	2/1	Numeration Systems & Place Value PPT – Numeration Recitation: Present from 1 & 2	<i>A 3.1 pp 122-125 # 2, 5, 15, 21, 30</i>	
5	Mon	2/4	Number Bases Base five/hand	<i>A 3.2A pp 135-138 # 6, 13, 15, 17, 27</i>	
6	Wed	2/6	Base ten	<i>A 3.2B pp 135-138 #29, 31, 33, 38, 59</i>	
7	Fri	2/8	Bases other than ten and five Recitation: Present from sheet 3	<i>A 3.3 pp 146-149 # 11a, b, c, 14, 16a, b, c, 21a, b, 55</i>	
8	Mon	2/11	Composed and Decomposed form of number bases	<i>A 3.3B handout</i>	
9	Wed	2/13	4.1 Add/Subtract Whole Numbers	<i>A 4.1 pp 168-172 # 16, 20, 28, 36, 41</i>	Portfolio Checkpoint #1
10	Fri	2/15	4.2 +/- Whole Numbers Recitation: Present from sheet 4	<i>A 4.2A pp 185-188 # 10, 11, 13, 18, 22</i>	

11	Mon	2/18	4.3 Mult/Divide Whole Numbers	<i>A 4.3 pp 203-207 # 16, 19, 23, 26, 47</i>	
12	Weds	2/20	4.4 Mult/Divide Whole Numbers	<i>A 4.4 pp 217-221 # 10, 15a, c, 20a, c, 27a,c, 41</i>	
13	Fri	2/22	5.1 Divisibility Recitation: Present from sheet 5	<i>A 5.1A p 255 # 10, 14, 22, 27, 24</i>	
14	Mon	2/25	5.1 Prime/Composite	<i>A 5.1B pp 254-257 # 30, 35, 53, 58,65</i>	
15	Wed	2/27	Review for Exam #1		
16	Fri	3/1	EXAM #1		
17	Mon	3/4	5.2 GCF/LCM	<i>A 5.2A pp 267-270 # 3, 6, 17, 20, 47</i>	
18	Wed	3/6	5.2 GCF/LCM	<i>A 5.2 B Handout</i>	Portfolio Checkpoint #2
19	Fri	3/8	Pi Day Activities		
	Mon Thru Fri	3/11-3/15	SPRING BREAK		
20	Mon	3/18	6.1 Integers, Absolute Value, Add/Subtract Signed Numbers	<i>A 6.1 pp 300-303 # 13, 15, 21, 41, 57</i>	
22	Wed	3/20	6.2 Mult/Divide Integers	<i>A 6.2 pp 313-316 # 9, 10, 11, 29, 56</i>	
23	Fri	3/22	7.1 Fractions & Rational Numbers Recitation: Present from sheet Present from sheet 6 & 7	<i>A 7.1 A pp 340-341 # 11, 12, 13, 14, 18</i>	
24	Mon	3/25	7.2 Fraction Operations +/-	<i>A 7.2 A Handout</i>	
25	Wed	3/27	7.3 Fraction Ops Mult	<i>A 7.3 A Handout</i>	
26	Fri	3/29	7.3 Fraction Operations Div Recitation: Present sheet 8	<i>A 7.3B Handout</i>	
27	Mon	4/1	Ch 10 Geometry Basics	<i>A 10.1 Handout</i>	
28	Wed	4/3	Review for Exam #2		
29	Fri	4/5	EXAM #2		
30	Mon	4/8	Catch Up Day		Portfolio Checkpoint #3
31	Wed	4/10	Ch 13 Measurement	<i>A 13.1 Handout</i>	

32	Fri	4/12	Ch 13 Area and Volume Recitation: Present sheet 9	A 13.2 Handout	
33	Mon	4/15	14.2 Display of Data	A 14.2 Handout	
34	Wed	4/17	14.3 Measures of Central Tendency	<i>A 14.3 Handout</i>	
35	Fri	4/19	15.2/15.2 Probability Recitation: Present sheet 10	<i>A 15.2 pp 927-931 # 16, 20, 56, pp 945-959 # 14</i>	
36	Mon	4/22	15.2/15.3 Probability	<i>A 15.2 pp 945-949 # 23, 37, pp 959-962 # 12, 14, 20</i>	Final Portfolio Due
37	Wed	4/24	<i>Review for Exam #3</i>		
38	Fri	4/26	EXAM #3		
	Mon	4/29	<i>Last Day of Class Review for Final Exam</i>		
39					
	TBA	TBA	FINAL EXAM		

***** FINAL EXAM: TBA, TBA *****