

Course title and number	Structure of Math I (MATH 365-504)
Term	Fall 2014
Meeting times and location	MW 4:10 – 5:25, Blocker (BLOC) 150

### Course Description and Prerequisites

Structure of Mathematics I. (3-0). Credit 3. Informal logic, sets, relations, functions, whole numbers, numeration systems, binary operations, integers, elementary number theory, modular systems, rational numbers and the system of real numbers. Designed primarily for elementary teacher certification. Others must have consent of instructor. Prerequisites: Must have completed University Core Curriculum mathematics requirements with a grade of C or better.

### Learning Outcomes or Course Objectives

The purpose of taking the MATH 36X series of courses (MATH 365, 366, and 367) is for preservice elementary and middle school teachers to:

- Acquire knowledge of the mathematics topics beyond elementary school mathematics that can aid in developing deeper knowledge of elementary school mathematics;
- Gain experience in using this deeper understanding of the content to answer EC-8 students' math questions (at both a conceptual and procedural level), interpret EC-8 students' possible confusion about the math, and trouble-shoot EC-8 students' possible mistakes;
- Develop the disposition and ability to look at a problem from different points of view;
- See connections between different topics and branches of mathematics;
- Acquire knowledge of where to find potential material for enrichment for more advanced elementary students.

The overall goal of MATH 365 is to provide preservice elementary and middle-school teachers with the mathematical knowledge necessary to provide effective classroom instruction related to numbers and operations. MATH 365 is a mathematics content course for students working toward a teaching certificate that allows them to teach mathematics from Early Childhood through Grade 8. It IS NOT a methods course in which the main focus is on how to TEACH mathematics. It IS a course in which you will be asked to DO AND LEARN mathematics by engaging in logical mathematical thinking about numerical concepts so that you will have a strong content-knowledge base from which you can draw to make appropriate instructional decisions and generate appropriate mathematical questions as a mathematics teacher in elementary or middle school.

Students who participate in this course should improve their ability to:

- Appropriately represent in multiple ways the content related to numbers and operations that they are expected to teach;
- Develop and explain (verbally, pictorially, and in writing) their own mathematical thinking about numbers and operations;
- Use logical reasoning in the context of numbers and operations, including making conjectures and justifying them or providing counterexamples to disprove them; and
- Analyze and evaluate the mathematical reasoning of others.

The development of these broad outcomes will be supported by the accomplishment of more specific outcomes that will be articulated during the course.

During the semester, you will be expected to do homework that has been assigned to promote class discussion. There will be several in-class activities (possibly including technology) that lead to discussions of concepts and language that you will see again on the exams. It is impossible to replicate these experiences outside of the classroom environment; therefore class attendance and participation are extremely important. **Attendance is required and will be taken each class period.**

In addition, you are encouraged to schedule some time to work with other classmates outside of class. The majority of the content of this course focuses on the vocabulary and language of mathematical reasoning. The best way to learn vocabulary and language is to **use it!** In previous semesters, students in this course have found it very helpful to form small study groups, or at least to have a study partner, with which to discuss the ideas and homework problems. Office hours (or times you make by appointment) are also available for extra discussion and questions.

### Instructor Information

Name Tamara A. Carter, Instructional Assistant Professor  
 Email address tcarter@math.tamu.edu  
 Office hours MW 3:00 – 4:00, TR 11:00 – 12:30, TR 3:00 – 3:45 and by appointment  
 Office location 245A Blocker

### Textbook and/or Resource Material

Billstein, R., Libeskind, S., & Lott, J. *A Problem Solving Approach to Mathematics for Elementary School Teachers* (Eleventh Edition). (This textbook will also be used in Math 366.)

*Texas Essential Knowledge and Skills for Mathematics(revised)*

Available here: <http://ritter.tea.state.tx.us/rules/tac/chapter111/index.html>

### Tentative Course Topics, Calendar of Activities

Week 1	Sept. 1, 3	Introduction, Section 1.3	
Week 2	Sept. 8, 10	Sections 2.1-2.3	
Week 3	Sept. 15, 17	Sections 3.1-3.2, Parts of Sections 3.3-3.4	
Week 4	Sept. 22, 24	Parts of Sections 3.3-3.4, Section 3.5	
Week 5	Sept. 29, Oct. 1	Review	<b>Exam 1</b>
Week 6	Oct. 6, 8	Sections 8.2-8.4	
Week 7	Oct. 13, 15	Sections 4.1, 4.2 (Project part A due 10/15)	
Week 8	Oct. 20, 22	Sections 4.3, 5.1 (Mid-semester grades due 10/20)	
Week 9	Oct. 27, 29	Section 5.2, Review	
Week 10	Nov. 3, 5	<b>Exam 2</b>	Sections 6.1, 7.1
Week 11	Nov. 10, 12	Sections 6.1, 7.1 (cont.);Section 6.2, Part of Section 7.2	
Week 12	Nov. 17, 19	Parts of Sections 6.3, 7.2 (Last day to Q drop, 11/21)	
Week 13	Nov. 24, 26	Sections 6.4 (Project part B due 11/24)	Section 7.3
Week 14	Dec. 1, 3	Section 8.1	Review
Week 15	Dec. 8, 10	Redefined Friday, No class	Reading Day, No class
<b>Exam 3 (during the final exam period)</b>	Dec.15, Monday	Section 504: 3:30-5:30 PM	

## Grading Policy

Learning Journal, Activities, Daily Grades	10%
Project	15%
Three Major Exams (25%) each	75%
Total	100%

### *Required Averages*

A = [90,100%]   B = [80,90%)   C = [70,80%)   D = [60,70%)   F = [0,60%)

I reserve the right to lower these cutoffs if I deem it appropriate. Due to privacy issues, I cannot discuss grades over email or by phone.

### *Attendance & Make-up Policy*

The University views class attendance as the responsibility of an individual student. Attendance is essential to complete this course successfully. University rules related to excused and unexcused absences and make-ups are located on-line at <http://student-rules.tamu.edu/rule07>. Please notify me via email prior to the date of an absence, if possible. Consistent with Texas A&M Student Rules, in cases where advance notification is not feasible (e.g. accident, or emergency), you must provide notification by the end of the second working day after the absence. This notification should include an explanation of why notice could not be sent prior to the class. For injury or illness too severe or contagious to attend class, you must provide confirmation of a visit to a health care professional affirming date and time of visit. The Texas A&M University Explanatory Statement for Absence from Class form will not be accepted. It is YOUR responsibility to schedule a make-up. Any assignments given on the day(s) missed will still be due according to the regular schedule.

### **Learning Journal**

Each week you must write at least two entries in your online learning journal (in eCampus). Journal entries are due by midnight on Sunday for the prior week. One entry may be on any class-related topic you choose. The other entry must be based on the list of writing prompts, posted within eCampus. Respond to each prompt from the list at least once over the course of the semester. At the end of the semester, I will ask you to submit a document (available in eCampus) that matches each writing prompt with the date on which you responded to that prompt. I recommend that you track your responses as you go along.

### **Daily Grades and Activities**

In-class activities will generally involve group work and occur during most class periods. Activities may also be assigned as homework. I may collect activities for a grade, participation points, or as a means of taking attendance.

### **Project and Deadlines**

The project will be submitted in two parts. Part A will be due on October 15, and part B will be due on November 24. For each part, choose a mathematics classroom question from the corresponding list posted in eCampus and write a 2-4 page response to the question. Each response should be appropriate for the grade level identified in the question and should draw from the Math 365 course content. As a part of your response to each question, you should identify the TEKS related to the question.

You may discuss your response with other people. In fact, I encourage you to discuss your responses with other classmates; a conversation about clarity and mathematical precision can be invaluable for everyone involved. However, each person must write and submit an individual response to the question selected for each part of the project. Visual representations can be drawn by hand or with software and included electronically as a picture. They will be included in the page count, and it is important that they add value to your explanation but are not distracting.

Remember: This is a mathematics content class, not a methods class. Your priority is a complete, clear, correct, grade-level appropriate mathematical explanation. Everything else is secondary. A grading rubric for the project is available in eCampus. The rubric without Item 7 (26 point rubric) will be used to evaluate Part A, and the complete rubric (30 point rubric) will be used to evaluate Part B.

Along with Part B of your project, you will submit a brief self-assessment. Evaluate your work objectively based on the rubric posted in eCampus and also based on your personal opinion of your finished project. You should fill out the rubric for yourself (except for item 7) and then write two or three paragraphs in which you elaborate on your rubric responses and reflect on your process and product. Include a description of what you learned by completing this project. You should be able to use the feedback you got from Part A to guide your reflections on Part B.

### **Exams**

The three in-class exams will each be 75 minutes long. Everything discussed in class, experienced within an activity, or found in the suggested homework is fair game for content on an exam. You will be expected to show all of your work and many items will require expository writing (as in explanations). The third exam will be during the official final exam time.

### **Extra Help & Preparing for Exams**

#### *Your Professor*

Communication is essential. Please communicate with me before class, after class, during office hours, via email, and through your journal.

#### *Your Classmates*

It is also important to communicate with your classmates. You will learn more and be able to build on each other's ideas if you discuss the material with other people. Please consider setting a regular time to meet. This is a useful idea to carry into your teaching career as well.

#### *Thoughtful Practice*

I strongly recommend that you practice problems from the book. These homework problems, if addressed independently, can provide an "exam-like" experience. They can also give you more ideas for your learning journal entries and your project. See the suggested homework list posted in eCampus.

## **Americans with Disabilities Act (ADA)**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information, visit <http://disability.tamu.edu>. If you require accommodation, please see me as soon as possible so that we can make sure you have the necessary paperwork in order.

### **Academic Integrity**

*For additional information please visit: <http://aggiehonor.tamu.edu/>*

*"An Aggie does not lie, cheat, or steal, or tolerate those who do."*

Academic integrity is vital to an academic community and essential for all teachers. As an Aggie, you have agreed to know and uphold the honor code. Please review the website carefully. I will be happy to answer any questions you might have. You will be asked to sign the honor code on your work as a reminder of that commitment. If you ever have a question about whether or not an action would be

acceptable under the honor code, please ask your professor BEFORE you take the action. If you don't have time to ask, then consider whether or not you would take the action if your professor was beside you.

For this class, I encourage you to study with your classmates (unless I specifically state otherwise). However, all graded work (exams, quizzes, project, etc.) must clearly be your own individual work, and you should not discuss graded work with anyone who has not completed that work yet. If you use a source when completing work, cite the source.

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