

Course title and number	Structure of Mathematics I (MATH 365)
Term	Spring 2018
Meeting times and location	Section 501 meets TR from 8:00 to 9:15 AM in BLOC 117 Section 502 meets TR from 9:35 to 10:50 AM in BLOC 117 Section 503 meets TR from 12:45 to 2:00 PM in BLOC 117

### 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.

### Course Objectives and Learning Outcomes

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 frequent in-class 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 and will be counted toward your daily grade. **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 schedule by appointment) are also available for extra discussion and questions.

### Instructor Information

Name Tamara Carter, Instructional Assistant Professor  
 Phone The department's phone number is 979-845-3261.  
 There is no phone in my office, so email is a better way to reach me.  
 Email Address tcarter@tamu.edu (please include your full name, class, and section in all emails)  
 Office Hours TR 2:15 – 4:15 in Blocker 246 and by appointment in Blocker 245A.  
 Office Location Blocker 245A  
 Webpage www.math.tamu.edu/~tcarter Class material will be posted in eCampus (eCampus.tamu.edu)

### Required Materials

- Billstein, R., Libeskind, S., & Lott, J. A Problem Solving Approach to Mathematics for Elementary School Teachers (Eleventh Edition). Notice that this is NOT the newest edition.
- *Texas Essential Knowledge and Skills for Mathematics* (revised)  
 Available here: <http://ritter.tea.state.tx.us/rules/tac/chapter111/index.html>
- *Texas A&M Student ID* - Bring your student ID to all exams. If you have a question about your grade, please come see me in person and bring your ID.
- *Calculator* - A calculator is not required. However, a five-function or scientific calculator is allowed. Programmable calculators (such as TI83/84/89/inspire), cell phones, tablets, and computers are NOT allowed on exams.

### Tentative Course Topics and Calendar of Activities

All changes will be announced in class, via email, or posted in eCampus. My expectation is that you have read the book sections and completed associated daily assignments before coming to class.

Week 1	Jan. 16, 18	Introduction, 1.3, 2.1	
Week 2	Jan. 23, 25	Sections 2.1-2.2	
Week 3	Jan. 30, Feb. 1	Sections 2.3-3.2	
Week 4	Feb. 6, 8	Continue Parts of Sections 3.3-3.4	
Week 5	Feb. 13, 15	Section 3.5 and Review	<b>Exam 1 February 15</b>
Week 6	Feb. 20, 22	Sections 4.1, 4.2, 4.3	
Week 7	Feb. 27, Mar. 1	<b>Formal Explanation 1</b> due MONDAY by 8 am in eCampus; Sections 5.1, 5.2	
Week 8	Mar. 6, 8	Sections 8.2-8.4 and 1.2	
	Mar. 12-16	Spring Break	
Week 9	Mar. 20, 22	Finish Exam 2 material and Review	<b>Exam 2 March 22</b>
Week 10	Mar. 27, 29	Sections 6.1, 7.1	
Week 11	Apr. 3, 5	Sections 6.2, 6.3	
Week 12	Apr. 10, 12	Sections 7.2, 7.3	
Week 13	Apr. 17, 19	<b>Formal Explanation 2</b> due MONDAY by 8am in eCampus; Section 8.1 and 6.4	
Week 14	Apr. 24, 26	Section 7.4, wrap up module 3, and review	
Week 15	May 1, 3	Redefined Friday – no class for us	Exams start
<b>Exam 3 (during the final exam period) in our regular room</b> Sec. 501 (8:00 class), Friday, May 4, 1:00 – 3:00 PM Sec. 502 (9:35 class), Thursday, May 3, 12:30 – 2:30 PM Sec. 503 (12:45 class), Tuesday, May 8, 8:00 – 10:00 AM <a href="http://registrar.tamu.edu/General/FinalSchedule.aspx">http://registrar.tamu.edu/General/FinalSchedule.aspx</a>			

### Grading Policy

Daily Grades	10%
Formal Explanations	15%
Exam 1 (Sec. 1.3, Ch. 2 and Ch. 3)	25%
Exam 2 (Sec. 8.2-8.4, Ch. 4 and Ch. 5)	25%
Exam 3 (Ch. 6, Ch. 7 and Sec. 8.1)	25%

### Required Averages

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

Due to privacy issues,

I cannot discuss grades over email or by phone.  
 I reserve the right to lower these cutoffs if I deem that it is appropriate, but you should not expect them to be lowered.

## Daily Grades

To earn full points in this category, you will attend class, have your work completed and on your desk by the beginning of class, present your work to the class or your group when requested, share ideas with classmates, and listen attentively when other people share their ideas. **Please attend and participate in all classes.**

- Most book sections will have a reading assignment to help prepare you for that section of material. This should be completed **BEFORE** we start that section. We will use those answers as we discuss the material in class.
- Notebook explanations are an opportunity for you to practice written explanations (and oral explanations when you are picked to present) prior to the exam. Although I will not grade everyone's explanations, I would be happy to read them and provide feedback if you request it. Feedback works best in person (office hours, after class, or a scheduled appointment), but I will respond via email (using track changes in Word) if you cannot meet in person.
- Homework problems should be completed soon after we finish each section. You can check answers to some of these problems in the back of your book. You are welcome to use my text to check most other problems. I would be happy to discuss any of the problems with you, and I encourage you to discuss them with each other. These are excellent preparation for the test.

## Formal Explanations

Explanations (both verbal and written) are vitally important for effective communication of mathematics. Sometimes in your teaching career, you will need to thoroughly explain a topic in writing (to send home to a student who is ill, to send home to explain to parents, or as a replacement for a textbook) at a more complete level than the notebook explanations. You will turn in two formal explanations for this course. I suggest that you start early and work through multiple drafts of the assignment before submitting it.

## Exams

The three in-class exams will last the entire class period. Everything discussed in class, experienced within an activity or assignment, or found in the homework, reading assignment, or explanations 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 (such as explanations).** The third exam will be during the official final exam time. The complete final exam schedule can be viewed at <http://registrar.tamu.edu/General/FinalSchedule.aspx>

## 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 (even if it is less than the 3 days mentioned in rule 7), you must provide confirmation of a visit to a health care professional affirming date and time of visit for the absence to be "excused". The Texas A&M University Explanatory Statement for Absence from Class form will not be accepted in this case.
- Your participation in class is so important that it counts toward your daily grade even when papers are not collected. It is impossible to participate if you are not present. If you miss a class day with an excused absence, no daily grade will be assigned for that day. If you miss class without a university excused absence, you will earn a zero for the daily grade for that day. I realize that there are reasons to miss a class that are not university excused absences, so I will drop one daily grade. Most students use this for a day when they do not feel well but do not visit a doctor.
- It is **YOUR** responsibility to learn what you missed from class, obtain any notes and assignments, and complete assignments by the regularly scheduled due date. In other words, **missing class on the day work was assigned is not a reason for an extension.**
- It is also your responsibility to schedule a make-up if one is needed. Departmental make up exam times can be found at <http://www.math.tamu.edu/courses/makeupexams.html>. Make up exams should be taken at the first opportunity after an exam unless you have a university excused absence for that time too. Makeup exams should be taken prior to the next class if feasible. No exams will be administered without prior approval, so contact me as soon as possible if you need to miss a scheduled exam or assignment.
- If class is officially cancelled for any reason, you can expect that the assignments due/taken on the missed class day will be due/taken the next time the class meets. Please also check eCampus for additional information.
- No rule can cover every situation. If you encounter extenuating circumstances, **please communicate** with me as soon as possible.

## Extra Help and Preparing for Exams

### Your Professor

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

### Your Class Notes

Please review your notes after each class and ask questions about anything that is not clear. Your notes will be very valuable as you study for exams as well.

### 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 and provide background for your Formal Explanations. See the homework list posted in eCampus. You will notice that many of these problems are not like problems from the class notes. The goal is for you to have an opportunity to grapple with thought-provoking problems at your own pace. I will be happy to answer questions after you have worked with the problems. These deeper questions (especially the explanation questions) are great preparation for the exams.

### 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, currently located in the Disability Service building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit <http://disability.tamu.edu>

### Academic Integrity

*"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 students and professors. As an Aggie, you have agreed to know and uphold the honor code. Please review <http://aggiehonor.tamu.edu/> 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). Exams must be completed without any assistance from classmates or other unauthorized sources and should not be discussed with anyone who has not yet taken that exam. Other graded work (such as notebook explanations, reading assignments, and formal explanations) can be discussed with classmates, but the work submitted must represent YOUR work and YOUR understanding of the topics. You may NOT "copy" someone else's work even if they have explained it to you. If you use a source when completing any work, cite the source.

### Classroom Environment

Please do your part (attitudes, words, and actions) to make our class a place where everyone can feel comfortable exploring mathematical topics without distractions.

### Copyright of Materials

All class materials (notes, tests, assignments, reviews, solutions, etc.) are copyrighted and may not be copied or reproduced without permission.