

Course Syllabus: Structure and Concepts in Mathematics I

MATH 10A-52079

Instructor: Mr. Steven Zook

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Spring 2018

Office Hours: TWTh 10am – 11am

Meeting Room: FEM 4

Meeting Days: MTWTh

Meeting Time: 1:00 pm – 2:15 pm

Course Description: This course is designed for prospective elementary school teachers. It will study problem solving strategies and skills, number sequences, set theory, ancient numeration systems, number theory, rational and irrational numbers, computation algorithms, and applications of mathematics. Emphasis is on comprehension and analysis of mathematical concepts and applications of logical reasoning.

Course Prerequisites: MATH 103 or equivalent

Course Advisories: Eligibility for ENGL 125 and 126

Student Learning Outcomes:

Upon completion of this course, students will be able to:

1. Apply mathematical principles and techniques to solve problems in different number bases.
2. Apply the concepts of Greatest Common Factor and Least Common Multiple to performing operations on rational numbers.
3. Apply a variety of strategies to solve multi-step problems; including making a table, chart or list, drawing pictures, making a model, using patterns, working backward, guessing and checking, and comparing with previous experience.

Objectives:

In the process of completing this course, students will:

1. Perform calculations with place value systems;
2. Evaluate the equivalence of numeric algorithms and explain the advantages and disadvantages of equivalent algorithms in different circumstances;
3. Apply algorithms from number theory to determine divisibility in a variety of settings;
4. Analyze least common multiples and greatest common divisors and their role in standard algorithms;
5. Explain the concept of rational numbers, using both ratio and decimal representations; analyze the arithmetic algorithms for these two representations; and justify their equivalence;

6. Analyze the structure and properties of whole, rational, and real number systems; define the concept of rational and irrational numbers, including their decimal representation; and illustrate the use of a number line representation;
7. Develop and reinforce conceptual understanding of mathematical topics through the use of patterns, problem solving, communication, connections, modeling, reasoning, and representation; and
8. Develop activities implementing curriculum standards.

Required Text: Beckmann, Sybilla, Mathematics for Elementary Teachers with Activities, Pearson Education, 5th Edition, 2018.

This text is required for reading; however, you do not have to purchase a hard copy of the text since it is available online as an eText with the MyMathLab subscription.

Required Course Material MyMathLab: You will be required to obtain access to MyMathLab. To access the course, use the **Course ID: zook69658**

You will need to first create an account here: www.pearsonmylabandmastering.com

When creating an account, **use your full first and last name as your name appears in official school records**, using usual capitalization rules.

WARNING: Any students who do not gain full paid access to MyMathLab by 1/22/18 may be automatically dropped from the course.

Office Hours: I will be holding regular office hours. I want to be available to you if you need assistance outside of class. Please visit me during the scheduled times for drop-in questions. You may come unannounced during those times. If the scheduled office hours do not suit your schedule, you may arrange a time to meet me in my office. Please don't hesitate to take advantage of these since I want you to succeed – it's what I am here for.

Attendance: As a student, you are expected to attend all classes for the entire period. Please be on time and ready to start when class is scheduled to begin. I ask this out of respect for your classmates and me. **Four (4) absences** may result in a drop from the course. If you decide to drop, it is your responsibility to drop the class officially through the Administration and Records office. In failing to do so, you run the risk of receiving a **grade of F**.

Classroom Behavior: Please take care of any personal responsibilities and needs before entering the classroom. Please **TURN OFF your phones** when entering the class. They should be **off for the duration** of the class period. If you use your phone in class, you may be asked to leave class. While you are in class, I expect you to participate and pay attention. You may not work on the homework in class or prepare for a different class. Please notify me in advance if you plan on bringing a guest to class.

You are allowed to use a **scientific calculator**, but not a graphing calculator for this class. Also, you may not use your phone as a calculator.

Drop Deadline: Tuesday, February 6

Assignments & Exams:

All **online homework** assignments will be completed online at **MyMathLab**. Homework assignments will be due on the due date by **11:59pm** and will cover topics discussed during the previous week. If you submit your homework late, there is a **10% penalty for each day** that the assignment is late.

I will do my best to maintain the pace as laid out in the schedule below. That being said, depending on how quickly or slowly we progress through the material, I reserve the right to adjust homework due dates as needed. Any changes to due dates always will be announced in class.

Throughout the semester, you will earn points for **participation**. Providing responses to questions and participating in activities will earn positive participation points. Absences and tardiness will result in negative participation points. Every three weeks, I will post a participation grade (on a scale from 0-10) in the Canvas gradebook.

There will be regular **class assignment** that will be completed in class.

There will be **three exams** during the course and the dates they will be held are in the course calendar and they will cover the specified content. There will be no make-up exams allowed although it will be possible to schedule a time to take an exam early if it is prearranged.

The **comprehensive final exam** will be held during the ninth week on **Thursday, March 10th, 1:00 pm – 2:15 pm**. If it is to your benefit, the cumulative final exam score will replace your lowest exam score.

Assignment Categories and Weighting

<i>Assignment</i>	<i>Weighting</i>
Online Homework	15%
Participation	5%
Class Assignments	15%
Exams (3 @ 15% each)	45%
Final Exam (cumulative)	20%

Final Grades

<i>Letter Grade</i>	<i>Percent</i>
A	90-100
B	80-89
C	70-79
D	60-69
F	0-59

SPECIAL NEEDS REQUESTS: If you have a verified need for an academic accommodation or materials in alternate media (i.e., Braille, large print, electronic text, etc.) per the Americans with Disabilities Act (ADA) or Section 504 of the Rehabilitation

Act, please contact me as soon as possible.

Please refer to the RC Catalog for the Policies on Academic Dishonesty, Cheating, and Plagiarism, pg. 44.

Course Outline and Schedule

Week 1: Begin Chapter 1: Numbers and the Base-Ten System
Homework 1 due on Friday, Jan. 12
Begin Chapter 3: Addition and Subtraction

Week 2: **Homework 2** due on Tuesday, Jan. 16
Homework 3 due on Friday, Jan. 19

Week 3: **Homework 4** due on Tuesday, Jan. 23
Exam 1 (Chapters 1, 3): Tuesday, Jan 23
Begin Chapter 4: Multiplication
Homework 5 due on Friday, Jan. 26

Week 4: **Homework 6** due on Tuesday, Jan. 30
Begin Chapter 6: Division
Homework 7 due on Friday, Feb. 2

Week 5: **Exam 2 (Chapters 4, 6): Monday, Feb. 5**
Homework 8 due on Tuesday, Feb. 6
Begin Chapter 8: Number Theory
Homework 9 due on Friday, Feb. 9

Week 6: **Homework 10** due on Tuesday, Feb. 13
Begin Chapter 2: Fractions and Problems Solving
Homework 11 due on Friday, Feb. 16

Week 7: **Homework 12** due on Tuesday, Feb. 20
Exam 3 (Chapters 8, 2): Thursday, Feb. 22
Homework 13 due on Friday, Feb. 23

Week 8: Topics from Chapters 3, 5, 6, and 8
Homework 14 due on Tuesday, Feb. 27
Homework 15 due on Friday, Mar. 2

Week 9: **Homework 16** due on Tuesday, Mar. 6
Final Exam on Thursday, March 8 1:00 pm – 2:15 pm

I will do my best to follow the schedule content-wise depending on how quickly we can cover the topics. However, the events in bold will take place on their specified dates.

If any changes are made, I will announce them in class and post them on Canvas.