Math 335 First semester – Course Outline

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Course Overview

The first semester of Math 335 is designed to strengthen your **fluency and confidence with fundamental mathematics**. We will review the basic operations, number systems, standard algorithms, fractions, integers, percentages, introductory algebraic thinking, and foundational geometry.

The emphasis this semester is on **practice and fluency**. You will have many opportunities to work with the mathematics, recognize patterns, improve your speed and accuracy, and become comfortable with the procedures and skills that you will need as a future elementary school teacher.

The second semester will build on this foundation by looking much more deeply at **mathematical understanding, why the procedures work, and how these ideas can be taught effectively to children**.

Course Structure

The course is divided into **four modules**:

1. **The Architecture of Numbers**
2. **Arithmetic and Standard Algorithms**
3. **Integers, Percentages, Input-Output Logic & Variable Conceptualization**
4. **Foundations of Geometry: Shapes, Measurement, Symmetry & Structure**

Each module contains lessons, class activities, practice problems, notes, solutions, WeBWorK practice, and a module test.

Learning Materials and Practice

After each lesson, you will receive:

- Class notes
- A collection of practice problems
- Solutions to the practice problems
- WeBWorK practice

An important rule about practice

Try the problems yourself before looking at the solutions.

The purpose of the practice problems is not simply to get the correct answer. You need to give yourself the opportunity to think, calculate, make mistakes, identify where you are having difficulty, and try again.

Looking at a solution before attempting a problem may make you feel as though you understand the material, but it does not provide the same learning experience as solving the problem yourself.

Your first attempt should always be your own.

Assessment

Your grade will be based on the four module tests and your WeBWorK practice.

Module Tests

There will be **four module tests**, one for each module.

Each module test is worth **20% of your final grade**.

Assessment	Weight
Module 1 Test	20%
Module 2 Test	20%
Module 3 Test	20%
Module 4 Test	20%
WeBWorK Practice	20%
Total	**100%**

Passing the Module Tests

There is an important requirement for this course:

You must achieve a score of 70% or higher on the test for each module in order to pass that module.

In other words, a score of 69% is **not a passing score** for a module test. You need **70% or higher**.

You must pass **all four module tests** in order to pass the course.

Three Opportunities to Pass Each Test

You will have **three opportunities to pass each module test**.

The three tests for each module are **essentially equivalent**. They cover the same material and assess the same skills at approximately the same level of difficulty, although the specific questions and numbers may be different.

If you do not achieve 70% on your first attempt, you will have two additional opportunities to demonstrate that you have mastered the material.

The purpose of having three attempts is to give you an opportunity to:

- Identify the areas where you need more practice.
- Review and practice those skills.
- Correct mistakes.
- Build your fluency and confidence.
- Demonstrate your learning on a subsequent attempt.

Please use the attempts as opportunities to learn, rather than simply as opportunities to repeat the test.

.WeBWorK

Each module will have a corresponding WeBWorK component.

You can earn **up to 5 points for each module**, for a maximum of **20 points** toward your final grade.

WeBWorK is primarily a practice environment. You may practice and take the WeBWorK tests **as many times as you wish**.

You are encouraged to use WeBWorK regularly throughout each module. The goal is to give you enough practice to become fluent and confident with the mathematical skills before taking the module test.

Important Distinction

Please keep the following two requirements in mind:

Module test:
You must achieve **70% or higher** to pass the module.

WeBWorK:
You can practice and retake the exercises and tests **as many times as you wish**, and you can earn up to **5 points per module**.

The WeBWorK points contribute to your final course grade, but **they do not replace the requirement to achieve 70% or higher on each module test.**

Major Topics

Module 1: The Architecture of Numbers

- Number systems and the structure of numbers
- Place value and the decimal system
- Order of operations
- Properties of numbers
- Comparing and representing numbers
- Mental mathematics and efficient calculation strategies

Module 2: Arithmetic and Standard Algorithms

- Addition and subtraction
- Multiplication and division
- Fractions and decimals
- Standard algorithms and computational fluency
- Mental math, estimation, and problem solving

Module 3: Integers, Percentages, Patterns & Algebra

- Positive and negative numbers
- Operations with integers
- Percentages
- Number patterns and algebraic thinking
- Variables and algebraic expressions
- One- and two-step equations
- Tables, graphs, and linear relationships

Module 4: Foundations of Geometry

- 2D and 3D shapes
- Lines, line segments, and rays
- Perimeter, area, and surface area
- Symmetry
- Geometry in everyday life
- **Additional geometry topics may be added if time allows.**

How to Succeed in Math 335

This course is designed to help you become **fluent** with mathematics. Fluency does not come from simply reading notes or watching someone else solve a problem.

It comes from **doing mathematics**.

I strongly recommend that you:

1. **Practice your multiplication tables regularly.**
2. Work on the assigned practice problems before looking at the solutions.
3. Use WeBWorK frequently rather than waiting until the end of a module.
4. Keep track of the types of problems that give you difficulty.
5. Practice calculations until they become increasingly automatic.
6. Ask questions when you are stuck.
7. Use your three test attempts wisely—**practice between attempts rather than simply retaking the test immediately.**
8. Do not be discouraged by mistakes. Mistakes are part of the process of becoming fluent.

If you put consistent time into the course, **you can succeed**.

A Final Note

The purpose of this first semester is to build a strong mathematical foundation.

You may sometimes feel that we are doing things that you learned many years ago. That is intentional. As future elementary teachers, you need to be **comfortable and fluent with the mathematics yourself** before we can spend significant time examining how children understand these ideas and how we can teach them effectively.

This semester: build fluency.
Next semester: deepen understanding and learn how to teach it.

I am looking forward to working with all of you and to having a productive—and hopefully enjoyable—semester together.

Let's get started!