

Math 1118 (1110): Mathematics for Elementary Teachers I
Fall 2019 Section 501 MW 4:30 to 5:45 PM CRN 66912
Instructor: Elaine W. Clark

Contact Information and Office Hours

- **Office:** Academic/Arts and Sciences Bldg. Room 142C
- **Phone:** (505)925-8618 (my office), 925-8600 (Academic office)
- **email:** ewclark@unm.edu or send a course message in Blackboard Learn. I will check email Monday through Friday afternoon unless I am out of town. Expect a response within 24 hours to email messages sent Sunday afternoon through Thursday evening. If you send me a message on Friday afternoon through Sunday I may not see it until Monday.

Office Hours:

I will hold office hours as indicated below. The office hours in my office, A142C, will also be times I will be in a Zoom meeting room for online office hours.

- A142C: Monday/Wednesday 3:00 to 4:30 PM; Tuesday/Thursday 12:00 to 1:30 PM; Wednesday 6:00 to 7:00 PM
- Structure Office Hour in LRC 119: Tuesday 1:30 to 2:30 PM
- Other hours by appointment (this includes evening times online if scheduled ahead of time)

Course Prerequisites and Overview

Course Prerequisites

In order for you to enroll in this course you will need to meet one of the following criteria:

- ACT greater or equal to 22
- SAT greater or equal to 510
- C or better in a previous UNM mathematics course numbered 100 or above (in Spring 2019 this will be changing to C or better in Math 102 or Math 1215Y)
- Place into class based on Accuplacer score

Check with your advisor to determine if you meet one of these requirements.

Course Overview

Sybilla Beckmann, author of the text we will use in the part II class said, “It is easy to think that elementary school mathematics is simple and that it shouldn’t require college-level study in order to teach it well. But to teach mathematics well, teachers must know more than just how to carry out basic mathematical procedures; *they must be able to explain why mathematics works the way it does.*” (emphasis mine)

This course is about what and why – the structure of mathematics – rather than about how. In particular we will *deconstruct* basic arithmetic, look below the surface of the familiar algorithms, and *reconstruct* this arithmetic, based on models and representations. Thus this course is not about doing so much as about explaining. Learning how to effectively explain and use representations will be the main things you will do in this class.

Common Core State Standards

Familiarize yourself with the CCSS addressed in Math 1118. These standards have been adopted by the State of New Mexico, in addition to many other states, and will be referred to throughout the semester.

<http://www.corestandards.org/Math/>

See the Student Learning Outcomes for Math (1110) 1118 at the end of the syllabus.

Text and Tools - Required

Textbook

Mathematics for Elementary School Teachers (7th edition) by Bassarear and Moss (inclusive access through UNM Blackboard Learn). We will cover topics from chapters 1, 2, 3, 4 and 8.

“How to Learn Math”

For this semester I would also like you to enroll in the free online course through Stanford Online called “How to Learn Math.” The link to the Stanford Online site is

<https://lagunita.stanford.edu/courses/Education/EDUC115-S/Spring2014/about>. You will need to create a login profile as well. We will do this the second day of class.

Internet access

Not only is your text available to you through UNM Bb Learn, I will also be posting homework assignments, additional readings, messages, and other communications in Learn. Also, you will need Internet to access the Stanford Online course. You should access these online materials using an actual computer (laptop or desktop) rather than a mobile device. I will not guarantee the materials are readable and useable if you plan to use your phone to access them.

Four-function calculator

A calculator will be useful from time to time. Some of you may be familiar with using the calculator provided on your cell phone, but simple four-function calculators are very inexpensive and a little easier to use than your cell phone in a group setting. That said, do not count on using your calculator to help you *explain* how to do the math we will be doing.

Paper, pencil, and eraser

Some people can do mathematical calculations in their heads but the purpose of this course is to show and explain all the steps of the calculations you are asked to complete. Also, though some people may be able to do things perfectly the first time, for mathematics it is best to use a pencil. I usually carry along an extra eraser.

Course Grade

Your Course Grade will be based on your performance on the following:

Homework assignments	200 points (10 points each assignment)
In-class attendance/participation	200 points (10 points for each class day)
Term Exams (3 of these)	300 points (100 points each exam)
Projects	100 points (50 points each for Project 1 and 2)

Portfolio	50 points
Final project	50 points
Final exam	<u>100 points</u>
Total	1000 points

Depending on the grading option you have chosen, your final course grade will be determined as follows:

- You will receive an A in the course if you have a weighted average of 90% or better.
- You will receive a B in the course if you have a weighted average of 80% to 89%.
- You will receive a C in the course if you have a weighted average of 70% to 79%.
- You will receive a D in the course if you have a weighted average of 50% to 69%.
- You will receive an F in the course if you have a weighted average less than 50%.
- You will receive a CR in the course if you have a weighted average of at least 70%.
- You will receive an NC in the course if you have a weighted average less than 70%.

I do not usually give a + grade unless you are on the borderline between two letters in which case I may give the C+ for example instead of the B-. I give the D+ instead of the C- because a C- is not a passing grade. **You must earn a C or better to pass this course.**

You can resubmit any graded assignment for a higher score if you would like (this includes during term exams), but resubmissions are due within a week of when you received it back graded. You cannot resubmit your portfolio, final project, or final exam for a higher score. Due dates for all assignments are on the preliminary class schedule at the end of this syllabus. Be sure to check in Learn in case there is a change in due date.

Homework Assignments

Completing homework assignments on time is critical to your success in this class. Expect to do 2 to 3 hours of homework for every hour of class meeting time (an average of 6 to 9 hours per week). There will be approximately 20 assignments to turn in, each worth 10 points.

Explaining

For all written assignments, do not just show me that you know how to complete the problem. You also need to explain what you did. The audience for your work should be another student in this class who is having a difficult time. That student should be able to look at your paper, read what you wrote, and think, “Aha! I get it!” That said, do not actually share your work with another student and let them copy. Each homework assignment turned in should at the end be the work of the student whose name is at the top of the page. When I grade these assignments I will be looking for whether you

- addressed all mathematical components presented by the problem,
- showed and *explained* all steps and calculations,
- used notation properly,
- structured answers well so that it is easy to follow the thought process,
- wrote everything legibly (can I read it).

Attendance/Participation

Attendance is expected in this course. Tardiness or early departure may be regarded as an absence.

I *will* drop you if one of the below events occurs:

- You miss the first two days of class (August 19 and August 21)
- You have two or more absences in the first three weeks of class (before September 6)
- You are not turning in assignments during the first three weeks of class (before September 6)

If I drop you from the class or you drop yourself, you will still have to pay for access to the book unless you opt out by August 30.

After September 6 I will not drop you from the class unless you specifically ask me to. Please note that it is your responsibility to drop the course if you stop attending. A failing grade of F may be assigned if the student stops attending and does not drop before the posted deadline.

Participation in the class means being on time and in class for the whole scheduled time. Also, we will have several group activities you will complete during class. In particular, Project 2 is a group project and if you miss any of the days while your group is working on that project, it is up to you to make up the work. Do not force your group members to back up and explain what they did during the class time you missed.

Each class day counts for 10 attendance/participation points. Notice that once you have your 200 points you have enough for that part of your grade – this means you can be absent on some days. I work very hard to make attending class worth your time, so if you miss class you *will* miss something worthwhile.

Term Exams

There are three exams during the course of the term. Exam 2 at least will be take-home. This does not mean I should receive identical papers from two or more people, but I want you to have time to think about your explanations for the questions posed. Each exam is worth 100 points. If you miss an exam that is in class, contact me immediately.

Projects

There are two projects that will occur throughout the semester and a final project you will complete. These are:

- Project 1 – complete the assignments in the Stanford Online course, “How to Learn Math for Students.” I have set some due dates by which you can finish each of the six lessons in this course. None of them are very long and none should take you more than an hour to complete. Let me know if any take you longer than that. At the end of the Stanford course you will be given a completion certificate. Submit this certificate by November 11, 2019 (or earlier) to earn the 50 points for this project. Late submissions will be docked 10 project points for each day it is late.
- Project 2 – numeration system. You will be working in groups to create a numeration system in a base other than base 10. You will need to create numerals, demonstrate how to count, and demonstrate adding, subtracting, and multiplying in your system. We will have some days during the semester when you can work on this project in your groups. This project is worth a total of 50 points.
- Final Project – teaching demo. You will create a lesson that pertains to a topic we cover in this class. More information on this project to come. This project is also worth 50 points. You may

work on this project individually or in groups, but a group project will require a submitted group agreement.

Portfolio

I would like you to keep a binder/portfolio containing all of your notes, handouts, and graded work. This needs to be a three-ring binder with section dividers. You may wish to organize your binder by content (notes, handouts, homework, etc.) or by the topics (numeration, adding whole numbers, etc.), but it needs to be organized. At the end of the semester you will also include a self-reflection page – more about this to come later. The portfolio is worth 50 points in your final grade.

Final Exam

The final exam is in class during finals week (Monday, December 9). Questions on the final will be similar to those you saw on the three term exams, as well as a few on the last section we cover in the class. The final exam is worth 100 points.

Other Important Information

Student Behavior

All students must abide by the Student Code of Conduct as stated in the Pathfinder: <http://pathfinder.unm.edu/>. According to the Code of Conduct, student activities that interfere with the rights of others to pursue their education or to conduct their University duties and responsibilities will lead to disciplinary action. This includes any activities that are disruptive to the class and any acts of academic dishonesty.

Students are expected to behave in a courteous and respectful manner toward the instructor and their fellow students. Texting during class is not permitted, not even during group work. If you have a cell phone it must be silenced or set to vibrate. If you must take a call, please step out of the classroom even during group work. Some people like to have a laptop, netbook, or tablet in class to take notes and look up information on the Internet. As long as your use of a computer or mobile device does not disturb those around you, and as long as what you are doing is pertinent to the class, this is acceptable. If, however, you are doing something that does not have to do with what is happening in class I will ask you to put the device away.

No food is allowed in the classroom and only drinks that are in closed containers.

If you exhibit any behavior that is disruptive or I consider as endangering myself or other students, you will be asked to leave and I will report the incident to the director of Student Services.

Plagiarism and Not Doing Your Own Work

It is a bad idea to plagiarize or to have other people do your work for you. If I receive assignments from two or more people that are supposed to be done individually (for example, the homework assignments and unit tests), you will *all* receive a zero for that assignment.

Equal Access

If you have a documented disability, please provide me with a copy of your letter from Equal Access Services as soon as possible to ensure that your accommodations are provided in a timely manner. It is up to you to obtain documentation of a disability by contacting Equal Access Services at Valencia Campus. I will not guarantee accommodation if I do not receive the appropriate documentation within the first two weeks of the semester.

Title IX

In an effort to meet obligations under Title IX, UNM faculty, Teaching Assistants, and Graduate Assistants are considered “responsible employees” by the Department of Education. This designation requires that any report of gender discrimination which includes sexual harassment, sexual misconduct and sexual violence made to a faculty member, TA, or GA must be reported to the Title IX Coordinator at the Office of Equal Opportunity, oeo.unm.edu . For more information on the campus policy regarding sexual misconduct, see: <https://policy.unm.edu/university-policies/2000/2740.html>

Student Learning Outcomes for Math (1110) 1118

Course Goal # 1: Represent numbers and operations with models.

- **SLO 1:** Use visual models, including physical objects, drawings of counts, lengths, and area, number lines, and symbols to represent numbers and operations, and flexibly move between representations.
- **SLO 2:** Explain the relationship between contexts and the appropriate mathematical operations.

Course Goal # 2: Identify and use the deeper structures of arithmetic.

- **SLO 1:** Analyze and perform multiple methods for doing addition, subtraction, multiplication, and division.
- **SLO 2:** Analyze student work, assess the validity of arguments, and identify mathematical misconceptions in mistakes.
- **SLO 3:** Describe and use the relationships between operations to represent and solve problems.
- **SLO 4:** Describe and use strategies for mental computation and estimation using fact families, the structure of base-ten numbers, and the properties of arithmetic.

Course Goal # 3: Explain concepts in arithmetic.

- **SLO 1:** Explain procedures for doing addition, subtraction, multiplication and division with base-10 numbers using correct mathematical terminology and notation.
- **SLO 3:** Explain why the commutative and associative properties of addition and multiplication and the distributive property of multiplication over addition make sense.
- **SLO 4:** Explain how estimation and rounding work using models and correct mathematical terminology and notation.

Course Goal # 4: Explain concepts in geometry.

- **SLO 1:** Describe, using appropriate vocabulary and representations, how points, lines, and angles relate to each other and to applications in the real world.
- **SLO 2:** Explain different ways to classify two-dimensional shapes based on their properties.

Course Outline: Tentative Schedule of Topics and Assignment Due Dates

Week	Sections	Assignments	Due Dates (due at beginning of class)
1, 2	1.1	Read Section 1.1 (p. 1-20) Exercises: 6, 7, 8, 9 Proj 1: Register in Stanford Online Class	08/21/19 08/21/19 08/21/19
2, 3	2.1	Exercises: 16, 17, 20, 28 Read Section 2.1 (p. 37-53) Exercises: 7, 8, 10, 11 Proj. 1: HTML Lesson 1	08/26/19 08/26/19 08/28/19 08/28/19
3, 4, 5	2.2	Exercises: 18, 20, 46, add'l problem Read Section 2.2 (p. 57-68) Exercises: 2, 17, 18, 19, 20 Read Section 2.2 (p. 69-77) Exercises: 21, 24, 30, 36, 37, 53 Exam 1	09/04/19 09/04/19 09/09/19 09/09/19 09/11/19 09/16/19
5, 6	2.3	Read Section 2.3 (p. 82-middle of 92) Exercises: 1, 2, 4, 5 Proj 1: HTML Lesson 2	09/18/19 09/23/19 09/23/19
6, 7	3.1	Exercises: 8, 9, 14, add'l problem Read Section 3.1 (p. 101-112) Exercises: 3, 6, 8, 10, 12 Proj 2: Numeration System – part 1 (in class)	09/25/19 09/25/19 09/30/19 09/30/19
		Read Section 3.1 (p. 113-125) Exercises: 15, 23, 26, 36 (see 35 for instr.) Proj 2: Numeration System – part 2 (in class)	09/30/19 10/02/19 10/02/19
		Proj 1: HTML Lesson 3	10/02/19
7, 8	3.2	Read Section 3.2 (p. 128-141) Exercises: 1, 2, 5, 6, 15, 16 Exercises: 17, 22, 34, 35 Proj 1: HTML Lesson 4	10/02/19 10/07/19 10/09/19 10/09/19
		Proj 2: Numeration System – part 3 (in class)	10/09/19
9, 10, 11		Read Section 4.1 (p. 169-190) Exercises: 1, 2, 6, 8 (at least 3 ways) Proj 1: HTML Lesson 5	10/14/19 10/16/19 10/16/19
		Proj 2: Numeration System – part 4 (in class)	10/21/19
		Exam 2 is take-home and will be due Exercises: 13, 15, 17, 19, 23	10/21/19 10/23/19
		Exercises: 24, 40 (explain an estimate), 53	10/28/19
11, 12		Read Section 4.2 (p. 195 – 205) Proj 2: Numeration System – complete (in class)	10/28/19 10/28/19
		Exercises: 2, 4, 6, add'l problem	10/30/19
		Read Section 4.2 (p. 206-211)	10/30/19
		Exercises: 7, 10, 14, add'l problem	11/04/19

12, 13	Proj 1: HTLM Lesson 6	11/04/19
	Read Section 8.1 (p. 436-451)	11/04/19
	Exercises: 4, 9, 11, add'l problem	11/06/19
	Topology Problems (maybe)	11/11/19
	Proj 1: HTLM complete	11/11/19
13	Exam 3	11/13/19
14	Read Section 8.2 (p. 455-467)	11/18/19
	Exercises: 8, 10, 13, 14	11/20/19
	Read Section 8.2 (p. 472-485)	11/20/19
	Skip sections on Pythagorean Thm., special line segments, distance, and midpoint	
15	Exercises: 19, 30, 33, 34	11/25/19
	Final Project (start in class)	11/25/19
	No class on Wednesday, 11/27/19	
16	Work on Portfolios and Final Project	12/02/19
	Final Project presentations	12/04/19
17	Final Exam	12/09/19
	Last day to add or change grade mode in LoboWeb (by 5:00 PM)	08/30/19
	Last day to opt out of inclusive access text	08/30/19
	Labor Day Holiday – no class	09/02/19
	Last day to drop without a grade, 100% tuition refund (by 5:00 PM)	09/06/19
	Fall Break	10/10 through
10/13/19	Last day to drop without Dean's permission (by 5:00 PM)	11/08/19
	Thanksgiving Break	11/28 through
12/01/19	Last day to change grade mode with form, drop with Dean's permission	12/06/10