

Math 111: Mathematics for Elementary and Middle School Teachers I
Fall 2017 Section 501 CRN 34705
Syllabus

Instructor: Elaine W. Clark

Office: Academic Bldg. Room 142C

Office Hours:

Face-to-Face at Valencia Campus: 142C: Monday through Thursday 12:00 noon to 1:30 PM. Math Center: Tuesday/Thursday 2:30 to 3:30 PM

Other hours by appointment

Phone: 925-8618 (my office), 925-8600 (Academic office)

email: ewclark@unm.edu or send a 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 will may not see it until Monday.

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 19
- SAT greater or equal to 450
- C or better in a previous UNM mathematics course numbered 100 or above.
- 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 another text for this 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 more about what and why – the structure of mathematics – that 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.

Course Learning Objectives

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 2: Explain why the commutative and associative properties of addition and multiplication and the distributive property of multiplication over addition make sense.

SLO 3: 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.

Common Core State Standards: Familiarize yourself with the CCSS addressed in Math 111. 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://newmexicocommoncore.org/mathematics/>.

Text and Tools - Required

Textbook: The primary text for this course (and for Math 215) is “Mathematics for Elementary School Teachers,” 6th Edition, by Tom Bassarear & Meg Moss; with the companion text “Explorations: Mathematics for Elementary School Teachers,” 6th ed. same authors. In Math 111 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 is required. I will be posting all homework and discussion assignments, additional readings, messages, and other communications in Learn. Also, you will need Internet to access the Stanford Online course.

A four-function 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.

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 come from:

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|--------------------------|-----|
| • Homework assignments | 20% |
| • In-class participation | 20% |
| • Unit tests | 30% |
| • Projects/papers | 15% |
| • Portfolio | 5% |
| • Final assessment | 10% |

You should log into Learn regularly for postings and weekly assignments.

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 unit tests but resubmissions are due within a week of when you received it back graded. Due dates for all assignments are on the preliminary schedule. Be sure to check in Learn in case there is a change in due date.

In-Class Activities and Attendance: 20% of your course grade

I will take roll each class day and your attendance will count in this portion of your grade. Also, we will spend many class sessions with some sort of problem solving exercise or activity that you will complete in groups. These activities are designed to build on what you have read and what we have discussed in class. If you do not do the assigned reading or discussion postings, you will not fully understand the purpose of the activities. If you miss class you can still do the activity for that day but it is up to you to ask what we did in class.

If you miss three (3) consecutive class periods, you may be dropped from the course. ***Do not assume I will drop you,*** especially after the third week of class, but be aware it is an option I may exercise if warranted. If you miss any classes in the first week of a closed section, you *will*

be dropped. If you show no or little progress, have not purchased your book, or have not made other arrangements for completing the homework by the end of the third week of class you *will* be dropped.

The last day to drop without being assigned a grade is Friday, September 1 by 5:00 pm.

Homework: 20% of your course grade

Because we focus on the underpinnings of mathematics, the why, rather than just computations, you will be asked to do more reading and writing than calculation.

Your homework will be two types:

- Reading questions you should complete before we discuss in class,
- Exercises from the text that go with the reading or activities posted in Learn.

I will give extensions for three assignments without need for documentation, meaning you can turn them in one class period late for full credit. I will not accept original assignments that are more than a week late.

Unit Tests: 30% of your course grade

There will be three unit tests which will collectively count for 30% of your course grade (10% each). These will be take-home rather than in-class tests, so you will have time to think about your answers. I encourage you to work in study groups outside of class, but the final product you turn in for your tests must demonstrate your own, individual understanding of the material, not simply a parroting of the group consensus. If you do not show your own work and thought processes on the test, you may not receive credit. If you simply copy answers directly from the board when we review the test, you will receive at most half credit for the question. Do not share your test papers! You must demonstrate that *you* have thought about the explanations given in class and have made them your own. Any papers for which I suspect cheating or copying, *both parties* will receive no credit.

Projects and Papers: 15% of your course grade

There are three projects/papers you will complete for this course (see more information about each posted in Learn).

- For your first project/paper I will ask you to find out about the National Council of Teachers of Mathematics.
- Your second project/paper will be a Base Numeration System project.
- Your third project/paper will be the discussion postings relating to the Stanford Class “How to Learn Mathematics.”

Each project/term paper is worth 100 points. *Term papers and discussion postings must be completed individually.*

Portfolio: 5% of your course grade

Please collect all assignments, in-class and out-of-class, in a portfolio. You will be asked to organize these assignments in a way that is meaningful to you. At the end of the semester you will also be asked to complete a final self-assessment of your work based on these assignments.

Half of your portfolio grade comes from you having your collected work organized in a binder and half will come from your self assessment.

Final Assessment: 10% of your course grade

During finals week you will be asked to present a lesson based on a mathematical concept pertinent to the course. Details for this will be given separately

Time to allot for out-of-class assignments: Plan right now to spend an average of 9 hours per week outside of class reading your text, doing homework and discussion postings, and working on your papers/projects or unit tests. This time cannot all be lumped on the weekend; you will need to spend some time during the week as well. There is no guarantee you will pass if you dedicate this amount of time, you still need to demonstrate understanding of the material and use your time wisely, but you are not likely to pass if you don't.

Tools for Success

- Study groups are a good option. But again, do not copy assignments from each other that are to be done individually.
- I have posted face-to-face office hours and am also available in the Math Center. If the posted times are not convenient for you, let me know and we can schedule a mutually agreeable time. Let me know if you plan to attend office hours so I don't run off to the copy room or something.

Plagiarism and Not Doing Your Own Work

It's a bad idea to plagiarize or to have other people do your work for you. Refer to the UNM-Valencia Catalog for the campus policy on "Dishonesty in Academic Matters." If I receive assignments from two or more people that are supposed to be done individually (for example, the homework assignments and unit tests) that are basically identical, you will *all* receive a zero for that assignment.

Classroom Behavior

Texting during class is not permitted. 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 Dean.

Netiquette Expectations

One of the overriding principles in online conversations is to "craft your responses effectively." It is sometimes difficult to remember that there are real people reading posted messages. This is

especially true of online communication where others do not have the opportunity to see body language or hear tone of voice; therefore, they have a greater possibility of misunderstanding what is meant.

Please, follow these guidelines in all of your online responses and discussion postings.

- Honor everyone's right to an opinion.
- Do not belittle a person if you feel they are not fully understanding something.
- Respect the right of each person to disagree with others.
- Respond honestly but thoughtfully and respectfully; use language which others will not consider foul or abusive. You may also use emoticons to convey a lighter tone.
- Respect your own privacy and the privacy of others by not revealing information which you deem private and which you feel might embarrass you or others
- Be prepared to clarify statements which might be misunderstood or misinterpreted by others.

A Special Note about Anger

- Do not send messages that you have written when you are angry, even anonymous ones. In the online world, angry messages are known as "flaming" and are considered bad behavior. Venting and flaming are two different things. It is possible to vent without sounding angry. Stick to the facts of what is causing you frustration.
- Do not send messages that are written all in upper case; this is the visual equivalent of SHOUTING. It is considered aggressive and is considered bad behavior. If you ever feel like shouting a message, take a deep breath and wait until you have calmed down before responding. Then, respond in a calm and factual manner.

In the discussion threads in Blackboard Learn I will provide a thread for venting. These postings will be anonymous and will allow you to vent any frustration you are feeling about the assignments, the course, and math in general. Sometimes I may answer these posts if there is an issue that needs addressing.

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, Jeanne Lujan at (505)925-8910 and here is their web page: <http://www.unm.edu/~vcadvise/equalaccess.htm> . I will not guarantee accommodation without the appropriate documentation.

Responsible Employee: 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 (see page 15 - <http://www2.ed.gov/about/offices/list/ocr/docs/qa-201404-title-ix.pdf>). 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>.

Important Dates:

Unless otherwise indicated, these deadlines are by 5:00 PM Mountain Time

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| • Last day to add or change grading mode on LoboWeb | Friday, Sept. 1 |
| • Labor Day Holiday (no classes) | Monday, Sept. 4 |
| • Last day to drop without a grade/add with form | Friday, Sept. 8 |
| • Fall Break | Th/Fr, Oct. 12 & 13 |
| • Last day to drop <i>without</i> Dean's permission | Friday, Nov. 10 |
| • Thanksgiving Holiday | Th/Fr, Nov. 23 & 24 |
| • Last day to change grading mode with form | Friday, Dec. 8 |
| • Last day to drop <i>with</i> Dean's permission | Friday, Dec. 8 |

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Preliminary Schedule (subject to change as needed)

Week	Date	Day	Topic(s)	Complete Before Class	Will Do In Class
1	8/21	Mon.	Syllabus	Written activities you complete at home will be due the next class meeting	Go watch the eclipse!
	8/23	Wed.	Getting Started and Problem Solving;	READ: Sect. 1.1 DO: Write responses to the questions listed in HW1	Register for HTLM; Explorations 1.2, 1.3 Counting Stars,
2	8/28	Mon.	Process, Practice, and Content Standards	READ: Sect. 1.2 DO: Write responses to pencil questions p.11 #11, 14, 16	Explorations 1.4, 1.6
	8/30	Wed.	Numeration	READ: Sect. 2.2, p. 53-61 DO: Write responses to What Do You Think? and pencil questions p. 31-36 #4, 26, 39	Number Sense Mayan Numeration Exploration 2.4
Last day to add a course or change sections: Friday, Sept. 1 by 5:00 PM MT					
Last day to change grading option in LoboWeb: Friday, Sept. 1 by 5:00 PM MT					
9/4 Mon. HTLM Lesson 1, and Discussion Postings and Responses due in Learn					
Labor Day Holiday, Monday, September 4 (no class)					
3	9/6	Wed.	Numeration	READ: Sect. 2.2, p. 61-68 DO: Write responses to pencil questions p. 69 #1, 14	Begin Project 2 Numerals and Counting
	Last day to drop without a grade is Friday, September 8 by 5:00 PM				
9/10 Sun. HTLM Lesson 2, and Discussion Postings and Responses due in Learn					
4	9/11	Mon.	Addition	READ: Sect. 3.1 p. 75-84 DO: Write responses to What Do You Think? and pencil questions p. 69-72 #7, 10, 11, 13	Exploration 3.2 Project 2 Addition
	9/13	Wed		READ: Sect. 3.1 p. 85-95 DO: Write responses to pencil questions p. 96-97 #2, 7, 24	Explorations 3.3, 3.4 Project 2 Addition
9/17 Sun. HTLM Lesson 3, and Discussion Postings and Responses due in Learn					
5	9/18	Mon.	Subtraction	READ: Sect. 3.2 p. 98-105 DO: Write responses to What Do You Think? and pencil questions p. 96-97 #20, 27, 29	Explorations 3.5 Project 2 Subtraction
	Begin Unit 1 Take-Home Test				NCTM Paper due

8/18/2017

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5	9/20	Wed.	Subtraction	READ: Sect. 3.2 p. 105-111 DO: Write responses to pencil questions p. 111+ #1, 2, 4, 5	Explorations 3.6 Problem Structures
			END UNIT 1		
6	9/25	Mon.	BEGIN UNIT 2	Unit 1 Test Due	
			Multiplication	READ: Sect. 3.3 p. 114-122 DO: Write responses to What Do You Think? and pencil questions p. 111+ #11, 14, 18	Explorations 3.9, 3.10 Problem Structures Circles and Stars
	9/27	Wed.		READ: Sect. 3.3 p. 122-132 DO: Write responses to pencil questions p. 132+ #1, 4, 9	Exploration 3.13 Project 2 Multiplication
10/1 Sun. HTLM Lesson 4, and Discussion Postings and Responses due in Learn					
7	10/2	Mon.	Wrap up Unit 1	DO: p. 132+ #17, 22, 32, 44	Go over Unit 1 test Finish Project 2
	10/4	Wed.	Division	READ: Sect. 3.4 p. 136-140 DO: Write responses to What Do You Think? and pencil questions	Exploration 3.15 Zero
10/8 Sun. HTLM Lesson 5, and Discussion Postings and Responses due in Learn					
8	10/9	Mon.	Division	READ: Sect. 3.4 p. 140-147 DO: Write responses to pencil questions p. 154+ #2, 4, 6, 9	Explorations 3.18, 3.19
				Unit 1 Test Corrections Due	
	10/11	Wed.		READ: Sect. 3.4 p. 147-153 DO: Write responses to pencil questions p. 154+ #14, 28, 30, 40, 42	Remainders Order of Operations Exploration 3.22
Fall Break Thursday - Sunday, October 12 through 15					
9	10/16	Mon.	Fractions and Rational Numbers	READ: Sect. 4.2 p. 174-185 DO: Write responses to What Do You Think? and pencil questions p. 154+ #50, 63, 59, 71, 74	Explorations 4.6, 4.7
			Begin Unit 2 Take-Home Test		Midterm Portfolio
	10/18	Wed.	Fractions and Rational Numbers	READ: Sect. 4.2 p. 185-194 DO: Write responses to pencil questions	Explorations 4.8, 4.11

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Week	Date	Day	Topic(s)	Complete Before Class	Will Do In Class
10	10/23	Mon.	Fractions and Rational Numbers	p. 195+ #3, 5, 6, 11, 15, 20, 29, 30, 31	Exploration 4.13
			END UNIT 2		
	10/25	Wed.	BEGIN UNIT 3 Decimal Fractions	Unit 2 Test Due READ: Sect. 4.4 p. 222-231 DO: Write responses to What Do You Think? and pencil questions	Explorations 4.21, 4.23 Converting between decimal and common fractions
10/29 Sun. HTLM Lesson 6, and Discussion Postings and Responses due in Learn					
11	10/30	Mon.	Decimal Fractions	READ: Sect. 4.4 p. 231-235 DO: Write responses to pencil questions p. 241+ #1, 5, 8, 10	Explorations 4.24, 4.26
	11/1	Wed	Wrap up Unit 2	DO: p. 241+ #15, 16, 17, 24	Go over Unit 2 test
12	11/6	Mon.	Geometry	READ: Sect. 8.1 p 425-435 DO: Write responses to What Do You Think? and pencil questions	Exploration 8.1, 8.4
	11/8	Wed.		READ: Sect. 8.1 p 435-443 DO: Write responses to pencil questions p. 443+ #1, 3, 18	Exploration 8.2 Angles
				Unit 2 Test Corrections Due	
Last day to withdraw without Deans approval is Friday, November 10 by 5:00 PM					
13	11/13	Mon.	2-Dimensional Figures	READ: Sect. 8.2 p. 446-451 DO: Write responses to What Do You Think? and pencil questions p. 443+ #10, 13, 17	Dimension What lives where Exploration 8.7
	11/15	Wed.		READ: Sect. 8.2 p. 452-456, 461-466 DO: Write responses to pencil questions p. 477+ #1, 3, 4	Polygons Exploration 8.9
14	11/20	Mon.	Topology	READ: Handout in Learn DO: p. 477+ #6, 7, 11, 42	US Map
	11/22	Wed.		DO: Exercises from Handout	Mobius strip exploration
			Begin Unit 3 Take-Home Test		
Thanksgiving Break Thursday - Sunday, November 23 through 26					
I don't know yet what we will be doing the last two weeks of class. Will update					