



MATH 2118 Sect. 501
Mathematics for Elementary and Middle School Teachers III
Summer 2021

Instructor Information:

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I will check email Monday mornings through Thursday afternoons unless there is a university holiday, often on Fridays, and usually on Sunday afternoons unless I am out of town. Expect a response within 24 hours to email messages sent Sunday afternoon through Thursday. If you send me a message on Friday or Saturday, expect a message no later than the following Monday.



Figure 1 Photo by Adam Solomon on unsplash.com

Instructor-Led Help Sessions:

- Online scheduled instructor-led help sessions will be in this Zoom room: <https://unm.zoom.us/j/99306957046>
- Password to enter Zoom room: HelpMe
- Hours:
 - Mondays 5:00 to 6:00 PM
 - Tuesdays 11:00 AM to 12:15 PM and 3:00 to 4:00 PM
 - Thursdays 11:00 AM to 12:15 PM and 3:00 to 4:00 PM
- Other times by appointment
- ***I am quite happy to be available in the evenings and on Sunday afternoons if you let me know you want to meet.*** We may also set up a scheduled once-a-week meeting time in the evening if folks would like that real-time interaction.
- ***Be sure to check my weekly schedule posted in Learn to make sure I have not changed availability. Occasionally I may have an unexpected or impromptu meeting come up that takes me away from “the office.” It is a good idea to let me know you are coming so I don’t run off.***

Course Overview

Sybilla Beckmann, author of our textbook 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 the structure of mathematics – the why rather than how. We will ***deconstruct*** arithmetic and geometry to look below the surface of the familiar algorithms and rule. We will be using models and representations. Thus, this course is about explaining. Learning how to effectively explain and use representations will be the main things you will do in this class.

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Course Prerequisites

To be eligible for this course you need to have a C or better in MATH 1118 and either need to place in based on the approved UNM-Valencia placement or have completed MATH 1215X.

Course Goals and Student Learning Outcomes

In addition to the Learning Objectives listed below, familiarize yourself with the Common Core State Standards (CCSS) addressed in Math 2118. These standards have been adopted by the State of New Mexico, in addition to many other states, and may be referred to throughout the semester. <http://newmexicocommoncore.org/mathematics/>

Goal 1: Understand data analysis from the viewpoint of elementary school curriculum, such as making and interpreting dot plots, pictographs, and bar graphs.

SLO 1: By the end of the course, students will be able to display, analyze, and interpret data.

Goal 2: Know how to use appropriate vocabulary, notation, and reasoning in valid mathematical explanations.

SLO 2: By the end of the course, students will be able to construct valid mathematical explanations.

Goal 3: Understand problem solving in the context of mathematical applications.

SLO 3: By the end of the course, students will be able to model and solve a variety of mathematical applications using various approaches relevant to the K-8 curriculum.

Goal 4: Understand the interconnectedness of elementary mathematical concepts and relate these concepts to application problems.

SLO 4: By the end of the course, students will be able to describe real-world situations that model expressions and equations.

Goal 5: Understand algebraic concepts from the viewpoint of elementary school curriculum.

SLO 5: By the end of the course, students will be able to demonstrate understanding of algebraic concepts of the K-8 curriculum.

These outcomes will not necessarily be addressed sequentially, they are just numbered for ease of reference.

Text and Tools

Required Text: *Mathematics for Elementary Teachers with Activities* (5th edition) by Sybilla Beckmann. We will cover topics from these chapters in our text: 2, 3, 5, 6, 7, 9, 11, 12, 15.

An e-text will be automatically available to you inside our class in Learn. In order to not be billed for access to this e-text, you will need to opt out by June 18. See email sent by the University Bookstore.

Internet and Computer (required): You will need reliable access to a computer, high-speed internet, and the ability to upload free software to access the online materials. All the programs we use should be fully compatible with mobile devices – phones, tablets, laptops, etc. You will also need administrative rights to download free software or plug-ins or add-ons on the computer you plan to use for this course. If you do not own a computer, be sure you schedule time to spend in the computer labs on campus or in a public library.

Accessing our Course in Zoom: This is a remote/scheduled class which means you are expected to sign into the class Zoom room at the scheduled times each week. We will be doing group work during class in breakout rooms, so skipping class or signing in and muting your microphone and video camera while you go do something else will not be a good strategy. The Zoom room for our class is:

Math 2118 Summer 2021
<https://unm.zoom.us/j/99976936109>

Meeting ID: 999 7693 6109
Passcode: SumMath!

Dial by your location
+1 346 248 7799 US (Houston)
+1 669 900 6833 US (San Jose)

UNM Learn (required): You will need access to Blackboard UNM Learn. This is the primary program we will use for communication in the class. You will use your UNM NetID to log into UNM Learn. You may access it directly via <http://learn.unm.edu>

Four-Function Calculator: A calculator will be useful from time to time. 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.

Time for this Course

This is a three-credit-hour course in the summer so plan right now to spend a minimum of **9 to 12 hours per week** outside of class for homework and assignments. Explanation is a key part of the what you are learning in this class and making sense of what is going on in mathematics takes time. Do not try to complete homework

assignments just before class time but begin working on them as soon as possible after I introduce the topic in class.

Course Grade

As a departure from the standard paradigm, I am moving away from the usual points for evaluated work. There is a lot of research out in the world to show that even positive reinforcement with external motivators (good grades for good work) in the long run is ineffective and can actually destroy the intrinsic desire to learn. For example, I provide you a link below to an article “Punished by Rewards? A Conversation with Alfie Kohn” by Ron Brandt in Educational Leadership (Sept. 1995)

<http://www.ascd.org/publications/educational-leadership/sept95/vol53/num01/Punished-by-Rewards%C2%A2-A-Conversation-with-Alfie-Kohn.aspx> .

Unfortunately, I cannot completely depart from assigning you a course grade. Below is how each type of assignment will contribute to your final course grade and further on I give more detail about what I expect for completion of these assignments.

- | | |
|---|------------|
| • Attendance/In-Class Activities | 20% |
| • Attempted Homework | 20% |
| • Best of Homework | 40% |
| • Final Project | 20% |

W grade: You will be assigned a W grade if you drop the course before the last day of classes – July 31 – and after the last day to drop without the W – June 18. Pay attention to the time you are able to devote to this class during the first two weeks. If it is too fast-paced or you are missing class, you may need to decide to take this class during a regular 16-week semester.

Reasons I will drop you from the course:

- Student who does not log into Learn and complete course contract during the first week of regular classes.
- If you specifically request me to drop you from the course.
- If you have excessive absences without working out an arrangement with me, you **may** be dropped from the course. Do not just stop attending and expect me to automatically drop you.

If you do not log into Learn and complete the course contract during the first week of class, you will be dropped.

How to Complete Work for This Course

The only way to learn how to explain mathematics is by explaining mathematics, sort of like riding a bicycle. You can watch people riding bicycles all day, but until you get on the bike and find your balance, you won't be able to ride. Below is the list of assignments I am asking you to work on and that will contribute to your course grade.

Show up to class/In-class activities.

I will do my best to make coming to class worth your time. I find that a lot of what we do in this class is discuss misunderstandings in mathematics and rethinking those basic skills to build a deeper understanding. You need to be part of that discussion in order to learn and rewire your brain away from incorrect models. Also, during nearly every class session you will work in groups on various in-class activities. Documentation of what your group learned from the activity will be due at the end of class (or by 11:59 PM on that day). I will ask you to rotate who the scribe/recorded for the group is so that everyone can have a chance to represent what the group learned.

There are 11 out of the 16 class meeting times during which you will participate in these in-class activities. Completion of an activity will be determined by

- Documentation of what the group learned turned in on time (by 11:59 PM on that day).
- Indication that at least 80% of the activity was completed correctly.
- If at least 80% of the activity is not correct, your group may resubmit for credit. Resubmission may be done individually.
- Your score for your course grade will be how many of these I have recorded as complete out of 10 possible. That score will be weighted to count as 20% of your course grade.

Work on Homework Problems

Though it is good to think together, it is also important for you to build your own, individual understanding. I will assign some problems for you to struggle with in the homework. Do NOT go get someone else to do these problems for you. If you do not struggle with the problems, your learning will be short circuited. Try them, pull your hair out, write down your questions, and bring those questions to class.

There are 26 homework assignments – two to five assignments per day and two out-of-class assignments in June. My expectation is that you will attempt these problems by the posted due date and come to class with any misunderstandings or questions you have. What you need to do to earn credit:

- Scan and upload your best attempt on these problems by class time on the posted due date. They do not need to be entirely complete, but you need to have enough information on the page to let me know you have thought about a method of solution and an appropriate explanation.
- We will use some of class time to discuss these problems so that you can improve your understanding. Be sure to ask *your* questions!
- I will give you feedback on your attempts that you can use to polish and refine your answers.
- “Completion” of this work will be that you attempted all of the problems by the posted due date and uploaded your attempt on time.
- Your score for your course grade will be how many of these are “complete” out of 24 possible. That score will be weighted to count as 20% of your course grade.

Best of Homework

Three times during the term you will submit a selection of five of the homework problems that you feel you understand the best. These submissions should take what you did on your initial attempt and then refine your understanding and explanation based on in-class discussions and feedback from me. The selection of problems is up to you, though you should choose them from different sections of the text.

- Completion of these assignments means that you have:
 - Answered the mathematical question correctly using a correct method of solution.
 - Explained what you have done and why, drawing on number and/or spatial sense as well as an understanding of the structure of the mathematics.
 - Used models, drawings, diagrams, and/or graphs appropriately to support your explanations.
 - Turned in on time (by 11:59 PM on the posted due date).
- Your score for your course grade will be how many of the five you submit in each unit correctly out of five. There are three units, so this gives a total of 15 problems. That score (how many you completed out of 15) will be weighted to count as 40% of your course grade.
- You may resubmit any that are not complete once to improve your score.

Final Project

At the end of the semester, you will have a chance to present a short lesson on a topic related to one we covered in class. This may be a good time for you to take the part of arithmetic, geometry, pre-algebra, or statistics that you have struggled with the most and see if you can “tame that lion.” Make it your own, build your understanding. Pick something challenging, not something you already know well. We will all help you figure out where you still need to polish or rethink. This project will count as 20% of your course grade.

Working Ahead and Late Assignments

It is conceivable that you may be able to work ahead on your assignments. For individual work, this is fine. If it is something that requires collaboration do not try to drive your group faster than they are comfortable going. Also, speed does not necessarily build understanding.

As for late work, if you get too far behind in the class you will not know your questions about the topic and your learning will suffer. Late attempts on homework will not receive credit for that part of the course grade, though you could still use any of those assignments for the Best of Homework part of your grade.

My goal is to give you feedback on all attempted homework problems by 11:59 PM on the posted due date that you turned it in **before** class. Anything submitted for feedback after class on the assigned due date, expect it within a week. If an assignment is more than class period late, I will no longer give you feedback on it.

Support

Office Hours

Feel free to come into the Zoom conference room for online office hours or make an appointment to get help. I can also be available online via Zoom in the evening or on Fridays or Sundays if you let me know ahead of time you would like to meet.

Study Groups

You may work together with other members of our class. However, for work meant to be done individually, if the results are too much alike, all parties involved will lose points. Let me know if you want to collaborate so we can work out the logistics.

Tutoring

By the nature of this course the tutoring offered at UNM-Valencia will likely not be appropriate. Most of our tutors know how to solve a problem but most cannot develop the sorts of explanations I would like you to come up with. Be sure to come to the help session hours for help. I will be looking for an embedded tutor also to help with this course.

Student Services

There are various services provided in our Student Services Department. See below about equal access. Also, we have a testing center, advising, and career placement available: <http://valencia.unm.edu/students/student-services.html>

Other Important Information

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. If you are a Valencia campus student, contact Equal Access Services at Valencia Campus (505)925-8910 and <http://valencia.unm.edu/students/advisement-and-counseling/equal-access-services.html>. If you are a main campus student you can receive documentation from the main campus Accessibility Resource Center <http://as2.unm.edu/>. I will not guarantee accommodation without the appropriate documentation.

Netiquette and Behavior 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, misunderstandings are more likely.

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

- Honor everyone’s right to an opinion.
- 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 becoming “ugly.” 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 course, but netiquette rules still apply. Sometimes I may answer these posts if there is an issue that needs addressing.

Plagiarism and Not Doing Your Own Work

It is a bad idea to plagiarize or to have other people do your work for you. UNM has specific policies concerning academic dishonesty: <https://policy.unm.edu/regents-policies/section-4/4-8.html>.

Don't Cheat! Cheating, in my opinion, is any behavior that short circuits *your* learning. This can range from mindlessly mimicking what you see in the readings or examples, to simply copying someone else's solution, to paying someone to complete the course for you. I won't always be able to detect when you have cheated, at least not at the time you cheat, but the chance of you becoming an effective teacher goes down considerably the more you cheat. Also, there is no point in me awarding you an A for the course if you used Chegg or some other program on the computer to do your homework for you. Therefore, be sure you demonstrate that you are leaving this class knowing more than when you started.

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 (see pg 15 - <http://www2.ed.gov/about/offices/list/ocr/docs/ga-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>

Semester Deadlines

Summer 2021

- Monday, June 7: First day of class, classes available in Blackboard Learn.
- Friday, June 11, by 5:00 PM NM time: Last day to add a class or to change credit hours or grade mode in LoboWEB.
- Friday, June 18: Last day to drop without “W” grade and with 100% refund on LoboWEB.
- July 5: Independence Day Holiday
- Friday, July 16: Last day to drop *without* Dean’s permission on LoboWEB. Will receive “W” grade and will be responsible for tuition for the course.
- Friday, July 30: Last day to change grade mode w/form, Last day to add w/form, Last day to drop w/ Dean’s permission w/ form.

Due Dates by Date

Dates	Due at Beginning of Class	We will do during class
06/08	Show up to class!	Intro, Act. 11A, 11B, 11C
06/10	Read Sections 11.1 – 11.3 Pgs. 492 – 512 HW 11.1: p. 504+ Exercises: 1, 2 HW 11.2: p. 509+ Exercises: 1, 3	Discuss attempted HW Act. 11F, 12L, 12M
06/15	Out-of-Class Assignment	Create your own ruler – instructions in Learn Act. 12A
06/17	Read Sections 12.1, 12.2, 12.3, 12.4, 12.6 Pgs. 525 – 547, 554 – 557 Out-of-class assignments due HW 11.3: p. 513+ Exercises: 1, 3 HW 12.6a: p. 560 Exercise: 4	Discuss attempted HW Act. 12C Derive area formulas
06/22	HW 12.1: p. 529 Exercise: 1 HW 12.2: p. 534+ Exercises: 2, 6 HW 12.3: p. 542+ Exercises: 2, 7 HW 12.4: p. 547 Exercise: 9 HW 12.6b: p. 560 Exercise: 6	Discuss attempted HW Wrap up Unit 1

Best five of Unit 1 HW due by 11:59 PM Wed. 06/23

06/24	Read Sections 2.2 – 2.4 Pgs. 48 – 74	Review of Fractions Act. 2A, 2D, 2J, 2O
06/29	Read Section 3.4 Pgs. 123 – 127 HW 2.2: p. 57+ Exercises 2, 3 HW 2.3: p. 67 Exercise: 1 HW 2.4: p. 77+ Exercises: 4, 7	Discuss attempted HW Act. 3O, 3Q, 3R, 3S
07/01	Read Sections 5.1, 6.4, 6.5 Pgs. 196 – 201, 253 – 265 HW 3.4: p. 131+ Exercises: 2, 6, 10, 11	Discuss attempted HW Act. 5D, 6M, 6O, 6P

July 5 is Independence Day Holiday (it's a Monday)

Dates	Due at Beginning of Class	We will do during class
07/06	Read Sections 7.1 – 7.3, 11.4 Pgs. 281 – 304, 514 – 518 HW 5.1: p. 203+ Exercises: 1, 7, 11 HW 6.4: p. 259+ Exercises: 6, 15 HW 6.5: p. 268+ Exercises: 8, 9	Discuss attempted HW Act. 7A, 7B, 7E, 7G
07/08	HW 7.1: p. 288+ Exercises: 1, 2, 7 HW 7.2: p. 297+ Exercises: 1, 3 HW 7.3: p. 305+ Exercises: 4, 5 HW 11.4: p. 521+ Exercises: 7, 10	Discuss attempted HW Wrap up Unit 2

Best five of Unit 2 HW due by 11:59 PM Mon. 07/12

07/13	Read Sections 2.1, 9.3 Pgs. 42 – 48, 396 – 401	Problem Solving, Equations Act. 9I, Word Problems
07/15	Read Sections 9.4, 9.5 Pgs. 404 – 420 HW 9.3: problems posted in Learn	Discuss attempted HW Act. 9K, 9N, 9P Word Problems
07/20	Read Sections 15.1, 15.2 Pgs. 673 – 690 HW 9.4: p. 410+ Exercises: 4, 6, 8 HW 9.5: p. 423+ Exercises: 2, 6, 13	Discuss attempted HW Act. 15B, 15D Start Final Project
07/22	Read Section 15.3 Pgs. 693 – 698 HW 15.1: p. 680+ Exercises: 1, 3, 9 HW 15.2: p. 691+ Exercises: 2, 3	Discuss attempted HW Act. 15E, 15I, 15L, 15N Check in for Project
07/27	HW 15.3: p. 700+ Exercises: 4, 10, 14, 15	Discuss attempted HW Work on Final Project

Best five of Unit 3 HW due by 11:59 PM Wed. 07/28

07/29	Final Project presentations
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