



Mathematics 4020: Mathematics for Elementary Teachers II

Fall Semester 2023

TuTh, 04:35 PM-06:30 PM; LCB 121

Instructor: Van Vo

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Office Hours: Mon/Tue/Wed/Thu, 11AM-12PM and 3PM-3:50PM, or by appointment

Office Location: JWB 107

Course Web Site: Canvas

Required Materials

Sybilla Beckman, Mathematics for Elementary Teachers with Class Activities, 5th edition, ISBN-13: 978-0134392790. A physical copy is OK. If you took Math 4010 last semester, you will still have access to the book through IA under Canvas for your Math 4010 (but not Canvas for this course).

Course Description

This is a continuation of MATH 4010, but deals with a different part of the mathematics curriculum. It is a content course that gives teachers a better understanding of topics in geometry appropriate to Grades K-6, including measurement, symmetry, geometric shapes, congruence and similarity. The course presents ideas from an intuitive perspective that prepares teachers to discuss geometry with children, and from a computational perspective to enable teachers to work with students to calculate distance, area and volume in both customary and metric units, measure angles, construct figures, and more. A brief discussion of topics in statistics and probability for Grades K-6 is also included. See the Utah State Core Curriculum at www.usoe.k12.ut.us. Teaching methods pertaining to this material are discussed in EDU 5360. Prerequisites for this course expire after one year.

Course Outcomes

Here is a list of the topics to be mastered. The abbreviations stand for the domains of the Common Core State Standards: OA=operations and algebraic thinking (an asterisk indicates an emphasis on algebraic thinking), MD=measurement and data, G=geometry.

- Angle sum of triangle (G)
- Find unknown angles (G, OA*)
- Locations using circles (G)
- Quadrilateral relationships (G)
- Quadrilateral definitions (G)
- Angle sums of arbitrary polygons (G, OA*)
- Different measurements of same object (MD)
- Metric prefixes (MD)
- Interconnectedness of metric system (MD, OA*)
- Precision in measurement (MD)
- Measurement conversions (MD, OA*)
- Area conversions (MD, G, OA*)
- Volume (and related) conversions (MD, G, OA*)
- Area of rectangles (G, OA*)
- Moving and additivity for lattice polygons (G)
- Triangle area (G)
- Parallelogram area (G)
- Parallelogram not determined by sides (G)
- Circumference and Area relationship (G, OA*)
- Area and Perimeter relationships (G,OA*)
- Prism attributes (G)
- Pyramid attributes (G)
- Angles around the point of a polyhedron (G, OA*)
- Nets for polyhedra (G)
- Surface area (G, OA*)
- Surface area of prism (G, OA*)
- Surface area of regular pyramid (G, OA*)
- Surface area of cylinder (G, OA*)
- Surface area of cone (G, OA*)
- Volume of prism (G,OA*)
- Volume of regular pyramids (G, OA*)
- Volume of cylinder (G, OA*)
- Volume of cone (G, OA*)
- Apply translations (G)
- Apply rotations (90, 180, etc) (G)
- Apply reflections (V/H/45) (G)
- Determine transformation (G)
- Determine polygon symmetries (G)
- Informal congruence (G)
- Determine shapes are similar (G)
- Proportions from similarity (G, OA*)
- Similarity word problems (G, OA*)
- Similarity and area/volume (G,OA*)

Teaching and Learning Methods

This will be an in-person course meeting Tuesdays and Thursdays. Classes will be a blend of lecture and active learning. This will involve a mixture of problem solving, working on giving explanations, and analyzing student work.

Attendance & Punctuality

Attendance is not counted as part of the final grade, but should be considered necessary for course success. Active participation is expected. In order to ensure a vibrant learning environment in which we may discuss coursework, students are expected to complete homework before the start of class. Exams may not be made up in advance or after the fact without serious extenuating circumstances. The University of Utah student code allows for making up quizzes or exams in advance for “officially sanctioned University Activities ..., or government obligations, or religious obligations”. Please contact me at least one week in advance of any such obligations to arrange accommodation.

Course Policies

Participation:

- Students are expected to log in and check Canvas every weekday for posted announcements and assignments. Students are also strongly advised to set up notifications for Canvas so they do not miss any important notifications.
- This is an in-person course. No remote options are offered. No portion of the grade is based on attendance, but you are responsible for any due dates, classwork, or announcements missed for missed classes. If you are planning to miss an extended stretch of classes for any reason, I recommend that you drop this class and take it when you are able to attend.

Electronic Devices in Class:

- As shiny devices tend to distract humans both near and far from said shiny device, as a courtesy, please keep phones put away unless explicitly allowed by the instructor. Note that phones are not allowed on exams.

Canvas:

- All course materials, such as lecture slides, assignments, solutions, grades, etc. will be posted on the Course Canvas site. Class announcements will be done via Canvas. You will be responsible for any information contained in them as well as the information announced in class.
- It is also your responsibility to check your Canvas messages regularly. There will be occasions during the semester that we may need to reach out to you individually (e.g. regarding a grade or assignment) and it is in your best interest to respond promptly.
- Feel free to contact me by email or Canvas message. I will do my best to answer emails promptly. I would like to encourage you to email me only if it is something personal that requires individual attention, if instead you have questions about logistics of the class, course material and assignments, and anything else your classmates may wonder as well, please post a question on the Discussions Board instead. This way the information is shared quickly to the entire class, and each of you can benefit from seeing other classmates' questions.

Classroom Social Equity:

- I strive to be ethical, kind, fair, inclusive and respectful in my classroom and expect students to behave likewise. In this regard, I have these requests of students:
 - Please do tell me, discreetly, if you have any sort of anxiety disorder, TBI, PTSD, C-PTSD, or any other challenge that would cause psychological harm to you by me calling on you in class. I want students to feel a little

uncomfortable and stretched during class, while working on problems as a large group, but I definitely don't want to cause any harm to any human being. So, please discreetly tell me if that is the case for you and I will confidentially accommodate your request.

- If your preferred name is different from your legal first name.

Communication:

- I will always do my best to ensure the communication relevant to the course is clear and transparent, it is your responsibility as well to keep yourself updated by regularly checking: the announcements on Canvas, your Umail, the posts on the Discussions Board, and pay attention to the announcements given in class and Discussion Section.

Academic Misconduct:

- All work submitted must be your own. Any breach of the university academic integrity code will result minimally in a zero grade on the given assignment and be referred to the dean of students per the academic integrity code. Although collaboration in thinking about homework problems is allowed and encouraged, all submissions must be original work. You are responsible to make sure that you are fully understanding any classwork done in collaboration with others. Academic misconduct is not tolerated. The Student Code for the University of Utah can be found at: <http://regulations.utah.edu/academics/6-400.php>

Assignments

The homework will consist of hangouts or exercises from the textbook assigned at the end of the previous class.

Grading Policy (Evaluation Methods & Criteria)

Assignment Category	Contribution to Grade	Note
Homework	20%	Lowest 2 scores are dropped
Practicum	15%	Required to pass
Exam 1	20%	
Exam 2	20%	
Final Exam	25%	

Semester letter grades will be converted from numerical semester scores (N) as follows:

	$100 \geq N \geq 93$:A	$93 > N \geq 90$:A-
$90 > N \geq 87$:B+	$87 > N \geq 83$:B	$83 > N \geq 80$:B-
$80 > N \geq 77$:C+	$77 > N \geq 73$:C	$73 > N \geq 70$:C-
$70 > N \geq 67$:D+	$67 > N \geq 63$:D	$63 > N \geq 60$:D-
	$60 > N$:E	

The numerical grade consists of several components:

- **Written Homework:** Almost every day, a homework assignment will be due before class via Gradescope. This will be strictly enforced. Each assignment will be awarded five points for complete and coherent work, and another five points will be awarded according to correctness and pedagogical structure. Here, pedagogical structure," refers to the way in which you explain your solutions, as if you were a classroom teacher explaining your solutions to your students, with attention to wording, sense-making, and representation. Your two lowest-scoring written homework assignments will be dropped. If you do not understand a homework problem, it is your responsibility to ask questions well in advance of homework due dates. You are welcomed to email me, post in the discussion section of Canvas, form a study group and meet in person or have an online group session (see conference feature on Canvas), come to office hours or set up an appointment to meet with me. Complete assignment and submit in PDF format on Gradescope. Homework turned in after the due date, but before the beginning of the next class will be deducted 20%. Homework later than that will receive no credit. Homework problems may not be redone for credit -- but I'm happy to evaluate any corrections you make for your learning.
- **Practicum:** Each student will spend six hours in an elementary school classroom, three hours observing and three hours working with one or two children in the classroom. More information and a scoring rubric will be provided during class and posted to Canvas. The practicum is worth 15% of final grade, but is mandatory to receive a passing grade in the course. An alternative to the practicum is to write two observations (instead of one observation, one working with a student) based on observing videos of classroom teachers.
- **Midterm Exams:** There will be two midterm exams. Calculators are allowed, but smart devices are not. You will be allowed to use a one-page (front-and-back) sheet of paper with any notes you desire, in any format, on your midterms.
- **Final Exam:** The final exam will be comprehensive. Calculators are allowed, but smart devices are not; the final exam is closed-notes, but you will be allowed to bring a one-page (front and back) sheet of notes with you.
- **Incompletes:** According to university policy, to be considered for an incomplete, a student must have 20% or less of the course work remaining and be passing the course with a C or better. You must request an incomplete grade and I will consider giving that grade only under exceptional circumstances.

Regrading Policy

It is the student's responsibility to ensure the accuracy of all recorded homework, quizzes, online assignments, and exam grades. Also you should keep as record all your graded assignments. If you see any error in your grades on Canvas, reach out to the instructor as soon as possible, or at the latest within two weeks from when the assignment was returned.

Course Schedule

The following schedule is approximate (although exam dates are firm). We may move through the material faster or slower depending on specific circumstances.

Week/Date	Sections Covered	Exams
1 (8/21 - 8/27)	10.1, 10.3	
2 (8/28 - 9/3)	10.3,10.4	
3 (9/4 - 9/10) Labor Day: 9/4	10.4,11,1	
4 (9/11 - 9/17)	11.2, 11.4	
5 (9/18 - 9/24)	11.4	Exam 1: Thursday, 9/21
6 (9/25 - 10/1)	12.1,12.2	
7 (10/2 - 10/10)	12.3, 12.4	
BREAK		
8 (10/16 - 10/22)	12.5,12.6	
9 (10/23 - 10/29)	12.8,12.9	
10 (10/30 - 11/5)	12.9	Exam 2: Thursday 11/2
11 (11/6 - 11/12)	13.1, 13.2	
12 (11/13 - 11/19)	13.3, 15.1	
13 (11/20 - 11/26) Thanksgiving Break: 11/23, 11/24	15.2	
14 (11/27 - 12/3)	15.3, 16	
15 (12/4 - 12/7) Reading Day: 12/8	16	
Final Exam: Tuesday, 12/12, 6:00 - 8:00 pm		

Note: This syllabus is meant to serve as an outline and guide for our course. Please note that I may modify it with reasonable notice to you. I may also modify the Course Schedule to accommodate the needs of our class. Any changes will be announced in class and posted on Canvas under Announcements.

Exam Dates: The two midterms will occur during usual class time on Thursday, September 21st and Thursday November 2nd.

University Policies

1. **The Americans with Disabilities Act.** The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the Center for Disability & Access, 162 Olpin Union Building, (801) 581-5020. CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in an alternative format with prior notification to the Center for Disability & Access.
 - a. Given the nature of this course, attendance is required and adjustments cannot be granted to allow non-attendance. However, if you need to seek an

ADA accommodation to request an exception to this attendance policy due to a disability, please contact the Center for Disability and Access (CDA). CDA will work with us to determine what, if any, ADA accommodations are reasonable and appropriate

2. **University Safety Statement.** The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit <https://safeu.utah.edu>
3. **Addressing Sexual Misconduct.** Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS).
 - a. **Lauren's Promise:** Lauren's Promise is a vow that anyone – faculty, staff, students, parents, and community members – can take to indicate to others that they represent a safe haven for sharing incidents of sexual assault, domestic violence, or stalking. Anyone who makes Lauren's Promise vows to:
 - 1.) listen to and believe those individuals who are being threatened or experiencing sexual assault, dating violence or stalking;
 - 2.) represent a safe haven for sharing incidents of sexual assault, domestic violence, or stalking;
 - and 3.) change campus culture that responds poorly to dating violence and stalking. By making Lauren's Promise, individuals are helping to change campus cultures that respond poorly to dating violence and stalking throughout the nation.
4. **Academic Misconduct Statement.** It is expected that students adhere to University of Utah policies regarding academic honesty, including but not limited to refraining from cheating, plagiarizing, misrepresenting one's work, and/or inappropriately collaborating. This includes the use of generative artificial intelligence (AI) tools without citation, documentation, or authorization. Students are expected to adhere to the prescribed professional and ethical standards of the profession/discipline for which they are preparing. Any student who engages in academic dishonesty or who violates the professional and ethical standards for their profession/discipline may be subject to academic sanctions as per the University of Utah's Student Code: <https://regulations.utah.edu/academics/6-410.php>
5. **Diversity Statement .** I stand in support of compassion, dignity, value-of-life, equity, inclusion and justice for all individuals regardless of color, race/ethnicity, sexual orientation, religion, language, socioeconomic status, ability, gender, gender identity

or expression, immigration status, or any type of marginalization. I stand in support of making our society more inclusive, just, and equitable for all individuals. I stand against individual and systemic racism in all its various forms.

6. **Undocumented Student Support Statement.** Immigration is a complex phenomenon with broad impact—those who are directly affected by it, as well as those who are indirectly affected by their relationships with family members, friends, and loved ones. If your immigration status presents obstacles to engaging in specific activities or fulfilling specific course criteria, confidential arrangements may be requested from the Dream Center. Arrangements with the Dream Center will not jeopardize your student status, your financial aid, or any other part of your residence. The Dream Center offers a wide range of resources to support undocumented students (with and without DACA) as well as students from mixed-status families. To learn more, please contact the Dream Center at 801.213.3697 or visit dream.utah.edu.
7. **Drop/Withdrawal Policies.** Students may drop a course within the first two weeks of a given semester without any penalties. Students may officially withdraw (W) from a class or all classes after the drop deadline through the midpoint of a course. A “W” grade is recorded on the transcript and appropriate tuition/fees are assessed. The grade “W” is not used in calculating the student’s GPA. For deadlines to withdraw from full-term, first, and second session classes, see the U’s Academic Calendar.
8. Other important information to consider including:
 - a. Student Code: <http://regulations.utah.edu/academics/6-400.php>
 - b. Accommodation Policy (see Section Q):
<http://regulations.utah.edu/academics/6-100.php>
9. **Student Mental Health Resources**
 - Rates of burnout, anxiety, depression, isolation, and loneliness have noticeably increased during the pandemic. If you need help, reach out for [campus mental health resources](#), including free counseling, trainings and other support.
 - Consider participating in a [Mental Health First Aid](#) or other [wellness-themed](#) training provided by our Center for Student Wellness and sharing these opportunities with your peers, teaching assistants and department colleagues

Disclaimer:

This syllabus is meant to serve as an outline and guide for the course. The instructor reserves the right to modify this syllabus to better suit class needs at any time during this semester. Any changes that are made will be immediately communicated during class and via Canvas.