

Math 366 - Structure of Math II

Course Information

Course Number: Math 366
Course Title: Structure of Math II
Section: 502
Time: Tuesdays and Thursdays 11:10 AM to 12:25 PM
Location: HELD 111
Credit Hours: 3

Instructor Details

Instructor: Tamara Carter, Instructional Associate Professor
Office: Blocker 322C
Phone: Math Department: 979-845-3261. There is no phone in my office, so email is the best way to reach me.
E-Mail: tcarter@tamu.edu
Office Hours: Mondays 1:30 – 2:30 PM online (check Home Page in Canvas for Zoom Link);
Tuesdays 2:20 - 3:30 PM in Blocker 322A;
Wednesdays 10:00 – 11:00 AM online (check Home Page in Canvas for Zoom Link);
Thursdays 2:20 - 3:30 PM in Blocker 322A
by appointment (email tcarter@tamu.edu to make an appointment).

Course Description

Math 366 *Structure of Mathematics II*, Credits 3.
Geometry, measurement and coordinate geometry.
Designed primarily for elementary teacher certification.

Course Prerequisites

Math 365 or equivalent with a grade of C or better.

Special Course Designation

None

Course Learning Outcomes

The purpose of taking the MATH 36X series of courses (MATH 365, 366, and 367) is for preservice elementary and middle school teachers to:

- Acquire knowledge of the mathematics topics beyond elementary school mathematics that can aid in developing deeper knowledge of elementary school mathematics;
- Gain experience in using this deeper understanding of the content to answer EC-8 students' math questions (at both a conceptual and procedural level), interpret EC-8 students' possible confusion about mathematics, and trouble-shoot EC-8 students' possible mistakes;
- Develop the disposition and ability to look at a problem from different points of view;
- See connections between different topics and branches of mathematics;
- Acquire knowledge of where to find potential material for enrichment for more advanced elementary students.

The overall goal of MATH 366 is to provide preservice elementary and middle-school teachers with the mathematical knowledge necessary to provide effective classroom instruction related to geometry. MATH 366 is a mathematics CONTENT course for students working toward a teaching certificate that allows them to teach mathematics from Early Childhood through Grade 8. It IS NOT a methods course in which the main focus is on how to TEACH mathematics. It IS a course in which you will be asked to DO AND LEARN mathematics by engaging in logical mathematical thinking about numerical concepts so that you will have a strong content-knowledge base from which you can draw to make appropriate instructional decisions and generate appropriate mathematical questions as a mathematics teacher in elementary or middle school.

Upon successful completion of this course, students will:

- Solve geometry problems, using a core set of problem solving strategies, including find a pattern, make a table, work backwards, guess and check, draw a picture, make a list, write an equation.
- Use logical reasoning to solve problems including perimeter, area, and volume of two-dimensional and three-dimensional geometric figures.
- Gain greater depth of knowledge about underlying geometric concepts and use that knowledge to explain and prove theorems.
- Integrate various mathematical content, solution methods, and strategies, especially geometric constructions, to solve problems.
- Connect mathematics, mathematical ideas and concepts, and applications, through connecting concrete activities to abstract mathematical notation. Examples include transformations of geometric figures and formulas involving linear, area, and volume measure.

The development of these broad outcomes will be supported by the accomplishment of more specific outcomes that will be articulated during the course.

Textbook and/or Resource Materials

The [TAMU bookstore \(Links to an external site.\)](#) is an option for procuring many of these materials.

Textbook

Billstein, R., Boschmans, B., Libeskind, S., & Lott, J. *A Problem Solving Approach to Mathematics for Elementary School Teachers* (Thirteenth Edition). Any format of the textbook is acceptable. You will not need MyMathLab or other electronic resources beyond the text.

Compass and Straightedge

You will need a compass (one with a mechanism controlled by a screw rather than tension is preferable) and a straightedge (something to help you draw a straight line without measurement markings).

Paper, writing utensils, scissors, and assorted supplies

You will need blank, unlined paper and writing utensils. You will also need scrap paper (preferably blank on at least one side), scissors, and tape. You will be asked to print and cut out some manipulatives. Resealable baggies would be helpful to contain these manipulatives.

Calculator

Scientific calculators will be allowed for all assignments including exams. Notice that you may not use your phone, tablet, or programmable calculators (such as the TI-84) on exams. You may check out a scientific calculator at the Annex of Evans Library for short-term loans as needed.

Other Technology

Online assessments will be completed electronically using a combination of Canvas and Gradescope.

Online office hours will use Zoom.

We will use the free online program GeoGebra for explorations.

You will need a computer that meets TAMU's Bring Your Own Device policy (<https://it.tamu.edu/services/academics-and-research/teaching-and-learning-tools/computer-requirements/Links to an external site.>) and a high-speed internet connection

You will need to scan and upload written work as a PDF (this can be achieved with a cell phone or other technology – directions will be provided in Canvas).

You will also need appropriate software (PDF reader, Zoom on both your phone and computer, and the latest update on an internet browser - Chrome or Firefox is recommended)

Texas A&M Student ID

Bring your student ID to each class (especially on exam days). If you have a question about your grade, please bring your ID when we talk.

Texas Essential Knowledge and Skills for Mathematics (Revised)

Available here: <https://tea.texas.gov/about-tea/laws-and-rules/texas-administrative-code/19-tac-chapter-111> (Links to an external site.)

TE_xES Exam Preparation Goals

Available here: https://www.tx.nesinc.com/PageView.aspx?f=GEN_Tests.html.

Grading Policy

The course grading will be based on the information below. At the end of the semester, you will receive the grade you *earned*, according to the scale given. Due to FERPA privacy issues, I cannot discuss grades over email or phone. If you have a question about your grade, please schedule an individual Zoom meeting or breakout room with me and bring your TAMU ID.

Grade Breakdown

- Daily Grades: 10%
- Formal Explanations: 30%
- Exam 1: 20%
- Exam 2: 20%
- Final Exam: 20%

Letter Grade assignment

- A: [90,100]
- B: [80,90)
- C: [70,80)
- D: [60,70)
- F: [0,60)

Daily Grades

You will have a daily grade (DG) in Canvas between most class sessions. Daily grades will typically be assigned one class and due at **6 AM on the date of the next class** (for most students, that means that the assignments should be submitted before the student goes to bed the night before class). For Daily Grades, you may use your book, notes, calculators, internet sources, and **even help from other people** as long as you can explain the answers that you submit. This is an opportunity for you to interact with the material with as much support as you need to understand the answers you submit.

Formal Explanations

Explanations (both verbal and written) are vitally important for effective communication of mathematics. Sometimes in your teaching career, you will need to thoroughly explain a topic in writing (to send home to a student who is ill, to send home to explain to parents, or as a replacement for a textbook). You will work in groups and submit three formal explanations for this course. I suggest that you start early and work through multiple drafts of the assignment before submitting it. Note that these assignments are due at 6 AM on MONDAY mornings, so please work far enough in advance to ask questions during office hours prior to the due date. If you want to complete these before the weekends, please communicate that goal when picking your group members.

Exams

There will be two proctored midterm exams administered during published class times. Everything discussed in class, experienced within an activity or assignment, or found in the homework, reading assignments, or explanations is eligible content for an exam. **You will be expected to show all of your work, and many items will require expository writing (such as explanations).** No cellphones or other electronic devices are allowed (other than for proctoring purposes). Only approved calculators are allowed. You will need to have your ID available at each exam.

Final Exam

The final exam will be comprehensive and is required for all students. You will need to bring your ID to your final exam. If your final exam grade is higher than your lowest test grade, the grade on your final will also replace your lowest test grade in the final grade calculation.

You can check the time for all your final exams at <https://registrar.tamu.edu/Courses,-Registration,-Scheduling/Final-Examination-SchedulesLinks to an external site.>

Attendance and Make-up Policies

Attendance is essential to complete this course successfully. “Attending” class is not just physically being present in the room. To really attend class, you should have your preparation work completed by the beginning of class, present your work to the class or your group when

requested, share ideas with classmates, and listen attentively when other people share their ideas. During the semester, you will be expected to do homework and daily assignments that have been assigned to promote class discussion. There will be frequent in-class discussions of concepts and language that you will see again on the exams. It is impossible to replicate these experiences outside of the classroom environment; therefore, class attendance and participation are extremely important. **Please attend and participate in all classes.**

Excused Absences

University student rules concerning excused and unexcused absences, as well as makeups, can be found at <http://student-rules.tamu.edu/rule07>. In particular, make-up exams or assignments will typically not be allowed unless a **University approved reason is given to me in writing**. It is **highly recommended** that you notify me before an absence when possible so appropriate arrangements can be made ahead of time. Otherwise (e.g. accident, or emergency), you must notify me **within two business days** of the last date of the absence, including an explanation of why notice could not be sent earlier, to arrange a makeup exam. I understand that there are some reasons to miss an assignment that are not listed as excused absences, so I will drop one daily grade when I calculate grades at the end of the semester.

Technical Difficulties

If you experience technical difficulties while completing or submitting work, email me immediately.

We all know that technology is not 100% reliable. Please have a backup plan in place so that minor technical issues do not prevent you from completing work on time. For instance, you should copy Zoom links to a file that you can access from your phone and have a plan of where to go if your normal internet provider or computer is having issues.

Make-up Exams

Makeup exams will only be allowed due to excused absences and the makeup must be taken as soon as possible after the missed exam. If you know ahead of time you will be absent during an exam, please notify me in advance.

Missed Classes

- It is YOUR responsibility to learn what you missed from class, obtain any notes and assignments, and complete assignments by the regularly scheduled due date. In other words, **missing class on the day work was assigned is not a reason for an extension**. Please continue to keep up with your daily grades. If your reason for missing class would also prevent you from completing daily grades, please directly communicate that information via email.
- If you miss class, please visit with your classmates to discuss the information you missed and attend office hours (online office hours are available) to discuss the missed

information with me. Notes are rarely sufficient to help you catch up from a missed class, so please initiate the discussions too.

- If class is officially cancelled for any reason, you can expect that the assignments due/taken on the missed class day will be due/taken the next time the class meets. Please also check Canvas for additional information.
- No rule can cover every situation. If you encounter extenuating circumstances, **please communicate** with me as soon as possible.

Late Work Policy

Late work is typically not accepted unless you have a University approved reason and contact me according to the timeline state in [Student Rule 7 of the University Student RulesLinks to an external site.](#).

Course Schedule

Week	Topic	Sections	Major Assignments Due
Week 1: 8/22 - 8/26	Introduction Basic Geometric Notions	Introduction 11.1	
Week 2: 8/29 - 9/2	Basic Geometric Notations Curves, Polygons, and Symmetry	11.1 11.2	
Week 3: 9/5 - 9/9	Curves, Polygons, and Symmetry	11.2	
Week 4: 9/12 - 9/16	Curves, Polygons, and Symmetry More about Angles	11.2 11.3	
Week 5: 9/19 - 9/23	More about Angles Linear Measure (will be tested on Exam 2) Exam 1	11.3 13.1 Exam 1	Exam 1 In class Thursday, 9/22
Week 6: 9/26 - 9/30	Linear Measure Areas of Polygons and Circles	13.1 13.2	Formal Explanation 1 Due 6 AM MONDAY 9/26
Week 7: 10/3 - 10/7	Areas of Polygons and Circles Pythagorean Theorem, Distance Formula, and Equation of a Circle	13.2 13.3	

Week 8: 10/10 - 10/14	Fall Break Monday and Tuesday Pythagorean Theorem, Distance Formula, and Equation of a Circle Geometry in Three Dimensions	13.3 11.4	
Week 9: 10/17 - 10/21	Geometry in 3D Surface Area	11.4 13.4	Formal Explanation 2 Due 6 AM MONDAY 10/17
Week 10: 10/24 - 10/28	Volume, Mass, and Temperature	13.5	
Week 11: 10/31 - 11/4	Surface Area and Volume Exam 2	13.4 and 13.5 Exam 2	Exam 2 In class Thursday, 11/3
Week 12: 11/7 - 11/11	Translations, Rotations, and Tessellations Reflections and Glide Reflections Dilations	14.1 14.2 14.3	
Week 13: 11/14 - 11/18	Congruence through Construction Additional Constructions	12.1 12.3	Formal Explanation 3 Due 6 AM MONDAY 11/14
Week 14: 11/21 - 11/25	Additional Congruence Properties Thanksgiving break 11/24 and 11/25	12.2 Thanksgiving	
Week 15: 11/28 - 12/2	Additional Congruence Properties Similar Triangles and Other Similar Figures	12.2 12.4	
Week 16: 12/5 - 12/9	Similar Triangles and Other Similar Figures Final Exam	12.4 Final Exam	Final Exam Friday, 12/9 3:00 - 5:00 PM

Optional Course Information Items

Classroom Environment

Please do your part (attitudes, words, and actions) to make our class a place where everyone can feel comfortable exploring mathematical topics without distractions. Always remember and uphold the Aggie core values: Respect, Excellence, Leadership, Loyalty, Integrity, and Selfless service.

Office Hour Attendees

I would like office hours to be a casual time when we can gather together in one room (either Zoom or in person) and discuss mathematics. This is like a study hall with some of your classmates and me in the room. This allows you to ask questions when you have them and lets you listen to other people's questions. You can come and go from office hours as your schedule permits. If you have a quick question, you are welcome to join us for online office hours by phone as you walk from one class to another.

Everyone attending online office hours will be joining one room, so please mute your microphone when you are not speaking so we are not distracted by the background noise. If no one is speaking, please unmute and ask a question. If you need my attention while someone is talking, please use the chat feature. If you need to speak to me individually, let me know so we can move to a breakout room where the other students cannot hear the conversation.

Technology Support

As much of our learning experience relies on technology, many people can get overwhelmed when something goes wrong or things get overwhelming. If you are looking for a curation of online learning resources, consider checking out <https://keeplearning.tamu.edu>.

If your need is specific to a course-related technology issue, consider seeking help from the 24/7 TAMU IT Help Desk. <https://it.tamu.edu/help/>.

Learning Resources

Your Professor

Communication is essential. Many issues can be solved with effective communication. Please communicate with me before class, after class, during office hours, and via email.

Your Textbook

Please review your textbook and complete reading assignments PRIOR to our discussion of that section in class. Even if some of the topics are not clear from your reading, this textbook reading provides a framework in your brain for our discussions.

Your Class Notes

Please review your notes after each class and ask questions about anything that is not clear. Your notes will be very valuable as you study for exams as well.

Your Classmates

It is also important to communicate with your classmates. The majority of the content of this course focuses on the vocabulary and language of mathematical reasoning. The best way to learn vocabulary and language is to **use** it! In previous semesters, students in this course have

found it very helpful to form small study groups with whom to discuss the ideas and homework problems. This often helps people learn more and be able to build on each other's ideas. Please consider setting a regular time to meet. This is a useful idea to carry into your teaching career as well.

Thoughtful Practice

I strongly recommend that you practice problems from the book. These homework (exam preparation) problems, if addressed independently, can provide an “exam-like” experience and provide background for your Formal Explanations. See the Exam Preparation Problem list posted in Canvas. You will notice that many of these problems are not like problems from the class notes. The goal is for you to have an opportunity to grapple with thought-provoking problems at your own pace. I will be happy to answer questions after you have worked with the problems. These deeper questions (especially the explanation questions) are great preparation for the exams.

Office Hours

As mentioned above, office hours are a great time and place to work on your homework and communicate with your classmates and professor.

Study Hub

TAMU has curated other information helpful to study habits. They are available here: <https://studyhub.tamu.edu/Links to an external site.>

Academic Integrity

You will read more about the Academic Integrity Statement and Policy in the University Policies section. It is VERY important to me that you abide by that policy: “An Aggie does not lie, cheat or steal, or tolerate those who do.” If you have any questions about whether something would be considered cheating, ask me before you do it. However, here is some general guidance.

- In this course, I encourage you to discuss exam preparation problems and daily grade assignments and their solutions with your classmates. Study groups are a great way to learn. However, it is NOT permissible to copy homework solutions from another source (person, book, internet, etc.). Make sure that you understand and could rework anything that you submit for a grade.
- It is NOT permissible to communicate about any aspect of any exam until ALL students have completed the exam.
- The penalties for violating this policy could include an F on an assignment, exam, or the entire course.

As stated above, for Daily Grades, you may use your book, notes, calculators, internet sources, and even help from other people on as long as you can explain the answers that you submit.

Therefore, you are violating the honor code if you submit an answer that you got from another source but do not understand.

For exams, you may not use any sources other than your own brain and a scientific calculator.

Copyright of Materials

All class materials (notes, exams, assignments, videos, etc.) are copyrighted and may not be copied, posted, or reproduced without permission.

University Policies

Attendance Policy

The university views class attendance and participation as an individual student responsibility. Students are expected to attend class and to complete all assignments.

Please refer to **Student Rule 7** [Links to an external site.](#) in its entirety for information about excused absences, including definitions, and related documentation and timelines.

Makeup Work Policy

Students will be excused from attending class on the day of a graded activity or when attendance contributes to a student's grade, for the reasons stated in Student Rule 7, or other reason deemed appropriate by the instructor.

Please refer to **Student Rule 7** [Links to an external site.](#) in its entirety for information about makeup work, including definitions, and related documentation and timelines.

Absences related to Title IX of the Education Amendments of 1972 may necessitate a period of more than 30 days for make-up work, and the timeframe for make-up work should be agreed upon by the student and instructor" (**Student Rule 7, Section 7.4.1** [Links to an external site.](#)).

"The instructor is under no obligation to provide an opportunity for the student to make up work missed because of an unexcused absence" (**Student Rule 7, Section 7.4.2** [Links to an external site.](#)).

Students who request an excused absence are expected to uphold the Aggie Honor Code and Student Conduct Code. (**See Student Rule 24** [Links to an external site.](#)).

Academic Integrity Statement and Policy

“An Aggie does not lie, cheat or steal, or tolerate those who do.”

“Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one’s work, should the instructor request it, may be sufficient grounds to initiate an academic misconduct case” ([Section 20.1.2.3, Student Rule 20](#)[Links to an external site.](#)).

You can learn more about the Aggie Honor System Office Rules and Procedures, academic integrity, and your rights and responsibilities at aggiehonor.tamu.edu[Links to an external site.](#).

Americans with Disabilities Act (ADA) Policy

Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact Disability Resources office on your campus (resources listed below). Disabilities may include, but are not limited to attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability related needs with Disability Resources and their instructors as soon as possible.

Disability Resources is located in the Student Services Building or at (979) 845-1637 or visit disability.tamu.edu[Links to an external site.](#).

Title IX and Statement on Limits to Confidentiality

Texas A&M University is committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws prohibit gender-based discrimination and sexual harassment, including sexual assault, sexual exploitation, domestic violence, dating violence, and stalking.

With the exception of some medical and mental health providers, all university employees (including full and part-time faculty, staff, paid graduate assistants, student workers, etc.) are Mandatory Reporters and must report to the Title IX Office if the employee experiences, observes, or becomes aware of an incident that meets the following conditions (see [University Rule 08.01.01.M1](#)[Links to an external site.](#)):

- The incident is reasonably believed to be discrimination or harassment.
- The incident is alleged to have been committed by or against a person who, at the time of the incident, was (1) a student enrolled at the University or (2) an employee of the University.

Mandatory Reporters must file a report regardless of how the information comes to their attention – including but not limited to face-to-face conversations, a written class assignment or paper, class discussion, email, text, or social media post. Although Mandatory Reporters must file a report, in most instances, a person who is subjected to the alleged conduct will be able to control how the report is handled, including whether or not to pursue a formal investigation. The University’s goal is to make sure you are aware of the range of options available to you and to ensure access to the resources you need.

Students wishing to discuss concerns in a confidential setting are encouraged to make an appointment with [Counseling and Psychological ServicesLinks to an external site.](#) (CAPS).

Students can learn more about filing a report, accessing supportive resources, and navigating the Title IX investigation and resolution process on the University’s [Title IX webpageLinks to an external site.](#)

Statement on Mental Health and Wellness

Texas A&M University recognizes that mental health and wellness are critical factors that influence a student’s academic success and overall wellbeing. Students are encouraged to engage in healthy self-care by utilizing available resources and services on your campus.

Students who need someone to talk to can contact [Counseling & Psychological ServicesLinks to an external site.](#) (CAPS) or call the [TAMU HelplineLinks to an external site.](#) (979-845-2700) from 4:00 p.m. to 8:00 a.m. weekdays and 24 hours on weekends. 24-hour emergency help is also available through the National Suicide Prevention Hotline (800-273-8255) or at [suicidepreventionlifeline.org \(Links to an external site\).](#)