MATH 1331 Syllabus

This is an example of a syllabus that is typical for the class. An official "day one" syllabus will be provided by the faculty member teaching the course for which you enroll.

As the instructor for this course, I reserve the right to adjust this syllabus and schedule in any way that serves the educational needs of the students enrolled in this course.
- [Insert Name and Title or Credentials]

Instructor Information

- **Name**: [Insert Name and Title or Credentials]
- **Office Location**: [If no campus office, use department main office]
- **Office Phone**: [If no UTA phone, use department main office phone]
- **Email**: [Use @uta.edu email]
- **Faculty Profile**: [Embed web address in meaningful display text]
- **Office Hours**: [Check with home department for specific requirements]

Course Information

Section Information

[Insert course number and section number(s); ex: ILDT 5340-001 and 002]

Course Description

Course Title: Arithmetical Problem Solving

A discovery-oriented exploration of two-and three-dimensional geometry, with emphasis on reasoning and writing. Topics include constructions, polygons, tessellations, polyhedra, symmetry, rigid motions in the plane, measurement, and discovering theorems.

This course is designed to prepare future elementary school teachers *mathematically* to teach math (as opposed to pedagogically, which is the goal of ECED/BEEP 4311 and EDML 4372). It does this in two main ways: by teaching math which is relevant (not identical) to the math they will be teaching, and by modeling a math classroom through problem-solving activities, cooperative groups, and holding students responsible for deciding (reasoning) what is correct.

There will be almost no lecturing in this course. To help you develop your intuitive reasoning and problem-solving skills, we will spend most of our class time working in small groups on problems provided. An important part of learning to solve problems is being willing to struggle with a problem even after you get stuck, and this one of the first things you will face this term. You may be surprised by how much you can do if you just keep at it! We will usually discuss the problems in a large group after most groups have finished them. Sometimes you will be asked to write up your ideas and solutions, but you are always expected to think about the problems, participate in solving them, and communicate your ideas with others. Communicating your ideas clearly to others is as important as developing them in the first place. Note that this is a math *content* course, and not a pedagogy course. We hope that taking this course will help you be a better teacher, but more by setting an example rather than teaching you math methods. Students who come out of this course generally feel a lot more comfortable about teaching math, and about being a mathematical authority in the classroom. Hang in there!

Prerequisites: C or better in MATH 1330 and enrollment as an education major.

Time and Place of Class Meetings

[Include this section, even if the course is asynchronous]

This course operates on Central Time. All times listed for class meeting times, exams, and assignment deadlines are in Central Time (CT).

Classroom/Lecture Recording Policy

Faculty maintain the academic right to determine whether students are permitted to record classroom and online lectures. Recordings of classroom lectures, if permitted by the instructor or pursuant to an ADA accommodation, may only be used for academic purposes related to the specific course. They may not be used for commercial purposes or shared with non-course participants except in connection with a legal proceeding.

Recording of classroom and online lectures in this course is not allowed.

Student Learning Outcomes

By the end of this course, you will be able to:

1. accurately justify and communicate mathematical claims in writing and orally;
2. correctly verify and explain the Pythagorean Theorem with concrete, pictorial, and symbolic models;
3. use a straightedge and compass to correctly construct mathematical objects and apply axioms and theorems to verify the validity of the construction process;
4. generate and validate a correct procedure for determining the vertex angle measures for regular polygons;
5. correctly create and justify tessellations of the plane using an arbitrary triangle or quadrilateral;
6. develop and confirm a complete classification of regular and semiregular tessellations of the plane;
7. create regular and nonregular polyhedra to reflect each the three defining characteristics of regular polyhedra;
8. analyze the number of edges, vertices, and faces or regular polyhedra to formulate Euler's mathematical relationship between these values;
9. identify all symmetries of any given planar and solid figures using pictorial and concrete models;
10. characterize the defining characteristics of rigid motions and identify a sequence of rigid motions that result in an overall transformation of planar objects;
11. correctly synthesize and explain the relationships between perimeter and area of planar figures, and between surface area and volume of solid figures; and
12. use concrete, pictorial, and symbolic representations to derive accurate formulae for area and volume of regular and nonregular geometric figures.

Course Materials & Technology

Textbook Information

- The Coursepack is free, interactive, and accessed online through GeoGebra.
- You will need to bring a device to class each day with access to GeoGebra and Canvas.
- Binder for organizing work throughout the semester.

Additional materials for this course may range in cost depending on the project and or topic you choose to work on.

Technology & Equipment Requirements

- Texas Instruments 30X series calculator: TI-30XA, TI-30XIIS, TI-30XIIB, TI-30XS MultiView
- Device with access to Canvas

Visit the OIT Services page for a list of Applications and Software available through UTA.

Visit the UTA Libraries Technology page for a list of items that can be checked out or used at the library.

Assignments & Exams

Exams

The exams will consist of problems where you will be expected to show and/or explain your thinking. Problems will be similar in nature to the problems we work in class, but short enough to be completed in the time given. The dates and times for the midterm and final exam are given below. Please mark them on your calendar now so as to avoid conflicts. If a conflict arises, *please* contact me as soon as possible to resolve it. No make-up exams will be given without prior arrangement.

Students arriving late to any exam will not be given additional time. Students arriving more than 35 minutes late to Midterm 1 or 2, or arriving more than 45 minutes late to the final exam will be turned away and will receive zero credit for the exam.

Write-Ups

A write-up is a detailed solution to an assigned exploration. These write-ups should be readable independently of any worksheet on which they are based, in good English, and either legibly handwritten in ink or word-processed. They should always include the following (although you need not use this form exactly):

1. a statement of the problem at hand,
2. any strategies you used to attack the problem,
3. the solution you obtained, with an explanation of how you got it (and how you know it is complete), and
4. a conclusion that says what we can take with us from the problem.

Communication of what you understand (even if it's not a complete understanding) is at least as much the point as finding the solution. Each Write-Up has a detailed rubric in Canvas that will be used for grading. The write-ups should be uploaded into Canvas as a single PDF by the time specified in Canvas.

Journals

Throughout the semester you will be assigned Journals to complete through Canvas. Journals are designed to apply and extend the concepts investigated during class explorations. These assignments are less formal than write-ups and serve as a formative assessment of your mathematical understandings. Each Journal has a detailed rubric in Canvas that will be used for grading.

Exploration Uploads

Each week you will complete multiple explorations in your assigned groups. You will submit your completed explorations to the appropriate discussion board by the time and date assigned in Canvas. These are different than the formal write-ups discussed above. Rather, these uploads should consist of your informal, legible solutions and group work. You will submit each exploration as a single PDF attached to a post on the appropriate discussion board. Within each discussion post, you will discuss any big insights you had into the exploration and any questions you still have on the exploration. You will also respond to at least two of your classmates' posts for each discussion. Please use these discussion boards to gain further insight into the explorations and answer any questions your classmates may have. These explorations uploads will be graded on completion of the exploration and completion of the discussion board. You will earn 1 point for every completed Exploration Upload throughout the semester as part of your Attendance and Participation grade.

Grading Information

Assignments	Values (%)
Midterm 1	10%
Midterm 2	10%
Final Exam	20%
Attendance and Participation	10%
Journals	23%
Write-Ups	27%
	Total: **100%**

Students are expected to track their performance throughout the semester, which Canvas facilitates, and seek guidance from available sources, including the instructor, if their performance drops below satisfactory levels. Refer to the Student Support Services section below.

Final Grade Calculations

Earned %	Letter Grade
90-100%	A
80-89%	B
70-79%	C
60-69%	D
59% or below	F

Grading Standards

You must earn a letter grade of C or higher to pass this class. Grading rubrics are provided for all assignments in Canvas.

Late Work Policy

In general, late work will not be accepted. Late work will only be accepted if the student communicates with the instructor before the assignment is due and provides a legitimate and documentable excuse.

Make-Up Exams Policy

Please mark exam dates on your calendar now so as to avoid conflicts. If a conflict arises, *please* communicate with me as soon as possible to resolve it. No make-up exams will be given without prior arrangement and a legitimate and documentable excuse.

Extra Credit Policy

No extra credit will be offered in this course.

Expectations for Out-of-Class Study

Beyond the time required to attend each class meeting, students enrolled in this course should expect to spend at least an additional **9** hours per week of their own time in course-related activities, including reading required materials, completing assignments, preparing for exams, etc.

Grade Grievance Policy

Any appeal of a grade in this course must follow the procedures and deadlines for grade-related grievances as published in the current University Catalog: Grades and Grading Policies. If you experience a conflict with your instructor, first try and resolve the matter with your instructor. For issues that remain unresolved after this contact, including grade discrepancies or complaints, a grievance may be filed with the Mathematics Department by

completing the departmental Grievance form at https://go.uta.edu/mathgrievance. Students not satisfied with the departmental decision may appeal to the College of Science. It is imperative for students to follow the proper procedure for their grievances to be reviewed.

Course & University Policies

Attendance Policy

Students should review the University Class Attendance Policies on the Class Attendance Policies page. The following attendance policy will be applied in this course.

Attending class sessions is a critical predictor and indicator of student success. The University of Texas at Arlington does not recognize a single attendance policy but encourages faculty to establish class-specific policies on attendance. As the instructor of this section, attendance for this course will be monitored using the Attendance+ app on Canvas. Each class day, your instructor may provide a unique code that you must submit to receive attendance credit for that day, or the instructor will manually enter attendance for all students. **By submitting the code, you confirm your in-person attendance for the entire class session.** If you intend to leave early, do not submit the attendance code for that day unless you have permission from your instructor. Random attendance checks can occur at any time throughout the semester. Any student who submits an attendance code but is absent during a random attendance check will be reported for a code of conduct violation and will receive a zero for semester attendance. Do not share attendance codes with others or post them online. Any student found doing so will also be reported for a code of conduct violation and will receive a zero for semester attendance.

Attendance is a portion of the overall Participation and Attendance grade category. You will earn 2 points towards this grade category every time you attend and are engaged in class, 1 point for every Exploration Upload completed and uploaded to Canvas, and 1 point for every Discussion Board completed.

Generative AI use in this Course

The use of Generative AI (GenAI) in course assignments and assessments must align with the guidelines established by the instructor. Unauthorized use of GenAI could result in breaches of academic integrity. Instructors bear the responsibility of clearly delineating the permissible uses of GenAI in their courses, underscoring the importance of responsible and ethical application of these tools.

The UTA Office of Community Standards articulates the university's stance on academic integrity and scholastic dishonesty. These standards extend to the use of GenAI. Unauthorized or unapproved use of GenAI in academic work falls within the scope of these policies and will be subject to the same disciplinary procedures.

As the instructor of this course, I have adopted the following policy on Student use of GenAI: **Prohibition of GenAI Use**

> *In this course, the focus is on the development of independent critical thinking and the mastery of subject-specific content. To ensure that all submitted work accurately reflects personal understanding and original thought, the use of Generative AI (GenAI) tools in completing assignments or assessments is strictly prohibited. This policy supports our commitment to academic integrity and the direct measurement of each student's learning against the course's Student Learning Outcomes (SLOs). Any work found to be generated by AI will be subject to academic review.*

Institutional Policies

UTA students should review the University Catalog and the Syllabus Institutional Policies page for institutional policies and contact the specific office with any questions. The institutional information includes the following policies, among others:

- Drop Policy
- Disability Accommodations
- Academic Integrity
- Electronic Communication

UTA Honor Code

UTA students are expected to adhere to and observe standards of conduct compatible with the University's functions as an educational institution and live by the University of Texas at Arlington's Honor Code. It is the policy of The University of Texas at Arlington to uphold and support standards of personal honesty and integrity for all students consistent with the goals of a community of scholars and students seeking knowledge and responsibility.

Student Support Services

Student Services Page

The Student Services page provides links to many resources available to UTA students, including:

- Academic Success
- Counseling and Psychological Services (CAPS)
- Health Services
- Students with Disabilities
- Veteran Services

Students are also encouraged to check out Career Center resources to enhance their career-readiness, find student employment, search for internships, and more. We encourage Major Exploration and the use of Experiential Major Maps to keep students on track for graduation. Refer to the Graduation Help Desk for more details.

Online Academic Success Guide

Visit the Online Academic Success Guide to explore a list of helpful tips and resources to help you succeed in your online journey.

Important Dates

Description	Date
First Day of Classes	[Include this section, even if the course is asynchronous]
Labor Day Holiday	[Include this section, even if the course is asynchronous]
Census Date	[Include this section, even if the course is asynchronous]
Last Day to Drop Classes	[Include this section, even if the course is asynchronous]
Thanksgiving Break	[Include this section, even if the course is asynchronous]
Last Day of Classes	[Include this section, even if the course is asynchronous]
Final Exam	[Include this section, even if the course is asynchronous]

Course Schedule

Week or Module	Topics	Assignments Due
1	• Tangram • Pythagorean Theorem **(SLO 1, 2)** • Pythagorean Theorem Applications **(SLO 1, 2)**	
2	• Pythagorean Theorem Applications **(SLO 1, 2)** • Name That Triangle **(SLO 1)** • Applying Postulates and Theorems **(SLO 1)**	• Journal 1
3	• Exploring Constructions **(SLO 1, 3)** • Construction Properties **(SLO 1, 3)** • Constructing an Altitude **(SLO 1, 3)**	• Write-Up 1: Peer Review Draft • Write-Up 1: Peer Review Due
4	• Circle Construction **(SLO 1, 3)** • Constructing Numbers **(SLO 1, 3)** • Regular Polygons **(SLO 1, 4)**	• Journal 2 • Write-Up 1
5	• Constructible Polygons – I **(SLO 1, 3, 4)** • Constructible Polygons – II **(SLO 1, 3, 4)** • Midterm 1 Review	
6	• Midterm 1 • Vertex Angles **(SLO 1, 4)** • Regular Septagon **(SLO 1, 4)**	• Write-Up 2
7	• Tessellations of the Plane **(SLO 1, 5, 6)** • Vertex Figures and Arrangements **(SLO 1, 5, 6)**	• Journal 3
8	• Regular Polyhedra **(SLO 1, 7)** • Nonregular Polyhedra **(SLO 1, 7)** • Platonic Solids **(SLO 1, 8)**	• Journal 4
9	• Platonic Solids **(SLO 1, 8)** • Euler's Formula **(SLO 1, 8)** • Extending Polygons **(SLO 1, 7)** • Symmetry of Planar Objects **(SLO 1, 9)**	• Journal 5
10	• Symmetry of Planar Objects **(SLO 1, 9)** • Symmetry of 3-D Objects **(SLO 1, 9)**	
11	• Extending Euler **(SLO 1, 8, 9)** • Composing Symmetries of the Square **(SLO 1, 9)** • Midterm 2 Review	• Write-Up 3
12	• Midterm 2 • Rigid Motions in the Plane **(SLO 1, 10)** • Recognizing Rigid Motions **(SLO 1, 10)**	
13	• Recognizing Rigid Motions **(SLO 1, 10)** • Perimeter and Area **(SLO 1, 11)** • Area Formulae **(SLO 1, 11)**	• Write-Up 4

Week or Module	Topics	Assignments Due
14	• Surface Area: Toy Blocks **(SLO 1, 11)** • Volume **(SLO 1, 12)** • Magnification and Scaling **(SLO 1, 11)**	• Journal 6
15	• Review for final exam	
16	• Final Exam	