

**Texas A&M University-Central Texas****Math 4302: College Geometry****Online****Instructor: Mienie Roberts (Ph.D.)****Office: Heritage Hall, Room 302K or Online****Phone: (903) 705-9703****Email: [dekokk@tamuct.edu](mailto:dekokk@tamuct.edu)****Skype id: mienie123****Office Hours:****M W 12pm – 2pm online over Webex:****<https://tamuct.webex.com/join/dekokk>****Canvas access:**<http://tamuct.instructure.com>**UNILERT**

Emergency Warning System for Texas A&amp;M University – Central Texas

UNILERT is an emergency notification service that gives Texas A&M University-Central Texas the ability to communicate health and safety emergency information quickly via email, text message, and social media. All students are automatically enrolled in UNILERT through their myCT email account. Connect at [www.TAMUCT.edu/UNILERT](http://www.TAMUCT.edu/UNILERT) to change where you receive your alerts or to opt out. By staying enrolled in UNILERT, university officials can quickly pass on safety-related information, regardless of your location.

**COURSE INFORMATION****1.0 Course overview and description:****Program Goal**

Texas A&M University-Central Texas students, upon completion of certification requirements, will be reflective professional educators who make effective educational decisions that support the creation of dynamic learning environments.

**Course Overview and Description: MTHK 4302.110**

Math 4302 (College Geometry) is designed to prepare students for the Geometry and Measurement domain on the TExES Math 7-12 exam. The class aims to equip students with the requisite knowledge and skills that an entry-level educator in this field in Texas public schools must possess. The class also incorporates GeoGebra as a tool for understanding and teaching geometric concepts.

**Course Objective**

Math 4302 prepares aspiring secondary mathematics teachers for the “Geometry and measurement” domain on the 4-8 and 7-12 state certification examinations. Topics covered are in accordance with the

standards and competencies covered in the TExES examinations. Students will learn both content and methods of teaching geometry with technology (including the GeoGebra platform).

## Student learning outcomes as per the Core Subjects 7-12 Mathematics Math Standards

### Domain III – Geometry and Measurement

Competency 011: *The teacher understands measurement as a process.*

The beginning teacher:

- A. Applies dimensional analysis to derive units and formulas in a variety of situations (e.g., rates of change of one variable with respect to another) and to find and evaluate solutions to problems.
- B. Applies formulas for perimeter, area, surface area and volume of geometric figures and shapes (e.g., polygons, pyramids, prisms, cylinders, cones, spheres) to solve problems.
- C. Recognizes the effects on length, area or volume when the linear dimensions of plane figures or solids are changed.
- D. Applies the Pythagorean theorem, proportional reasoning and right triangle trigonometry to solve measurement problems.
- E. Relates the concept of area under a curve to the limit of a Riemann sum.
- F. Uses integral calculus to compute various measurements associated with curves and regions (e.g., area, arc length) in the plane, and measurements associated with curves, surfaces and regions in three-space.

Competency 012: *The teacher understands geometries, in particular Euclidian geometry, as axiomatic systems.*

The beginning teacher:

- A. Understands axiomatic systems and their components (e.g., undefined terms, defined terms, theorems, examples, counterexamples).
- B. Uses properties of points, lines, planes, angles, lengths and distances to solve problems.
- C. Applies the properties of parallel and perpendicular lines to solve problems.
- D. Uses properties of congruence and similarity to explore geometric relationships, justify conjectures and prove theorems.

- E. Describes and justifies geometric constructions made using compass and straightedge, reflection devices and other appropriate technologies.
- F. Demonstrates an understanding of the use of appropriate software to explore attributes of geometric figures and to make and evaluate conjectures about geometric relationships.
- G. Compares and contrasts the axioms of Euclidean geometry with those of non-Euclidean geometry (i.e., hyperbolic and elliptic geometry).

Competency 013: *The teacher understands the results, uses and applications of Euclidian geometry.*

The beginning teacher:

- A. Analyzes the properties of polygons and their components.
- B. Analyzes the properties of circles and the lines that intersect them.
- C. Uses geometric patterns and properties (e.g., similarity, congruence) to make generalizations about two- and three-dimensional figures and shapes (e.g., relationships of sides, angles).
- D. Computes the perimeter, area and volume of figures and shapes created by subdividing and combining other figures and shapes (e.g., arc length, area of sectors).
- E. Analyzes cross-sections and nets of three-dimensional shapes.
- F. Uses top, front, side and corner views of three-dimensional shapes to create complete representations and solve problems.
- G. Applies properties of two- and three-dimensional shapes to solve problems across the curriculum and in everyday life.

Competency 014: *The teacher understands coordinate, transformational and vector geometry and their connections.*

The beginning teacher:

- A. Identifies transformations (i.e., reflections, translations, glide-reflections, rotations, dilations) and explores their properties.
  - B. Uses the properties of transformations and their compositions to solve problems.
  - C. Uses transformations to explore and describe reflectional, rotational and translational symmetry.
  - D. Applies transformations in the coordinate plane.
  - E. Applies concepts and properties of slope, midpoint, parallelism, perpendicularity and distance to explore properties of geometric figures and
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solve problems in the coordinate plane.

- F. Uses coordinate geometry to derive and explore the equations, properties and applications of conic sections (i.e., lines, circles, hyperbolas, ellipses, parabolas).
- G. Relates geometry and algebra by representing transformations as matrices and uses this relationship to solve problems.
- H. Explores the relationship between geometric and algebraic representations of vectors and uses this relationship to solve problems.

Competency 009: *The teacher understands trigonometric and circular functions, analyzes their algebraic and graphical properties and uses them to model and solve problems.*

The beginning teacher:

- A. Analyzes the relationships among the unit circle in the coordinate plane, circular functions and the trigonometric functions.
- B. Recognizes and translates among various representations (e.g., written, numerical, tabular, graphical, algebraic) of trigonometric functions and their inverses.
- C. Recognizes and uses connections among significant properties (e.g., zeros, axes of symmetry, local extrema) and characteristics (e.g., amplitude, frequency, phase shift) of a trigonometric function, the graph of the function and the function's symbolic representation.
- D. Understands the relationships between trigonometric functions and their inverses and uses these relationships to solve problems.
- E. Uses trigonometric identities to simplify expressions and solve equations.
- F. Models and solves a variety of problems (e.g., analyzing periodic phenomena) using trigonometric functions.
- G. Uses graphing calculators to analyze and solve problems involving trigonometric functions.

#### **4.0 Required Reading and Textbook:**

All required materials and resources will be available on the Canvas LMS. Student needs access to the GeoGebra platform at:

[www.geogebra.org](http://www.geogebra.org)

**5.0 Course Requirements:**

Quiz 1: Competency 11 A, C	20 points
Quiz 2: Competency 11 A, B, C	20 points
Quiz 3: Competency 12 A, B, C, D, E, F	20 points
Quiz 4: Competency 12 A, B, C, D, E, F	20 points
Quiz 5: Competency 11 A, B, C, D, 12 A, B, C, D, E, 9	20 points
Quiz 6: Competency 12, 9	20 points
Quiz 7: Competency 12, 9	20 points
Quiz 8: Competency 13 B, C, D	20 points
Quiz 9: Competency 13 A, B, D, G	20 points
Quiz 10: Competency 13	20 points
Quiz 11: Competency 13	20 points
Quiz 12: Competency 12, 13, 14	20 points
Quiz 13: Competency 12, 13, 14	20 points
Quiz 14: Competency 13, 14	20 points
Midterm: Competency 11, 12.	300 points
Final: Comprehensive on Competencies 11, 12, 13, 14, 9	300 points
Project 1: Competency 11	20 points
Project 2: Competency 12	20 points
Project 3: Competency 13	20 points
Project 4: Competency 14, 9	20 points
Discussions (4 x 10): Competencies 11,12,13,14,9	40 points

**Total:** **1000 points**

**Projects:**

1. Student needs to complete courses on the GeoGebra platform and submit a lecture video with screen capturing software.
2. No credit will be given if the recording does not include audio and explanation of the concepts.

**Rubric for Projects:**

	Excellent	Average	Poor	Score
Understanding of mathematical concepts (30%)				
Understanding of coding concepts (50%)				
Professional decorum (Presentation/Audio/Quality of video, etc.) (20%)				

**Readings/Discussions:**

Readings should be completed on Canvas. Discussions will be posted on the Canvas LMS.

**Rubric for online discussions:**

	Excellent	Average	Poor	Score
Understanding of mathematical concept (50%)				
Grammar (25%)				
Spelling (25%)				

**Technology requirements:**

Every student is required to have access to a laptop/desktop and download the webex application in order to have online meetings with the instructor. Students should use the GeoGebra software which can be found at:

[www.geogebra.org](http://www.geogebra.org)

**Weekly Schedule:**

	Monday	Tuesday	Wednesday	Thursday	
<b>Week 1</b>	June 7 <sup>th</sup> Reading Module 1	June 8 <sup>th</sup>	June 9 <sup>th</sup> Quiz 1 due	June 10 <sup>th</sup>	
<b>Week 2</b>	June 14 <sup>th</sup>	June 15 <sup>th</sup>	June 16 <sup>th</sup>	June 17 <sup>th</sup>	



	Quiz 2 due Reading Module 2 Discussion 1 due		Quiz 3 due	
<b>Week 3</b>	June 21 <sup>st</sup> Reading Module 3 Quiz 4 due Reading Module 3 due Discussion 2 due Project 1 due	June 22 <sup>nd</sup>	June 23 <sup>rd</sup> Quiz 5 due	June 24 <sup>th</sup>
<b>Week 4</b>	June 28 <sup>th</sup> Project 2 due Reading Module 4 due Quiz 6 due	June 29 <sup>th</sup>	June 30 <sup>th</sup> Quiz 7 due Midterm due	July 1 <sup>st</sup>
<b>Week 5</b>	July 5 <sup>th</sup> Reading Module 5 due Project 3 due Quiz 8 due Discussion 3 due	July 6 <sup>th</sup>	July 7 <sup>th</sup> Quiz 9 due	July 8 <sup>th</sup>
<b>Week 6</b>	July 12 <sup>th</sup> Reading Module 6 due Project 4 due Quiz 10 due Discussion 4 due	July 13 <sup>th</sup>	July 14 <sup>th</sup> Quiz 11 due	July 15 <sup>th</sup>
<b>Week 7</b>	July 19 <sup>th</sup> Quiz 12 due Reading Module 7 due	July 20 <sup>th</sup>	July 21 <sup>st</sup> Quiz 13 due	July 22 <sup>nd</sup>
<b>Week 8</b>	July 26 <sup>th</sup> Quiz 14 due	July 27 <sup>th</sup>	July 28 <sup>th</sup> Final due	July 29 <sup>th</sup>

**Course Modality:****Canvas Support**

Use the Canvas Help link, located at the bottom of the left-hand menu, for issues with Canvas. You can select "Chat with Canvas Support," submit a support request through "Report a Problem," or call the Canvas support line: 1-844-757-0953.

For issues related to course content and requirements, contact your instructor.

**Online Proctored Testing**

A&M-Central Texas uses Proctorio for online identity verification and proctored testing. This service is provided at no direct cost to students. If the course requires identity verification or proctored testing, the technology requirements are: Any computer meeting the minimum computing requirements, plus web camera, speaker, and microphone (or headset). Proctorio also requires the Chrome web browser with their custom plug in.

#### **Other Technology Support**

For log-in problems, students should contact Help Desk Central

24 hours a day, 7 days a week

Email: [helpdesk@tamu.edu](mailto:helpdesk@tamu.edu)

Phone: (254) 519-5466

[Web Chat](http://hdc.tamu.edu): [http://hdc.tamu.edu]

*Please let the support technician know you are an A&M-Central Texas student.*

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#### **Important University Dates**

<https://www.tamuct.edu/registrar/academic-calendar.html>

### **UNIVERSITY RESOURCES, PROCEDURES, AND GUIDELINES**

#### **Drop Policy**

If you discover that you need to drop this class, you must complete the [Drop Request](#) Dynamic Form through Warrior Web.

[<https://dynamicforms.ngwebsolutions.com/casAuthentication.ashx?InstID=eaed95b9-f2be-45f3-a37d-46928168bc10&targetUrl=https%3A%2F%2Fdynamicforms.ngwebsolutions.com%2Fsubmit%2Fform%2Fstart%2F53b8369e-0502-4f36-be43-f02a4202f612>].

Faculty cannot drop students; this is always the responsibility of the student. The Registrar's Office will provide a deadline on the Academic Calendar for which the form must be completed. Once you submit the completed form to the Registrar's Office, you must go into Warrior Web and confirm that you are no longer enrolled. If you still show as enrolled, FOLLOW-UP with the Registrar's Office immediately. You are to attend class until the procedure is complete to avoid penalty for absence. Should you miss the drop deadline or fail to follow the procedure, you will receive an F in the course, which may affect your financial aid and/or VA educational benefits.

#### **Academic Integrity**

Texas A&M University -Central Texas values the integrity of the academic enterprise and strives for the highest standards of academic conduct. A&M-Central Texas expects its students, faculty, and staff to support the adherence to high standards of personal and scholarly conduct to preserve the honor and integrity of the creative community. Academic integrity is defined as a commitment to honesty, trust, fairness, respect, and responsibility. Any deviation by students from this expectation may result in a failing grade for the assignment and potentially a failing grade for the course. Academic misconduct is any act



that improperly affects a true and honest evaluation of a student's academic performance and includes, but is not limited to, working with others in an unauthorized manner, cheating on an examination or other academic work, plagiarism and improper citation of sources, using another student's work, collusion, and the abuse of resource materials. All academic misconduct concerns will be referred to the university's Office of Student Conduct. Ignorance of the university's standards and expectations is never an excuse to act with a lack of integrity. When in doubt on collaboration, citation, or any issue, please contact your instructor before taking a course of action.

For more [information regarding the Student Conduct process](https://www.tamuct.edu/student-affairs/student-conduct.html), [<https://www.tamuct.edu/student-affairs/student-conduct.html>].

If you know of potential honor violations by other students, you may [submit a report](https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout_id=0), [[https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout\\_id=0](https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout_id=0)].

### **Academic Accommodations**

At Texas A&M University-Central Texas, we value an inclusive learning environment where every student has an equal chance to succeed and has the right to a barrier-free education. The Office of Access and Inclusion is responsible for ensuring that students with a disability receive equal access to the university's programs, services and activities. If you believe you have a disability requiring reasonable accommodations please contact the Office of Access and Inclusion, WH-212; or call (254) 501-5836. Any information you provide is private and confidential and will be treated as such.

For more information please visit our [Access & Inclusion](https://tamuct.instructure.com/courses/717) Canvas page (log-in required) [<https://tamuct.instructure.com/courses/717>]

### **Important information for Pregnant and/or Parenting Students**

Texas A&M University-Central Texas supports students who are pregnant and/or parenting. In accordance with requirements of Title IX and related guidance from US Department of Education's Office of Civil Rights, the Dean of Student Affairs' Office can assist students who are pregnant and/or parenting in seeking accommodations related to pregnancy and/or parenting. Students should seek out assistance as early in the pregnancy as possible. For more information, please visit [Student Affairs](https://www.tamuct.edu/student-affairs/index.html) [<https://www.tamuct.edu/student-affairs/index.html>]. Students may also contact the institution's Title IX Coordinator. If you would like to read more about these [requirements and guidelines](http://www2.ed.gov/about/offices/list/ocr/docs/pregnancy.pdf) online, please visit the website [<http://www2.ed.gov/about/offices/list/ocr/docs/pregnancy.pdf>].

Title IX of the Education Amendments Act of 1972 prohibits discrimination on the basis of sex and gender—including pregnancy, parenting, and all related conditions. A&M-Central Texas is able to provide flexible and individualized reasonable accommodation to pregnant and parenting students. All pregnant and parenting students should contact the Associate Dean in the Division of Student Affairs at (254) 501-5909 to seek out assistance. Students may also contact the University's Title IX Coordinator.

### **Tutoring**

Tutoring is available to all A&M-Central Texas students, on a remote online basis. Visit the Academic Support Community in Canvas to view schedules and contact information. Subjects tutored on campus

include Accounting, Advanced Math, Biology, Finance, Statistics, Mathematics, and Study Skills. Student success coaching is available online upon request.

If you have a question regarding tutor schedules, need to schedule a tutoring session, are interested in becoming a tutor, success coaching, or have any other question, contact Academic Support Programs at (254) 501-5836, visit the Office of Student Success at 212F Warrior Hall, or by emailing [studentsuccess@tamuct.edu](mailto:studentsuccess@tamuct.edu).

Chat live with a tutor 24/7 for almost any subject from on your computer! Tutor.com is an online tutoring platform that enables A&M-Central Texas students to log in and receive online tutoring support at no additional cost. This tool provides tutoring in over 40 subject areas except writing support. Access Tutor.com through Canvas.

### **University Writing Center**

The University Writing Center (UWC) at Texas A&M University–Central Texas (TAMUCT) is a free service open to all TAMUCT students. For the Summer 2021 semester, all services will be online as a result of the COVID-19 pandemic. The hours of operation are from 10:00 a.m.-5:00 p.m. Monday thru Thursday with satellite hours Monday thru Thursday from 6:00-9:00 p.m. The UWC is also offering hours from 12:00-3:00 p.m. on Saturdays.

Tutors are prepared to help writers of all levels and abilities at any stage of the writing process. By providing a practice audience for students' ideas and writing, our tutors highlight the ways in which they read and interpret students' texts, offering guidance and support throughout the various stages of the writing process. While tutors will not write, edit, or grade papers, they will assist students in developing more effective composing practices. Whether you need help brainstorming ideas, organizing an essay, proofreading, understanding proper citation practices, or just want a quiet place to work, the UWC is here to help!

Students may arrange a one-to-one session with a trained and experienced writing tutor by making an appointment via [WOnline](https://tamuct.mywconline.com/) [https://tamuct.mywconline.com/]. In addition, you can email Dr. Bruce Bowles Jr. at [bruce.bowles@tamuct.edu](mailto:bruce.bowles@tamuct.edu) if you have any questions about the UWC and/or need any assistance with scheduling.

### **University Library**

The University Library provides many services in support of research across campus and at a distance. We offer over 200 electronic databases containing approximately 250,000 eBooks and 82,000 journals, in addition to the 85,000 items in our print collection, which can be mailed to students who live more than 50 miles from campus. Research guides for each subject taught at A&M-Central Texas are available through our website to help students navigate these resources. On campus, the library offers technology including cameras, laptops, microphones, webcams, and digital sound recorders.

Research assistance from a librarian is also available 24 hours a day through our online chat service, and at the reference desk when the library is open. Research sessions can be scheduled for more comprehensive assistance, and may take place on Skype or in-person at the library. Assistance may cover many topics, including how to find articles in peer-reviewed journals, how to cite resources, and how to piece together research for written assignments.

Our 27,000-square-foot facility on the A&M-Central Texas main campus includes student lounges, private study rooms, group work spaces, computer labs, family areas suitable for all ages, and many other features. Services such as interlibrary loan, TexShare, binding, and laminating are available. The library frequently offers workshops, tours, readings, and other events. For more information, please visit our [Library website](http://tamuct.libguides.com/index) [http://tamuct.libguides.com/index].

For Summer 2021, all reference service will be conducted virtually. Please go to our [Library website](http://tamuct.libguides.com/index) [http://tamuct.libguides.com/index] to access our virtual reference help and our current hours.

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## OPTIONAL POLICY STATEMENTS

### A Note about Sexual Violence at A&M-Central Texas

Sexual violence is a serious safety, social justice, and public health issue. The university offers support for anyone struggling with these issues. University faculty are mandated reporters, so if someone discloses that they were sexually assaulted (or a victim of Domestic/Dating Violence or Stalking) while a student at TAMUCT, faculty members are required to inform the Title IX Office. If you want to discuss any of these issues confidentially, you can do so through Student Counseling (254-501-5955) located on the second floor of Warrior Hall (207L).

Sexual violence can occur on our campus because predators often feel emboldened, and victims often feel silenced or shamed. It is incumbent on ALL of us to find ways to actively create environments that tell predators we don't agree with their behaviors and tell survivors we will support them. Your actions matter. Don't be a bystander; be an agent of change. For additional information on campus policy and resources visit the [Title IX webpage](https://www.tamuct.edu/compliance/titleix.html) [https://www.tamuct.edu/compliance/titleix.html].

### Behavioral Intervention

Texas A&M University-Central Texas cares about the safety, health, and well-being of its students, faculty, staff, and community. If you are aware of individuals for whom you have a concern, please make a referral to the Behavioral Intervention Team. Referring your concern shows you care. You can complete the [referral](https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout_id=2) online [https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout\_id=2].

Anonymous referrals are accepted. Please see the [Behavioral Intervention Team](https://www.tamuct.edu/student-affairs/bat.html) website for more information [https://www.tamuct.edu/student-affairs/bat.html]. If a person's behavior poses an imminent threat to you or another, contact 911 or A&M-Central Texas University Police at 254-501-5800.

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## OTHER POLICIES

NO LATE ASSIGNMENTS WILL BE ACCEPTED.

### Copyright Notice

Students should assume that all course material is copyrighted by the respective author(s). Reproduction of course material is prohibited without consent by the author and/or course instructor. Violation of copyright is against the law and Texas A&M University-Central Texas' Code of Academic Honesty. All alleged violations will be reported to the Office of Student Conduct.

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