MATH 302 – INTRODUCTION TO GEOMETRY AND MATHEMATICAL FOUNDATIONS

Section: 001 **Winter Quarter, 2024** **Classroom: BOGH 326**

INSTRUCTOR: Charles Patterson **Office: BOGH 217A** **Phone: 257-3224**

Office Hours: **2:00-5:00 M / 11:00-4:00 T / 2:00-5:00 W / 11:00-4:00 R / F by appointment only**

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COURSE PREREQUISITES: Credit for Math 242.

COURSE GOALS: The instructor will present the core concepts of Euclidean Geometry in two and three dimensions in a manner which will adequately prepare prospective middle school or secondary school teachers for meeting the needs of all students enrolled in high school mathematics courses. Additional topics related to number systems and number theory will be covered as time permits.

TEXTBOOK AND RESOURCE MATERIALS: Elementary Geometry (3rd edition) by Gustafson & Frisk – Required
Mathematics for High School Teachers: An Advanced Perspective by Usiskin, et.al. – Recommended
Read the assigned material daily and work through the examples in the text and the examples worked in class before attempting your homework. A portion of the course may be delivered via zoom, and thus a webcam is required. If you do not have a webcam, one may be checked out from Prescott Memorial Library. A scanner or an app with scanning capabilities will also be required to upload exams in the event that exams must be administered electronically.

COMPUTER: You may be required to work with the software, Geometer's Sketchpad.

ATTENDANCE REGULATIONS: Read the "Class Attendance" section of the Tech Bulletin which says in part that "Class attendance is . . . an obligation . . . and all students are expected to attend REGULARLY and PUNCTUALLY." *If you miss two consecutive class meetings, you must contact me by the following class meeting to discuss your reason for absence and to notify me of your plans to remain enrolled in the class.* Excuses for absences must be submitted within three class days after return to class. Respectfully pay attention for the entire period. Please turn off all cell phones and pagers before entering the classroom.

HOMEWORK/TEST POLICY: Homework will be collected by the chapter. The instructor intends for tests to be administered in person in the classroom setting during the regularly scheduled class time. However, it is possible that examinations may have to be administered electronically. For electronic exams requiring the student to submit written work, a webcam, with video turned on, is **required**. If the webcam malfunctions, a makeup exam is required. Written exams will be scanned in via a scanner or an app, and uploaded as instructed. Only material in the original submission will be graded, resubmissions will not be accepted. Smart devices (phones, watches, glasses, etc.) are not to be visible during an exam. If such a device is visible at all during an exam, a student's exam will be taken immediately and will result in a zero test grade. Students will not be permitted to leave a room once a test begins. If you miss an exam, you must notify the instructor *prior* to the exam either in person, email, or by phone. When you return, it is your responsibility to arrange for a makeup exam. In the case of technical difficulties during an exam, the student must contact the instructor as soon as possible and schedule a makeup exam.

GRADE DETERMINATION PROCEDURE: The instructor will schedule 3 tests worth 150 points each. A biographical sketch of a mathematician who contributed to the development of Geometry or an appropriate activity from the Common Core State Standards, one or two geometric transformation or number system projects, and selected homework/in-class work/quizzes will count for a total of 150 points (Biographical sketch/Common Core will be 50 points, transformation/number system project(s) will be 50 points, and homework/in-class work/quizzes will be 50 points). In the event of a question regarding an exam grade or final grade, it will be the responsibility of the student to retain and present graded materials which have been returned for student possession during the quarter.

LATE HOMEWORK/MISSED EXAMS: No make-ups will be allowed for homework, in-class work, or quizzes. Make-ups will be allowed for exams only in the case of an excused absence (generally a doctor's excuse which I have called and verified or an official university excuse). You must contact me by the class meeting following a missed exam to discuss your reason for missing the exam and to determine the possibility of a make-up exam. Make-ups will be another exam or a comprehensive final exam as specified by me.

GRADE SCALE: The usual grading scale will be used:

90-100%	A
80-89%	B
70-79%	C
60-69%	D
Below 60%	F

TUTORING ASSISTANCE: **No free student tutors are available for this course. Please take advantage of my office hours if you are having difficulty with homework assignments. If you have classes at all of the times my office hours are scheduled, see me after class about arranging an alternate time to meet with me.**

STUDENTS NEEDING SPECIAL ACCOMMODATIONS: Students needing testing accommodations or classroom accommodations based on a disability must discuss the need with me as soon as possible. For more details on the Office of Disability Services, refer to www.latech.edu/ods. Any issues with accessing technology, which are related to a disability, should be reported to the instructor as soon as possible. A student requesting an accommodation related to the COVID-19 pandemic should complete the student accommodation form and deliver it either in person or electronically. The preferable way to deliver the form is electronically to Testing and Disability Services (tds@latech.edu).

HONOR CODE AND ACADEMIC MISCONDUCT POLICY: In accordance with the Academic Honor Code, students pledge the following: Being a student of higher standards, I pledge to embody the principles of academic integrity. If it is determined that academic misconduct has occurred, the penalty may range from dismissal from the University to a failing grade in the course. For more details on the honor code, refer to http://www.latech.edu/current-students/student-advancement-affairs/student-conduct-integrity.

HAZING: In compliance with Acts 635, 637, and 640 of the 2018 Regular Session and Act 382 of the 2019 Regular Session of the Louisiana Legislature and the 2019 Board of Regents Uniform Policy on Hazing, the System reaffirms its policy that any form of hazing of any student enrolled at any institution of the System is prohibited. Violation of this Policy can result in both disciplinary action imposed by the organization and/or institution as well as criminal charges.

EMERGENCY NOTIFICATION SYSTEM (ENS): All Louisiana Tech students are strongly encouraged to enroll and update their contact information in the Emergency Notification System. It takes just a few seconds to ensure you're able to receive important text and voice alerts in the event of a campus emergency. For more information on the Emergency Notification System, please visit http://www.latech.edu/current-studnets/student-advancement-affairs/university-police. For emergency notifications, please visit http://ert.latech.edu.

ADDITIONAL COVID-19 INFORMATION:

a. Students can access COVID-19-related information at Louisiana Tech's website: latech.edu/coronavirus

b. Students testing positive for COVID-19 report directly to the faculty in order to arrange classroom absence arrangements. Accommodations may not be granted until proper University protocol has been followed. Short-term COVID-19 accommodations are not disability accommodations.

c. Information and contact numbers and sites for Louisiana Tech Counseling Services are located at: https://www.latech.edu/current-students/student-advancement-affairs/counseling-services/

MATH 302
Course Outline and Assignments

Lesson	Section	Topic	Assignment
1	1.1	Inductive/Deductive Reasoning	1-8 (all)
	1.2	Undefined Terms/Basic Definitions	2-40 (even)
2	1.3	Angles	3-54 (m/3)
	1.4	Constructions	3-18 (m/3)
3	1.5	Introduction to Proof	2-22 (even)
4	1.6	Supplementary/Complementary/Vertical Angles	2-24 (even)
5	2.1	Congruent Triangles	2-26 (even)
	2.2	Corresponding Parts of Congruent Triangles	2-8 (even), 14
6	2.3	Isosceles Triangles	3-15 (m/3)
	2.4	More on Isosceles Triangles	3-15 (m/3)
7	2.5	Proving Right Triangles Congruent	2-8 (even)
8	3.1	Parallel Lines	2-24 (even)
9	3.2	Introduction to Indirect Proof	2-30 (even)
10	3.3	Sum of Angles in a Triangle	3-30 (m/3)
	3.4	Sum of Angles of a Polygon	3-36 (m/3)
11	3.5	Indirect Proofs	2-10 (even)
12	4.1	Parallelograms	2-28 (even)
13	4.2	Rectangles and Rhombuses	3-18 (m/3), 22, 24-30 (m/3)
	4.3	Trapezoids	3-15 (m/3)
14	5.1	Areas of Polygons	3-33 (m/3)
	5.2	Areas of Circles	3-24 (m/3)
	10.2	Areas of Regular Polygons	3-15 (m/3)
15	5.3	Pythagorean Theorem	3-30 (m/3)
	5.4	Special Right Triangles	3-24 (m/3)
	5.5	Surface Area and Volume	3-27 (m/3)
16	6.1	Ratio and Proportion	48-60 (m/3)
	6.2	Similar Triangles	3-48 (m/3)
17	6.3	More on Similar Triangles	2-20 (even), 26, 28, 39
18	6.4	Trigonometry: The Tangent Ratio	12-24 (m/3)
	6.5	Trigonometry: The Sine and Cosine Ratios	21-42 (m/3)
19	7.1	Circles	2-30 (even)
20	7.2	Chords/Tangents/Secants	2-20 (even)
21	7.3	More on Tangents	2-20 (even)
22	7.4	More Circles	2-20 (even)
	8.1	Properties of Inequalities	2-14 (even)
23	8.2	Inequalities in Triangles and Circles	2-14 (even)
	8.3	Inequalities with Chords	1-6 (all)
24	10.1	Circumscribed and Inscribed Circles	2-14 (even)
25	12.4	Analytic Geometry: Proving Geometric Theorems	3-42 (m/3)

NOTE: m/3 - multiples of 3