

Geometry

Time: MW 4:30 – 5:45

Room: ACR 206

Instructor: Eric Funasaki

Office: ACR 109C / BAB 210

Phone: 432-837-8109

e-mail: eric.funasaki@sulross.edu

Office hours:

MW 2:30 – 4:20, R 1:30 – 2:20, or by appointment.

Textbook:

College Geometry, 2nd edition, by David C. Kay.

Course Description:

This course consists of a modern formal development of Euclidean geometry and a limited introduction to non-Euclidean geometry, with an integration of topics, methods, and use of technology appropriate for prospective middle grade and secondary mathematics teachers.

Course Prerequisite:

Math 2311 / MTH 3309, Math 2413, or permission of instructor.

Mathematics Program Student Learning Objectives:

The student should be able to:

1. Apply knowledge of basic mathematics principles;
2. Identify and provide valid proofs or solutions for theorems or problems; and
3. Recognize and dispute invalid mathematical statements using counterexamples.

Marketable Skills:

1. Students Demonstrate Logical and Analytical Skills.
2. Students Demonstrate Problem-Solving Using Analytic and Algebraic Methods.
3. Students Use Technology in Problem-Solving and Presentation.
4. Students Use Communication and Pedagogical Skills.

Course Objectives:

The student will be able to:

1. Understand the development of a mathematical system from the axioms up;
2. Apply mathematical theory, concepts, and methods of inquiry to advanced topics;
3. Understand and appreciate applications of mathematics to relevant subjects;
4. Construct proofs, of different types, to various problems in geometry; and
5. Recognize when and how to use different types of proofs in other mathematics courses.

Course Assessment:

Your grade will be based on the following components:

- 10% In-class problems and participation
- 25% Homework assignments and quizzes
- 45% Exams
- 20% Comprehensive Final Exam

The grading scale will be:

90 – 100 A 80 – 89 B 70 – 79 C 60 – 69 D 0 – 59 F

Course Schedule (tentative):

Week 1

- 8/26 M 2.1 An Introduction to Axiomatics and Proof
- 8/28 W 2.2 The Role of Examples and Models

Week 2

- 9/2 M **Labor Day (no class)**
- 9/4 W 2.3 Incidence Axioms for Geometry

Week 3

- 9/9 M 2.4 Distance, Ruler Postulate, Segments, Rays, and Angles
- 9/11 W 2.4 Distance, Ruler Postulate, Segments, Rays, and Angles
2.5 Angle Measure and the Protractor Postulate

Week 4

- 9/16 M 2.5 Angle Measure and the Protractor Postulate
- 9/18 W 2.5 Angle Measure and the Protractor Postulate
3.1 Triangles, Congruence Relations, SAS Hypothesis

Week 5

- 9/23 M 3.1 Triangles, Congruence Relations, SAS Hypothesis
3.2 Taxicab Geometry: Geometry without SAS Congruence
- 9/25 W 3.2 Taxicab Geometry: Geometry without SAS Congruence
3.3 SAS, ASA, SSS Congruence, and Perpendicular Bisectors

<u>Week 6</u>		(Exam 1)
9/30	M	3.3 SAS, ASA, SSS Congruence, and Perpendicular Bisectors
10/2	W	3.3 SAS, ASA, SSS Congruence, and Perpendicular Bisectors
<u>Week 7</u>		
10/7	M	3.4 Exterior Angle Inequality
10/9	W	3.5 The Inequality Theorems
<u>Week 8</u>		
10/14	M	3.5 The Inequality Theorems 3.6 Additional Congruence Criteria
10/16	W	3.6 Additional Congruence Criteria
<u>Week 9</u>		
10/21	M	3.7 Quadrilaterals
10/23	W	4.1 Euclidean Parallelism, Existence of Rectangles
<u>Week 10</u>		(Exam 2)
10/28	M	4.1 Euclidean Parallelism, Existence of Rectangles
10/30	W	4.2 Parallelograms and Trapezoids: Parallel Projection
<u>Week 11</u>		
11/4	M	4.3 Similar Triangles, Pythagorean Theorem, Trigonometry
11/6	W	4.3 Similar Triangles, Pythagorean Theorem, Trigonometry
<u>Week 12</u>		
11/11	M	6.1 Historical Background of Non-Euclidean Geometry
11/13	W	6.1 Historical Background of Non-Euclidean Geometry
<u>Week 13</u>		(Exam 3)
11/18	M	6.2 An Improbable Logic Case
11/20	W	6.2 An Improbable Logic Case
<u>Week 14</u>		
11/25	M	6.3 Hyperbolic Geometry: Angle Sum Theorem
11/27	W	Thanksgiving (no class)
<u>Week 15</u>		
12/2	M	6.3 Hyperbolic Geometry: Angle Sum Theorem 6.4 Two Models for Hyperbolic Geometry
12/4	W	6.4 Two Models for Hyperbolic Geometry
12/6	F	Final Exam (4 pm – 6 pm)

Attendance Policy:

Role will be taken. You are responsible for all material covered in class as well as any assignments and announcements that are made. If you miss an assignment, exam, or quiz you will receive a grade of zero unless I have been notified in advance.

Sul Ross State University policy allows an instructor to drop a student with a grade of W or F when 9 hours of class are missed. For this course that is when you miss **6** classes.

Cheating:

Cheating will not be tolerated. Anyone caught cheating will receive a grade of zero on that assignment. This includes homework assignments where the student who copied another student's work and the student who allowed their work to be copied will both receive a grade of zero.

Cell Phones and Other Electronic Devices:

Your cell phone must be **off** while you are in class. You may not read or send text messages while class is in session. If there is an unusual situation where you simply must be able to read and send a message without delay, place your phone in vibrate mode and leave the room before reading and responding. No other electronic devices may be used during class without the permission on the instructor.

ADA Statement:

Sul Ross State University (SRSU) is committed to equal access in compliance with the Americans with Disabilities Act of 1973. It is SRSU policy to provide reasonable accommodations to students with documented disabilities. It is the student's responsibility to initiate a request each semester for each class. Students seeking accessibility or accommodation services must contact Mrs. Mary Schwartz Grisham, LPC, SRSU's Accessibility Services Director at 432-837-8203 or email mschwartz@sulross.edu or contact Alejandra Valdez at 830-758-5006 or email alejandra.valdez@sulross.edu. Our office is located on the first floor of Ferguson Hall, room 112, and our mailing address is PO Box C-122, Sul Ross State University, Alpine, Texas, 79832.

Student Responsibilities:

All full-time and part-time students are responsible for familiarizing themselves with the Student Handbook and the Undergraduate & Graduate Catalog and for abiding by the University rules and regulations. Additionally, students are responsible for checking their Sul Ross email as an official form of communication from the university. Every student is expected to obey all federal, state and local laws and is expected to familiarize him/herself with the requirements of such laws.

SRSU Distance Education Statement:

Students enrolled in distance education courses have equal access to the university's academic support services, such as library resources, online databases, and instructional technology support. For more information about accessing these resources, visit the SRSU website.

Students should correspond using Sul Ross email accounts and submit online assignments through Blackboard, which requires a secure login. Students enrolled in distance education courses at Sul Ross are expected to adhere to all policies pertaining to academic honesty and appropriate student conduct, as described in the student handbook. Students in web-based courses must maintain appropriate equipment and software, according to the needs and requirements of the course, as outlined on the SRSU website. Directions for filing a student complaint are located in the student handbook.

**Department of Computer, Mathematical, and Physical Sciences
Sul Ross State University
Box C-18
Alpine, TX 79832**