

Course Syllabus
MATH 4320-001, MC1; MATH 5301-001: Real Analysis

Instructor: Dr. Angela Brown

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Office Hours: MW 10-12, 2-5, others by appointment.

Time and Place of Class Meetings: TTh 2-3:15 ACR 206

Prerequisites: Math 2414

Required Textbooks: *Functions and Calculus with a Guide on the Side* by Robert Vallin. This is an open resource textbook and will be posted on Blackboard.

Other Equipment Needed: paper and pencils.

Course Content: The plan is to cover chapters 1-5. This will be adjusted as necessary.

Learning Objectives The student will be able to prove mathematical statements with varying methods of proof, including direct proofs, proof by induction, proof by contradiction and proof by contrapositive. The student will be able to use the varying methods of proofs to prove their own theorems pertaining to real analysis.

Mathematics Program Learning Objectives: The graduating student should be able to

- The student will be able to demonstrate content knowledge of basic mathematical principles.
- The student will be proficient in logic, able to negate statements, provide counterexamples to false statements, and determine the validity of arguments.
- The student will be able to communicate mathematical content clearly and with valid reasoning.

Marketable Skills: Mathematics BS

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

Grading Scale: 90-100 A, 80-89 B, 70-79 C, 60-69 D, 59-Below F

Grading Policy: The grade weighting will be as follows:
Homework/Presentations/In Class Work:50%

Exams : 30%
Final Exam: 20%

Any graduate students will be expected to present more problems and have additional exam problems. A project will also be required and change the grading scale as follows:

Project: 15%
Homework/Presentations/In Class Work: 35%
Exams : 30%
Final Exam: 20%

Homework will be assigned periodically throughout the semester. Homework assignments must be complete and will be turned in on Tuesdays during class.

Students will be expected to present problems from the assigned problems. These will be turned in after presenting and taking in the constructive criticism of the class.

There will be two exams in addition to the final exam. All exams will be closed notes, closed book, and no calculators allowed. No make-up exams will be given unless due to a school function. If you miss an exam with a valid excuse, the grade you make on the final exam can replace this grade.

The final exam is on Monday May 2 12:30-2:30 pm

Attendance Policy: Students are expected to attend every class. If class must be missed, the student is expected to get the notes from a classmate, and to check with me or on Blackboard for announcements and updated assignments.

Students are expected to arrive to class on time. If a student is perpetually late, they will be asked to not attend class unless they arrive on time. If tardiness becomes a problem for the class as a whole, people who arrive late will not be permitted to enter the class. If this stricter policy becomes necessary, there will be an announcement made in class.

It is policy of the university to drop a student with a grade of "F" if 9 hours or more of class are missed. For this course that would be 6 or more class sessions missed.

Americans With Disabilities Act: SRSU Disability Services. Sul Ross State University (SRSU) is committed to equal access in compliance with 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. Alpine students seeking accessibility/accommodations services must contact Mary Schwartz Grisham, M.Ed., LPC, SRSU's Accessibility Services Coordinator at 432-837-8203 (please leave a message and we'll get back to you as soon as we can during working hours), or email mschwartz@sulross.edu Our office is located on the first floor of Ferguson Hall (Suite 112), and our mailing address is P.O. Box C-122, Sul Ross State University, Alpine. Texas, 79832.

Library Services: The Sul Ross Library offers FREE resources and services to the entire SRSU community. Access and borrow books, articles, and more by visiting the library's website, library.sulross.edu. Off-campus access requires your LoboID and password. Check out materials using your photo ID. Librarians are a tremendous

resource for your coursework and can be reached in person, by email (srsulibrary@sulross.edu), or phone (432-837-8123).

Academic Integrity: Students in this class are expected to demonstrate scholarly behavior and academic honesty in the use of intellectual property. A scholar is expected to be punctual, prepared, and focused; meaningful and pertinent participation is appreciated. Examples of academic dishonesty include but are not limited to: Turning in work as original that was used in whole or part for another course and/or professor; turning in another person's work as one's own; copying from professional works or internet sites without citation; collaborating on a course assignment, examination, or quiz when collaboration is forbidden.

Classroom Climate of Respect: Importantly, this class will foster free expression, critical investigation, and the open discussion of ideas. This means that all of us must help create and sustain an atmosphere of tolerance, civility, and respect for the viewpoints of others. Similarly, we must all learn how to probe, oppose and disagree without resorting to tactics of intimidation, harassment, or personal attack. No one is entitled to harass, belittle, or discriminate against another on the basis of race, religion, ethnicity, age, gender, national origin, or sexual preference. Still we will not be silenced by the difficulty of fruitfully discussing politically sensitive issues.

Diversity Statement: I aim to create a learning environment for my students that supports a diversity of thoughts, perspectives and experiences, and honors your identities (including race, gender, class, sexuality, religion, ability, socioeconomic class, age, nationality, etc.). I also understand that the crisis of COVID, economic disparity, and health concerns, or even unexpected life events could impact the conditions necessary for you to succeed. My commitment is to be there for you and help you meet the learning objectives of this course. I do this to demonstrate my commitment to you and to the mission of Sul Ross State University to create an inclusive environment and care for the whole student as part of the Sul Ross Familia. If you feel like your performance in the class is being impacted by your experiences outside of class, please don't hesitate to come and talk with me. I want to be a resource for you.

Important Dates:

January 10	First Day of Classes
January 13	Last Day for Late Registration and Schedule Changes
January 17	MLK Holiday
January 26	12th Class Day
March 7-11	Spring Break
March 28	Last Day to Withdrawal from University or Drop Classes with a Grade of "W" (by 4 pm)
April 27	Last Day of Classes
April 28	Dead Day
April 29, May 2-4	Final Exams
May 6	Commencement

Tentative Schedule-Subject to Change

	Tuesday		Thursday
Jan 11	Methods of Proofs	Jan 13	Introduction to Set Theory
Jan 18	Algebraic and Order Properties of \mathbb{R}	Jan 20	Completeness Axiom, Denseness of Rationals
Jan 25	Cardinality	Jan 27	Metrics
Feb 1	Topology	Feb 3	Sequences
Feb 8	Sequences	Feb 10	Sequences
Feb 15	Sequences	Feb 17	Continuous Functions
Feb 22	Exam 1	Feb 24	Limits of Functions and Consequences of Continuity
Mar 1	Continuity	Mar 3	Discontinuities and Monotone Functions
Mar 15	Uniform Continuity	Mar 17	Generalized Continuity
Mar 22	Derivatives	Mar 24	Derivatives
Mar 29	Derivatives	Mar 31	Derivatives and Applications
Apr 5	Applications	Apr 7	Taylor's Theorem and L' Hopital's Rule
Apr 12	Taylor's Theorem and L' Hopital's Rule	Apr 14	Generalizations
Apr 19	Generalizations	Apr 21	Exam 2
Apr 26	Final Exam Review		