

Sul Ross State University
Course Syllabus
CSA 4310 - Senior Capstone 1
Fall 2026

Instructor: Dr. Bushra Sajid
Office Number: ACR 203 C
Email Address: Bushra.sajid@sulross.edu
Office Hours: 3:00 pm - 5:00 pm TTR, others by appointment
Equivalency: CSAT 3301 (through summer 2023)
Time and Place of Class Meetings: Online anytime

Course Description

This is a capstone course in which the student is required to complete a project demonstrating command of a significant body of computer science. Includes oral defense of a paper written in ACM style and an exit examination designed to show mastery of all computer science courses completed. This course is required of all senior Computer Science majors. Offered when needed.

Marketable Skills

Upon successful completion of the course, students will develop marketable skills applicable to computer science, software development, information technology, and related professional careers.

- Design, plan, and develop a significant computer science project using appropriate computational methods and technologies.
- Communicate technical concepts and project results effectively through professional documentation, ACM-style writing, and oral presentations.
- Apply problem-solving, project management, teamwork, and critical evaluation skills to develop, test, and defend computational solutions.

BS Computer Science Student Learning Outcomes

- Students will be able to comprehend the fundamental concepts of computer science, including the binary number system, string operations, data types, branching, looping, input/output (I/O) operations, basic algorithms, and common data structures.
- Students will be able to demonstrate knowledge of modern computer systems, databases, and networking.

- Students will demonstrate mastery of and the ability to implement modern object-oriented programming methodologies and will be able to design and implement a basic Unified Modeling Language (UML) application design.

Course Student Learning Outcomes

Upon successful completion of Senior Capstone I, students will be able to:

1. Define and analyze a significant computer science problem, establish project requirements, and develop an appropriate plan for a capstone project.
2. Design and implement a computational solution by applying knowledge, programming skills, tools, and techniques acquired throughout the Computer Science program.
3. Evaluate, document, and communicate project progress and technical decisions through ACM-style technical writing and professional oral presentations.
4. Apply appropriate testing, verification, ethical reasoning, and critical evaluation to assess the correctness, reliability, and broader impact of the proposed solution.
5. Demonstrate professional project-management, teamwork, independent learning, and problem-solving skills while completing the first phase of the senior capstone project.

Grading Scale

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

Assignments with their due dates will be posted on Blackboard.

No make-up exams will be given. If there is a valid reason for missing an exam, then the grade for the missed exam will be replaced by the grade on the final exam. Otherwise, a missed exam will be a zero. Exams will be closed notes, closed book, and no calculator will be allowed unless otherwise stated. Any restroom breaks need to be taken before an exam starts. You cannot leave the classroom in the middle of an exam under any circumstances.

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 not to attend class unless they can 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.

Academic Integrity

Students in this class are expected to demonstrate scholarly behavior and academic honesty in the use of intellectual property. Students should submit work that is their own and avoid the temptation to engage in behaviors that violate academic integrity, such as 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. Students should also avoid using OpenAI sources unless permission is expressly given for an assignment or course. Violations of academic integrity can result in failing assignments, failing a class, and/or more serious university consequences. These behaviors also erode the value of college degrees and higher education overall.

Copyright and Web Content

Copyright is an important component of professional web development. The technical ability to download an image, video, graphic, font, source-code example, or other digital resource does not automatically grant permission to reuse or redistribute that material.

Students will learn to distinguish among original content, copyrighted material, public-domain resources, open-source software, and content distributed under licenses such as Creative Commons.

Students are responsible for appropriately attributing and documenting third-party content used in course projects.

Generative Artificial Intelligence (AI)

The University does not recommend or endorse any specific AI tools or resources. Students should be aware that many generative AI tools (e.g., ChatGPT, Google Gemini, Microsoft Copilot) store user input and may use this data to train future models. For this reason, students should never upload or share personal, confidential, or identifiable information—such as names, ID numbers, health data, or assignment submissions containing such details—into any generative AI platform. When using AI tools, students should verify whether the tool complies with student privacy standards as indicated by the University. Faculty may recommend specific tools that better align with institutional data privacy policies, but ultimate responsibility for data protection rests with users. Students are encouraged to use faculty-recommended platforms when engaging in coursework involving generative AI. The University is not liable for any adverse experience or impact when students interact with these tools.

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.

Americans With Disabilities Act

SRSU Accessibility Services. 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. To help protect confidentiality, students seeking accessibility/accommodation(s) services must submit the Accommodation Request Form located on our website. Students are welcome to call the Office of Accessibility Services at 432-837-8203 or stop by Ferguson Hall Room 112 if they have any additional questions regarding the process. Our mailing address is PO Box C-122; Alpine, TX; 79832.

Counseling

Sul Ross has partnered with TimelyCare where all SR students will have access to nine free counseling sessions. You can learn more about this 24/7/365 support by visiting [Timelycare/SRSU](https://www.timelycare.com/sulross). The SR Counseling and Accessibility Services office will continue to offer in-person counseling in Ferguson Hall room 112 (Alpine campus), and telehealth Zoom sessions for remote students and RGC students.

Library Services

The Bryan Wildenthal Memorial Library and Archives of the Big Bend in Alpine offer 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 logging in with your LoboID and password. Librarians are a tremendous resource for your coursework and can be reached in person, by email (srsulibrary@sulross.edu), or by phone (432-837-8123).

No matter where you are based, public libraries and many academic and special libraries welcome the general public into their spaces for study. SRSU TexShare Cardholders can access additional services and resources at various libraries across Texas. Learn more about the TexShare program by visiting library.sulross.edu/find-and-borrow/texshare/ or ask a librarian by emailing srsulibrary@sulross.edu.

Mike Fernandez, SRSU Librarian, is based in Eagle Pass (Building D-129) to offer specialized library services to students, faculty, and staff. Utilize free services such as InterLibrary Loan (ILL), ScanIt, and Direct Mail to get materials delivered to you at home or via email.

Student Responsibilities

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.

Supportive Statement

I aim to create a learning environment for my students that supports various perspectives and experiences. I understand that the recent pandemic, economic disparity, and health concerns, or even unexpected life events may 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 a supportive 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.

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.

Tutoring

The Lobo Den Tutoring Center offers FREE tutoring support to help you excel in your courses. Whether you need assistance in Writing, Math, Science, or other subjects, we're here to help!

Important Information:

Drop-in and Scheduled Appointments: Flexible options to fit your needs. Hours of Operation: Monday–Friday,

8:00 AM – 5:00 PM. Workshops: Attend our regularly hosted academic workshops on STEM topics and professional development, often in collaboration with specialized faculty. Location: BWML Room 128. Contact Us: For more information or to book an appointment, email tutoring@sulross.edu or call (432) 837-8726. Looking for additional support?

Tutor.com offers FREE 24/7 online tutoring in over 200 subjects, including specialized support for ESL and ELL learners with native Spanish-speaking tutors. Access Tutor.com via Blackboard: Log in to your Blackboard account to get started anytime, anywhere. Take advantage of these valuable resources to boost your confidence and performance in your classes. We look forward to helping you succeed!

Important Dates:

November 23–27	Thanksgiving Break – no class
December 1	Final project demonstrations and code defense
December 2	End of course instructional period

Additional official university deadlines regarding registration, census dates, withdrawals, and final examinations should be verified against the Fall 2026 Sul Ross State University Academic Calendar.

1 Tentative Course Schedule

Week	Topics
1	Introduction to Senior Capstone I – Purpose of the capstone, course expectations, characteristics of a successful computer science capstone project, project categories, professional responsibilities, documentation standards, and introduction to the capstone development process.
2	Project Idea Selection and Feasibility Analysis – Identifying real-world computing problems, brainstorming project ideas, evaluating technical feasibility, resource requirements, time constraints, available technologies, project risks, and selecting an appropriate capstone project.
3	Problem Statement and Project Scope – Defining the problem, identifying stakeholders and target users, establishing project boundaries, assumptions, constraints, and developing a clear and measurable project scope.
4	Project Objectives and Expected Outcomes – Developing specific and measurable project objectives, identifying expected results, defining project success criteria, deliverables, and evaluation measures.
5	Literature Review and Existing Systems Study – Searching scholarly and technical literature, evaluating credible sources, reviewing related systems and technologies, identifying limitations of existing solutions, and establishing the motivation for the proposed project.
6	Software Requirements Specification (SRS) – Introduction to requirements engineering, requirements gathering, stakeholder needs, system requirements, writing clear requirements, and organizing a Software Requirements Specification document.
7	Functional and Non-Functional Requirements – Identifying functional requirements, performance requirements, security, reliability, usability, accessibility, scalability, maintainability, and other non-functional system requirements.
8	System Analysis and Design – Translating requirements into a system design, identifying major system components, modules, interfaces, data flows, system architecture, and interactions among components.
9	System Modeling and Design Diagrams – UML diagrams, use-case diagrams, class diagrams, sequence diagrams, Entity Relationship Diagrams (ERD), Data Flow Diagrams (DFD), and other appropriate models for communicating system design.

Week	Topics
10	Technology Stack Selection – Evaluating and selecting programming languages, frameworks, databases, APIs, cloud services, development environments, libraries, and other technologies based on project requirements and constraints.
11	Project Development Methodology – Software development life cycle, Agile development, Scrum concepts, iterative development, Waterfall methodology, task organization, version control, and selection of an appropriate development methodology for the project.
12	Database, Interface, and System Architecture Design – Database schema design, user-interface design, user experience, system architecture, component integration, security considerations, and design consistency.
13	Prototype and Initial Implementation – Developing a proof-of-concept or functional prototype, implementing core system components, integrating selected technologies, debugging, version control, and evaluating early implementation results.
14	Testing, Evaluation, and Project Planning – Developing a testing strategy, unit and integration testing concepts, test cases, acceptance criteria, performance evaluation, project milestones, risk management, project timeline, and Gantt chart.
15	Capstone Proposal and Technical Documentation – Organizing the Capstone I report, ACM-style technical writing, project abstract, problem statement, literature review, requirements, methodology, system design, preliminary results, testing plan, timeline, references, and professional documentation standards.
16	Final Capstone I Presentation and Viva – Professional technical presentation, demonstration of the prototype, explanation of system architecture and design decisions, discussion of project limitations and future development, oral defense, technical questioning, and preparation for Senior Capstone II.

Tentative Nature of the Syllabus

This syllabus and course schedule are subject to change when necessary to improve instruction, accommodate University scheduling, or respond to the progress and needs of the class.

Changes will be communicated through Blackboard, Sul Ross email, and/or class announcements.

The goal of Senior Capstone I is not simply to build a computer science project.

The goal is to identify a meaningful problem, investigate existing solutions, define clear requirements, design a technically sound solution, develop and evaluate an initial implementation, and communicate the reasoning behind every major project decision.

A successful capstone demonstrates not only what students can build, but also their ability to explain, test, evaluate, document, and defend what they build.