SJSU SAN JOSÉ STATE UNIVERSITY

College of Science · Computer Science

Data Science Senior Project

CS 163

Fall 2026 Section 01 In Person 3 Unit(s) 08/19/2026 to 12/07/2026 Modified 08/26/2026

Contact Information

Instructor: Dr. Jelena Gligorijevic

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Office: MacQuarrie Hall 211

Office Hours

Tuesday, 12:30 PM to 2:30 PM, MacQuarrie Hall 211

Please schedule your time here: https://calendar.app.google/B34F7MkEbNAPLESg9 (https://calendar.app.google/B34F7MkEbNAPLESg9)

Please check my office-hours calendar before coming, since other students may already be scheduled during that time. I will keep the calendar updated and add additional availability when possible/needed. Booking through the calendar helps ensure you don't wait and that we can use the time efficiently. If you need more time, please book more than one time slot.

Course Information

Lecture

Tuesday, Thursday, 3:00 PM to 4:15 PM, MacQuarrie Hall 523

Course Description and Requisites

Semester-long individual or team project. Apply knowledge and technology to solve a realistic data science problem, including the entire process of collecting and processing real-world data, applying suitable analytic methods, explaining analysis outcomes, and making appropriate recommendations.

Prerequisite(s): CS 100W, CS 131, and either CS 156 or CS 171.
Grading: Letter Graded

Classroom Protocols

Students are expected to adhere to the Student Conduct Code (https://www.sjsu.edu/studentconduct/).

Communication:
This semester, we'll be using a private Discord server as our main space for class communication and collaboration.

Discord is where we can:

- Ask and answer course-related questions.
- Share ideas, resources, and helpful tips.
- Learn from one another's perspectives and approaches.
- Continue discussions beyond class time.
- Organize and coordinate with your project team.

Instead of sending most questions by email, please post them in the appropriate Discord channel so the whole class can see and benefit from the responses. Your classmates may have the same question, and sometimes, a peer's explanation will click for you even faster.

A direct link to join will be given in Canvas.

Private or sensitive matters should be addressed through direct messages or discussed during office hours.

Office hours are the best time to get help with assignments, conceptual questions, or technical troubleshooting.

Use of AI Tools

Modern AI tools are part of the normal project workflow in CS 163. Modern AI tools may be used for most project development, including brainstorming, coding, debugging, test generation, documentation support, analysis support, and critique. Students remain responsible for every technical claim, result, line of submitted code, and design decision.

The course uses AI tools differently depending on the assessment purpose:

- Project work with AI tools: AI tools are allowed. Each sprint review includes a short disclosure of material AI use and how important outputs were verified.

- Individual technical checks without AI tools: AI tools are not used during selected individual technical defenses/checks because the goal is to assess the student's own understanding.
- AI-assisted engineering assessment: AI tools are explicitly allowed and encouraged. The goal is to evaluate how effectively a student can use modern tools to diagnose, modify, test, and explain a system under a new constraint.

Submitting AI-generated work that you cannot explain, presenting fabricated data/citations/results, or misrepresenting work as independently verified is inconsistent with course expectations and may also violate SJSU academic integrity policy.

Program Information

Diversity Statement - At SJSU, it is important to create a safe learning environment where we can explore, learn, and grow together. We strive to build a diverse, equitable, inclusive culture that values, encourages, and supports students from all backgrounds and experiences.

Course Learning Outcomes (CLOs)

Upon successful completion of this course, students will be able to:

- Carry out a data science project that involves data collection, data cleaning, analysis, and visualization.
- Construct a literature search and summarize the state of the arts.
- Translate the project objectives into a realistic work plan.
- Design and implement required software using data analysis tools such as Python, R, and MatLab.
- Present professionally, in both oral presentation and technical report, including project plan, design,implementation, analysis, final results, and recommendations.

Course Requirements and Assignments

The semester project is the organizing structure for the course. Most assigned work advances the project toward the next Sprint Review. Detailed assignment instructions, submission requirements, and rubrics will be posted on Canvas.

Projects may be completed individually or in teams. Teams of 3-4 are the default. Each student must make a substantial technical contribution and understand the complete project. Individual projects require instructor approval and an appropriately scoped plan.

Sprints and Sprint Reviews

Projects progress through five assessed sprints. Each sprint ends with a review of the main project deliverable and the next technical priorities. Teams maintain a current project board, use a rotating Sprint Lead, and complete concise planning and retrospective documentation.

- Sprint 1 Review, September 15: written proposal, data feasibility, evaluation plan, and pitch.
- Sprint 2 Review, October 1: data quality and EDA report, reproducible pipeline, analysis plan, and baseline results.
- Sprint 3 Review, October 22: preliminary results, experiment evidence, diagnostics, and technical poster.
- Sprint 4 Review, November 17 or 19: complete analysis, project deliverable, testing and reproduction evidence, and demonstration.
- Sprint 5 Final Review, December 10: final report, repository, project deliverable, documentation, presentation, and technical defense.

Each Sprint Review includes a short disclosure of material AI use and how important outputs were verified. Detailed review requirements and rubrics will be posted on Canvas.

Individual Technical Competency

Individual technical competency is assessed through short in-class technical checks, individual project checks during Sprint Reviews, an AI-assisted engineering assessment, and the final individual technical defense. Short checks and the technical defense are completed without AI tools; the AI-assisted engineering assessment allows AI tools.

Project Execution and Communication

Project execution and communication are assessed through planning records, project-board alignment, technical ownership, collaboration, project reviews, demonstrations, presentations, and questions. Every student participates in each major communication format.

Final Examination or Evaluation

There is no traditional written final examination. The final project showcase takes place on Thursday, December 10, 2026, from 1:00-3:00 PM.

Late Work and Missed Sprint Review Activities

Sprint Review deliverables are due before the scheduled review. Unapproved submissions up to 24 hours late may receive a 10% deduction; submissions 24-48 hours late may receive a 20% deduction; submissions more than 48 hours late may not be accepted. Excused absences and documented emergencies are handled according to university policy. Missed individual presentation or defense work may require an equivalent make-up activity.

✓ Grading Information

Breakdown

Category	Weight
Sprint 1: Proposal	5%
Sprint 2: Data Audit, EDA, and Analysis Plan	12%
Sprint 3 Review: Preliminary Results -- Technical Poster	15%
Sprint 4 Review: Complete analysis, deployment, validation	18%
Sprint 5 Review: Final project presentation and report	20%
Individual technical competency	20%
Project execution / teamwork	5%
Communication	5%

Criteria

Final grades:

Grade	Points
A plus	≥ 97

Grade	Points
A	93 - 96.99
A minus	90 - 92.99
B plus	86 - 89.99
B	83 - 85.99
B minus	80 - 82.99
C plus	76 - 79.99
C	73 - 75.99
C minus	70 - 72.99
D plus	66 - 69.99
D	63 - 65.99
D minus	60 - 62.99
F	< 60

University Policies

Per University Policy S16-9 (PDF) (http://www.sjsu.edu/senate/docs/S16-9.pdf), relevant university policy concerning all courses, such as student responsibilities, academic integrity, accommodations, dropping and adding, consent for recording of class, etc. and available student services (e.g. learning assistance, counseling, and other resources) are listed on the Syllabus Information (https://www.sjsu.edu/curriculum/courses/syllabus-info.php) web page. Make sure to visit this page to review and be aware of these university policies and resources.

Course Schedule

The course schedule is subject to change with fair notice. Changes will be announced in Canvas.

Sprints	Week / Date	Topic

Introduction and Team Formation	W1 Thu 8/20	Course introduction
	W2 Tue 8/25	Presentation of candidate projects
	W2 Thu 8/27	Team formation and collaboration agreements
	W3 Tue 9/1	Version control, Project board configuration and reproducible project setup
Sprint 1: Project Definition	W3 Thu 9/3	Sprint 1 planning; Data-science problem formulation
	W4 Tue 9/8	Data provenance, ethics, and risk assessment
	W4 Thu 9/10	Literature review and evaluation methodology
	W5 Tue 9/15	Sprint 1 Review: Proposal Pitch
Sprint 2: Data Preparation and Baseline Analysis	W5 Thu 9/17	Sprint 2 planning; Data preparation and processing pipelines
	W6 Tue 9/22	Exploratory data analysis
	W6 Thu 9/24	Baseline models and experiment management; AI-assisted data-science work
	W7 Tue 9/29	Project work session and consultations
	W7 Thu 10/1	Sprint 2 Review: Data Audit, EDA, and Analysis Plan
Sprint 3: Modeling and Evaluation	W8 Tue 10/6	Sprint 3 planning; modeling methodology review; Experiments and comparison design
	W8 Thu 10/8	Error analysis and model diagnostics
	W9 Tue 10/13	Large language models I: prompting and retrieval-augmented generation
	W9 Thu 10/15	Large language models II: adaptation, agentic systems, and evaluation
	W10 Tue 10/20	Communicating quantitative results, conducting techical review
	W10 Thu 10/22	Sprint 3 Review: Preliminary Results -- Technical Poster
	W11 Tue 10/27	Cross-Team Technical Review
Sprint 4: Deployment, Validation	W11 Thu 10/29	Revision or pivot studio; Sprint 4 planning; Project delivery approaches
	W12 Tue 11/3	APIs, service boundaries, and FastAPI
	W12 Thu 11/5	Docker and reproducible runtime
	W13 Tue 11/10	Cloud Run and production behavior
	W13 Thu 11/12	Dashboards and Interactive Data Applications
	W14 Tue 11/17	Sprint 4 Review, Session A
	W14 Thu 11/19	Sprint 4 Review, Session B
Sprint 5: Completion, Documentation and Dissemination	W15 Tue 11/24	Sprint 5 planning; Technical writing; Project Packaging, Testing, and Reproducibility
	W15 Thu 11/26	No class
	W16 Tue 12/1	AI-assisted engineering assessment and project reproduction
	W16 Thu 12/3	Final project testing and technical review; Individual assessment
	Final Thu 12/10, 1-3 PM	Final presentations and demonstrations