College of Science · Computer Science

Data Science Senior Project
CS 163

Spring 2026   Section 01   In Person   3 Unit(s)   01/22/2026 to 05/11/2026   Modified 01/20/2026

👤 Contact Information

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Office Hours

Monday, Wednesday, 12:15 PM to 1:15 PM, MH 215

You don't need to make an appointment for these office hours. You can stop by my office.

💻 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.

Letter Graded

✳ Classroom Protocols

Communication with the instructor

Students are requested to use the Canvas message function to contact the instructor. Private messages sent to the instructor's email address gets lost due to the large volume of emails received.

The instructor does not write messages after normal business hours, on weekends or holidays.

Reviewing code for the homework and technical trouble-shooting should be done during the office hours.

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 Materials

Suggested Reference:

- Peter Bruce, Andrew Bruce, and Peter Gedeck, "Practical Statistics for Data Scientists: 50 + Essential Concepts using R and Python (2nd ed.)", O'Reilly Media, 2020, ISBN: 149207294X. [You can read this book for free with your SJSU account: https://library.sjsu.edu/ebooks/safari-books-online-o-reilly (https://library.sjsu.edu/ebooks/safari-books-online-o-reilly/)]
- Hastie, T., Tibshirani, R., & Friedman, J. H. (2009). The elements of statistical learning: data mining, inference, and prediction. 2nd ed. New York, Springer. [You can download this book from the authors' webpage: https://hastie.su.domains/ElemStatLearn/ (https://hastie.su.domains/ElemStatLearn/)]

Course Requirements and Assignments

- This course is conducted in a workshop style, where students bring their proposals and results and discuss them as a group.
- Assignments are designed to provide a timeline to complete a project by the end of the semester. Making an appropriate schedule is a part of the project task.
- The submitted assignments will be discussed during the lecture time.
- Active participation in the discussion is required to obtain the full credits in each assignment.
- The final website will be evaluated from multiple aspects:
  - As a data science report: effective presentation, visualization, interactiveness, explanation of the analytical methods, result presentation, and alignment with the project objectives.

- As a software system: its functionality, documentation clarity, development and deployment practices, and scalability and reusability.

Item	Percentage
Proposal draft	5%
Finalized proposal	15%
EDA summary	15%
Analysis and visualization plan	10%
Preliminary results	15%
Final website and documentation	30%
Summary quiz	10%

✔ Grading Information

Extra-credits and Reworks

No extra-credit assignments or rework opportunities will be given.

Late Submission

Late submissions within 24 hours will be deducted 10% of its final grade. Submissions over 24 hours late will have 20% grade deducted. Late submissions over 2 days will not be accepted.

Missed Assignments or Exams

When students need to miss an assignment deadline or exam due to health conditions or any other emergency, it should be reported within one week after the due date.

Final Grade Table

Total Grade	Letter Grade
97% and above	A plus
93% to 96%	A
90% to 92%	A minus
87% to 89%	B plus
83% to 86%	B

80% to 82%	B minus
77% to 79%	C plus
73% to 76%	C
70% to 72%	C minus
67% to 69%	D plus
65% to 66%	D
60% to 64%	D minus
59% and below	F

🏛 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

Date	Topic	Note
1/26	Course Introduction	
1/28	Project Sample Presentation	
2/2	Project Organization and Data Processing	Due: Group formation
2/4	Exploratory Data Analysis	
2/9	Proposal Discussion	Due: Proposal draft
2/11	Statistical Methods Review	
2/16	Machine Learning Review	
2/18	Proposal Presentation 1	Due: Finalized proposal
2/23	Proposal Presentation 2	

2/25	Proposal Presentation 3	
3/2	Dash: Basics	
3/4	Dash: Interactive Graphing and themes	
3/9	Dash: Demo	Due: EDA Summary
3/11	Docker	
3/16	Cloud Web Hosting	
3/18	Model deployment	
3/23	Model deployment: Demo	Due: Analysis and visualization plan
3/25	Fine-tuning Foundation Models	
3/30	Spring Recess (No class)	
4/1	Spring Recess (No class)	
4/6	Fine-tuning Foundation Models	
4/8	Preliminary Results Presentation 1	Due: Preliminary results
4/13	Preliminary Results Presentation 2	
4/15	Preliminary Results Presentation 3	
4/20	Summary Quiz review	
4/22	Summary Quiz	
4/27	Indivisual feedback session	
4/29	Final Presentation 1	Due: Web page and documentation
5/4	Final Presentation 2	
5/6	Final Presentation 3	
5/11	Final Presentation 4	