San José State University
Computer Science Department
CS 161, Software Project, Section 01, fall 2019

Course and Contact Information

Instructor:	Jahan Ghofraniha
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Office Hours:	M-W: 3:00 – 4:00 pm, ENG 281
Class Days/Time:	M- W: 9:00 am – 10:15 am
Classroom:	Location MH 422
Prerequisites:	CS 160 (with a grade of "C-" or better) or instructor consent. Computer Science and Software Engineering Majors only.
Course Format	On-campus, face to face

Course Description
A substantial project based on material from an advanced area of computer science. Includes lectures on the project topic and on the testing and maintenance of software systems. At least 50% of the course grade to be based on the project.

Course Learning Outcomes (CLO)

Upon completion of this course, a student will be able to:
- Analyze requirements, design, implement and test a software project according to formal software engineering procedures.
- Break down a software project into multiple small tasks and assignment to team members on weekly basis.
- Provide progress update on the state of the project and resolve software product cycle issues.
- Work in a team environment and resolve group dynamics issues.
- Present results of the project in a formal manner.
- Perform basic data analysis on streaming or imported data from a database in the context of an end to end machine learning project.

Required Texts/Readings

Textbook

- Hands-on Machine Learning with Scikit-Learn, Keras, and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems

  by Aurélien Géron | Oct 6, 2019

  ISBN-13: 978-1492032649
  ISBN-10: 1492032646

Reference Books:

- Agile Software Development, Principles, Patterns, and Practices by Robert Martin, Prentice Hall, 2002

  ISBN-13: 978-0135974445
  ISBN-10: 0135974445

- An Introduction to Statistical Learning: with Applications in R
  by Gareth James, Daniela Witten, Trevor Hastie, Robert Tibshirani
  (free pdf available from authors' website: http://faculty.marshall.usc.edu/gareth-james/ISL/ISLR%20Seventh%20Printing.pdf)

  Series: Springer Texts in Statistics (Book 103)
  Hardcover: 426 pages
  Publisher: Springer; 1st ed. 2013, Corr. 7th printing 2017 edition (September 1, 2017)
  Language: English
  ISBN-10: 1461471370
  ISBN-13: 978-1461471370

Other Readings

Other readings will be occasionally assigned from articles and journals. The links will be provided on Canvas.

Course Requirements and Assignments

SJSU classes are designed such that in order to be successful, it is expected that students will spend a minimum of forty-five hours for each unit of credit (normally three hours per unit per week), including preparing for class, participating in course activities, completing assignments, and so on. More details about student workload can be found in University Policy S12-3 at http://www.sjsu.edu/senate/docs/S12-3.pdf. Note that University policy F15-12 at http://www.sjsu.edu/senate/docs/F15-12.pdf states that "Attendance shall not be used as a criterion for grading."
"Students are expected to attend all meetings for the courses in which they are enrolled as they are responsible for material discussed therein, and active participation is frequently essential to ensure maximum benefit to all class members. In some cases, attendance is fundamental to course objectives; for example, students may be required to interact with others in the class. Attendance is the responsibility of the student."… "Participation

may be used as a criterion for grading when the parameters and their evaluation are clearly defined in the course syllabus and the percentage of the overall grade is stated."

Assignments

The assignments are to be submitted on time. A penalty of 10% per day is applied to late submissions. No assignments will be accepted after a week past its due date.

Exams

- The exams are based on lectures, homework/lab assignments, and reading materials covered before the exam's date.

- Absolutely NO items may be shared during the exams, including books, notes, and calculators.

- Absolutely NO usage of cell phones during exams. Cell Phones must in off or silent mode and not within your reach.

Makeup exams will only be granted in case of documented medical emergency with an advanced notice to the instructor. If a student misses and exam without a legitimate excuse, a grade of zero will be recorded.

Grading Policy

Your individual grade will be weighted as follows:

- Project proposal   10%
- Project planning and management   15%
- Weekly homework   15%
- Midterm exam/evaluation   10%
- Final Project Presentation   15%
- Final project report   35%
Total   100%

A= 100-93; A- = 90-92.99; B+ = 88-89.99; B= 83-87.99; B- = 80-82.99; C+ = 78-79.99; C= 73-77.99; C- = 70-72.99; D+ = 68-69.99; D = 63-67.99; D- = 60-62.99; F= <60.

Passage of the Writing Skills Test (WST) or ENGL/LLD 100A with a C or better (C- not accepted), and completion of Core General Education are prerequisite to all SJSU Studies courses. Completion of, or co-registration in, 100W is strongly recommended. A minimum aggregate GPA of 2.0 in GE Areas R,S, & V shall be required of all students.

Classroom Protocol

All students are expected to be on time, each team will upload their weekly progress using the agile tools which includes tasks completed, Sprint progress and remaining tasks per individual per team. The lecture time during the in-class team work is spent with team discussion and team meeting. The instructor will participate in the

meeting to provide guidance and observe and evaluate team progress and dynamics. The second lecture is used to teach content related to data analysis and machine learning.

Use of cell phone during the lecture is not allowed. If you need to answer an emergency call, please leave the class quietly and answer your call outside the class.

University Policies

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' Syllabus Information web page at http://www.sjsu.edu/gup/syllabusinfo/"

CS161 / Software Project, Fall 2019, Course Schedule

List the agenda for the semester including when and where the final exam will be held. Indicate the schedule is subject to change with fair notice and how the notice will be made available.

Course Schedule (8/21/19 – 12/9/19)

Week	Topics, Readings, Assignments, Deadlines
1	Introduction, class policy and syllabus
	Team formation, agile project management tools, project proposal announcement
2	Introduction to Machine learning & Python Libraries
	Team announcement, team proposal evaluation and proposal due date, review of task assignment, user stories, determination of subtasks and issue tracking
3	ML lecture (Linear and Multi-linear Regression)
	In-class project team work + professor, weekly progress report upload to Canvas
4	ML lecture (Multi-linear Regression and Regularization, hw1 announcement)
	In-class project team work + professor, weekly progress report upload to Canvas
5	ML lecture (Decision trees classification)
	In-class project team work + professor, weekly progress report upload to Canvas (functional spec document due)
6	ML lecture (Decision trees Regression)
	In-class project team work + professor, weekly progress report upload to Canvas
7	Midterm exam Review
	Midterm Exam (20%)
	In-class project team work + professor (first project milestone due)

Week	Topics, Readings, Assignments, Deadlines
8	In-class project team work + professor, weekly progress report upload to Canvas
9	ML lecture (Ensemble techniques, Random Forest, Bagging)
	In-class project team work + professor, weekly progress report upload to Canvas
10	ML lecture (Neural Networks, Perceptron + Backpropagation)
	In-class project team work + professor, weekly progress report upload to Canvas
11	ML lecture (Convolutional neural networks)
	In-class project team work + professor, weekly progress report upload to Canvas
12	ML lecture (Recurrent Neural networks)
	In-class project team work + professor, weekly progress report upload to Canvas (second project milestone due)
13	In-class project team work + professor
	In-class project team work + professor
14	In-class project team work + professor
	In-class project team work + professor
15	Final project presentations
15	Final project presentations
16	Final project presentations
16	Last class, Final project presentations
Final Project report and slides	Final project report and presentation slides to be uploaded to Canvas by 12/7/19 11:59 pm