

Introduction to Machine Learning

CS 171

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

Contact Information

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Office Hours:

TuTh 9:30AM - 10:30AM (MH 213)

Course Description and Requisites

Covers a selection of classic machine learning techniques including backpropagation and several currently popular neural networking and deep learning architectures. Hands-on lab exercises are a significant part of the course. A major project is required.

Prerequisite(s): CS 146 (with a grade of "C-" or better). Computer Science or Software Engineering majors only.

Letter Graded

* Classroom Protocols

To ensure a positive and productive learning environment, here are some important points to keep in mind:

Materials and Updates

Find course materials on Canvas at <http://sjsu.instructure.com>

Regularly check MySJSU and your email for updates.

Recording and Privacy

Recording any class activities, including lectures, is only allowed with the instructor's permission.

You are not permitted to share or distribute class recordings.

Instructor-generated materials (like syllabi, lectures, and presentations) are protected by copyright.

Violation may result in referral to Student Conduct and Ethical Development office.

Respectful Behavior

Treat your fellow classmates with respect and kindness.

Avoid interruptive or disruptive behavior during class.

Limit electronic device usage to relevant learning activities.

The full code of conduct is available on Canvas.

Plagiarism and Cheating

If a student is found engaging in academic dishonesty on a homework assignment, they will receive a **zero** for that assignment. If a student is caught cheating on an exam, they will receive a **failing grade (F)** for the course. In accordance with **University Policy F15-7**, the instructor is required to report all instances of cheating or plagiarism to the university.

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)

By the end of this course, students will be able to:

1. **Explain** fundamental machine learning concepts, including supervised and unsupervised learning, feature representation, model training, and generalization.
2. **Apply** common machine learning algorithms, including regression, classification, clustering, and dimensionality reduction, to real-world problems.
3. **Preprocess and analyze data** through data cleaning, feature selection, feature engineering, normalization, and exploratory data analysis.
4. **Implement** machine learning models using appropriate programming languages, libraries, and computational tools.
5. **Evaluate and compare** machine learning models using appropriate performance metrics, validation techniques, and error analysis.
6. **Identify and address** common machine learning challenges, including overfitting, underfitting, class imbalance, and model selection.

Course Materials

- ***Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow*** by Aurélien Géron
A practical and accessible book covering core machine learning concepts, including regression, classification, decision trees, ensemble methods, clustering, and neural networks, with hands-on Python examples.
- ***Deep Learning*** by Ian Goodfellow, Yoshua Bengio, and Aaron Courville
A comprehensive reference for understanding the theoretical foundations of deep learning, including neural networks, optimization, regularization, and representation learning.

Course Requirements and Assignments

Homework (10%)

- Weekly or bi-weekly assignments based on lecture content and hands-on exercises.
- **Late Submission Policy:** Marks will be gradually deducted over time for late submissions.

Quizzes (10%)

- Weekly quizzes based on lecture content.

Exam (50%)

- Mid-term (25%)
- Final (25%)

Project (30%)

- Part 1: Project Presentation (10%)
- Part 2: AI Model Development & Application (20%)

Grading Information

A+	97 and above
A	93-96
A-	90-92
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76

C-	70-72
D+	67-69
D	63-66
D-	60-62
F	Below 60

University Policies

Per [University Policy S16-9 \(PDF\)](http://www.sjsu.edu/senate/docs/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) (<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.