SJSU SAN JOSÉ STATE UNIVERSITY

College of Science · Computer Science

Reinforcement Learning and Sequential Decision Making

CS 272

Fall 2026 Section 02 In Person 3 Unit(s) 08/19/2026 to 12/07/2026 Modified 08/15/2026

Contact Information

Instructor: Mira Jane

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Office Hours

Monday, 4:30 PM to 5:30 PM, DH 282

Course Information

Lectures (in-person only)

Monday, Wednesday, 3:00 PM to 4:15 PM, MH 225

Course Description and Requisites

Introduction to reinforcement learning, deep reinforcement learning, other online learning algorithms, and their applications.

Prerequisite(s): CS 157A. Allowed Declared Major: Computer Science MS, Bioinformatics MS, and Data Science MS.

Letter Graded

Classroom Protocols

- Regular attendance and participation is an integral part of the learning process. You are encouraged to ask questions and respond to questions from the instructor and other students.
- Please arrive to class on time and make sure your cell phones are silent during the lecture.

- Class time will be spent in interactive lecture.
- You are required to bring your wireless laptop to class. Your laptop must remain closed except for designated activities.
- The lockdown browser is needed for assignments / quizzes.
- We will use in-class short quizzes to allow everyone to participate, gather feedback, and check understanding of the material.
- No photography/audio/video recording permitted in the classroom.

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)

This graduate level class is an advanced class in AI&ML series building on the basic foundations covered in CS156 Introduction to AI and CS 171 Introduction to ML. The students will be able to:

- Understand basic RL concepts.
- Understand Multi-Armed Bandit problem.
- Understand Markov Decision Process (MDP).
- Distinguish different types of RL algorithms (Value-Iteration, Policy Gradients, Actor-Critic) and when to use them.
- Build different learners (MC, TD, SARSA, DQN, REINFORCE, PPO, SAC, etc) and apply to real-world problems.
- Analyze the performance of RL algorithms.
- Describe the benefits and challenges of deep RL.
- Build an RL project to solve a problem.

Course Materials

Reinforcement learning: An introduction

Author: Richard S. Sutton and Andrew G. Barto
Publisher: MIT press
Edition: 2nd edition
Year: 2018
ISBN: 0262039249
Optional
Availability: Online

PDF (https://www.andrew.cmu.edu/course/10-703/textbook/BartoSutton.pdf).

Additional Resources

- The Little Book of Reinforcement Learning (https://github.com/alxndrTL/little-book-rl), Alexandre Torres-Leguet, 2026.
- Deep Reinforcement Learning in Action (https://learning.oreilly.com/library/view/deep-reinforcement-learning/9781617295430/), Alexander Zai, Brandon Brown, 2020.
- Spinning Up in Deep RL (https://spinningup.openai.com/en/latest/), Open AI.
- Neural Networks and Deep Learning (http://neuralnetworksanddeeplearning.com/), Michael A. Nielsen, Determination Press, 2015.

Optional
Availability: Online

✓ Grading Information

Grading will be on a **curve** on the final total weighted sum.

- In-class participation: 5%
- In-class quizzes: 25%
- In-class assignments: 20%
- In-class mid term exam: 20%
- Take-home final project: 10%, due Sun, Dec 6.
- In-class cumulative final exam: 20%, Fri, Dec 11, 3:15pm-5:15pm.

Academic Honesty

All work must be yours only, no collaboration allowed, no use of AI/ML tools allowed unless the question specifically asks to use such tools.

🏛 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.