Syllabus for Machine Learning and System Control
Course No: EML 6934

Instructor:

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Lecture Location and Hours:

CSE E122
Tuesday   Period 2 - 3   (8:30 AM - 10:25 AM)
Thursday   Period 3   (9:35 AM - 10:25 AM)

You are expected to wear approved face coverings at all times during class and within buildings even if you are vaccinated. Please continue to follow healthy habits, including best practices like frequent hand washing. Following these practices is our responsibility as Gators.

If you are sick, stay home and self-quarantine. Please visit the UF Health Screen, Test & Protect website about next steps, retake the questionnaire and schedule your test for no sooner than 24 hours after your symptoms began. Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 (or email covid@shcc.ufl.edu) to be evaluated for testing and to receive further instructions about returning to campus. UF Health Screen, Test & Protect offers guidance when you are sick, have been exposed to someone who has tested positive or have tested positive yourself. Visit the UF Health Screen, Test & Protect website for more information.

Office Hours

Wednesday 2:30 – 3:30 PM or by appointment over Zoom https://ufl.zoom.us/j/2337969255.

Textbook:

Sutton, Richard S., and Andrew G. Barto. Reinforcement learning: An introduction. MIT press, 2018.

Other references will be given in lectures.

Course Overview:

This course introduces machine learning methods for decision making (particularly reinforcement learning) and their application to planning and control.

Prerequisites

None. Yet, a general understanding of probability theory and programming (e.g., in Python) will be beneficial.

Course Content:

Week (Date)	Lecture
1 (8/24, 8/26)	Introduction
2 (8/31, 9/2)	Multi-Arm Bandits
3 (9/7, 9/9)	Markov Decision Processes (HW1)
4 (9/14, 9/16)	Dynamic Programming
5 (9/21, 9/23)	Monte Carlo Method
6 (9/28, 9/30)	Temporal Difference Learning (HW2 + Project Start)
7 (10/5, 10/7)	First Mid-Term + Review
8 (10/12, 10/14)	Multi-Step Bootstrapping
9 (10/19, 10/21)	Planning and Learning (HW3)
10 (10/26, 10/28)	On-Policy Prediction with Approximation
11 (11/2, 11/4)	On-Policy Control with Approximation (HW4)
12 (11/9)	Second Mid-Term
13 (11/16, 11/18)	Off-Policy Methods
14 (11/23)	Policy Gradient (HW5)
15 (11/30, 12/2)	Project Presentations
16 (12/7)	Project Presentations

* The schedule is only tentative and may be subject to further changes.

Homework and Exam:

There will be 5 homework assignments and 2 in-class midterm exams.

Final Project:

The final project is based on reading a research paper and making an in-class presentation.

Attendance:

Not required.

Late/Makeup Policy:

Make-up exams will be given only for special circumstances that are pre-approved by the instructor. No more than one late homework is accepted.

Academic Honesty:

See the Orange Book (https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/).

Course Grading:

Homework 20%
Exams 30% × 2 = 60%
Project 20%