

MACF 491 (STAT 497/MAST 679/MAST881), Sec. L
Topics in Mathematics & Statistics: Reinforcement Learning
Topics In Mathematics & Computational Finance
Winter 2024

Instructor: Prof. Yang Lu, Office: LB 921-21 (SGW), Phone: 848-2424, Ext. 2948
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Office Hours: Mondays and Wednesdays, 11:00-13:00.

Class Schedule: Mondays and Wednesdays, 13h15-14h30.

Textbook: *Reinforcement Learning: An Introduction*, by R.S. Sutton and A.G. Barto, 2nd Edition, MIT Press. Available for free online at <http://incompleteideas.net/book/the-book-2nd.html>

Outline: This course is an introduction to reinforcement learning techniques. It requires extensive programming with the R language. Topics covered include:

- Multi-armed bandit problem
- Markov Decision Problems
- Dynamic Programming
- Monte-Carlo solution methods
- Temporal difference methods
- Multi-period
- Approximation methods
- Policy gradient

Evaluation: The course mark will be determined by a midterm exam (35%), assignments (35% weight) and a project (30% weight).

If the grading scheme for this course includes graded assignments, a reasonable and representative subset of each assignment may be graded. Students will not be told in advance which subset of the assigned problems will be marked and should therefore attempt all assigned problems.

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Behaviour

All individuals participating in courses are expected to be professional and constructive throughout the course, including in their communications.

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