Sums 707– Basic Reinforcement Learning
Elementary Theory and Applications — Winter 2021

Course Schedule

Week 1	Jan 18	Introduction to RL, bandits, MDPs	Gabriela
Week 2	Jan 25	Bellman operator, Banach's fixed point, solving MDPs	Gabriela
Week 3	Feb 1	Model-free prediction and control, TD methods, Q	Viet
Week 4	Feb 8	Thicc state spaces: function approximation, deep RL	Viet
Week 5	Feb 15	Policy gradient methods, PG theorem, actor critic	Gabriela
Week 6	Feb 22	Temporal abstraction, options	Gabriela
Week 7	Mar 1	State abstraction, frontiers	Gabriela
Week 8	Mar 8	POMDPs: theory and applications	Gabriela
Week 9	Mar 15	Concentration of measure	Shereen
Week 10	Mar 22	Exploration: regret, optimism, posterior sampling	Viet
Week 11	Mar 29	Deep exploration: neural nets for thicc state spaces	Viet
Week 12	Apr 5	Provably efficient exploration, frontiers	Viet

Important academic dates and information

Classes start: Jan 4
Reading week: Mon-Fri, Mar 1-5
Classes end: Apr 13
Lecture duration: 1.5 hours

Remark: The lecture schedule is tentative. The exact dates on which lectures will happen may change depending on the enrolled students' schedules. More details on this later.

Remark: Concentration inequalities are the next coolest human invention after the wheel, the steam engine, and sheaf cohomology.

A small but important remark: "Basic" in the course title refers to the acidity of the course, in our case, it means that the pH of the course is ≥ 7.0.

Remark: The title of the course is a tribute to André Weil.