

Online and Reinforcement Learning (OReL): Course Introduction (Spring 2024, Block 3)

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Course Team



Course Team: Instructors



Christian Igel

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(4 lectures)



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(4 lectures)



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(7 lectures)



Course Team: Teaching Assistants



Saeed Masoudian
Postdoc at DIKU
*(Course
co-organizer and
Head of TAs)*



**Hippolyte
Bourel**
PhD Candidate
at DIKU
(TA)



**Oliver
Mortensen**
PhD Candidate
at DIKU
(TA)



Chenxiao Ma
Research Assistant at
DIKU
(TA)



Course Plan



Weekly Plan

	Mon	Tue	Wed	Thu	Fri
9:15 – 10:00		TA (x2)		Lecture 1	
10:00 – 11:00		TA (x2)		Lecture 1	
11:00 – 12:00		TA (x2) + OTA		Lecture 1 Q&A	
12:00 – 13:00					
13:15 – 14:00				Lecture 2	TA (x1)
14:00 – 15:00				Lecture 2	TA (x1)
15:00 – 16:00				Lecture 2 Q&A	TA (x1)
16:00 – 17:00					
21:00			HA DEADLINE		

- 'TA' denotes *physical* exercise sessions.
- 'OTA' denotes the *online* TA session (held over Zoom).
- You can attend any and as many sessions you like.
- Note: A slightly different plan in Week 6.



Tentative Lecture Plan

Week 1	9:15-12:00		13:15-16:00
Tuesday	Practical Info	Theory of MDPs 1	---
Thursday	---	Learning Models	Online Learning: Full Information



Week	Thursday, 9:15-12:00	Thursday, 13:15-16:00
2	Theory of MDPs 2	Policy Evaluation and Off-policy Evaluation
3	Off-policy Optimization and Q-Learning	Online Learning: Stochastic Bandits
4	Direct Policy Search	Online Learning: Adversarial Full Information + Bandits
5	Policy Gradient Methods	Online Learning: Advance Topics
6	Offline Discounted RL	Deep RL
7	Deep RL	Online RL: Models and Settings
-	<i>Easter Break</i>	
8	Online RL: Average-Reward Problems	Online RL: Discounted RL
9	Course Summary	Course Evaluation

Yevgeny Christian Sadegh



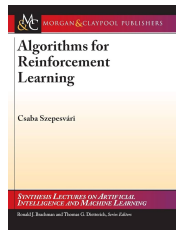
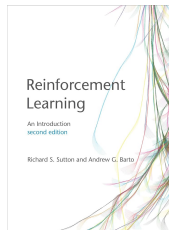
Course Material

- **Main material:** Lecture notes, slides, some papers, . . . and blackboard

LECTURE	Lecture Notes:
LECTURE	 [Y5] Machine Learning – The Science of Selection under Uncertainty
LECTURE	 [ST1] Notes on Theory of Discounted MDPs
LECTURE	[ST2] Notes on Theory of Episodic MDPs
LECTURE	[ST3] Notes on Theory of Average-Reward MDPs

- **Supplementary material (optional):**

- R. Sutton & A. Barto. [Reinforcement Learning: An Introduction](#).
- Cs. Szepesvári. [Algorithms for Reinforcement Learning](#).



Home Assignments



Home Assignments

Weekly home assignments

- Due dates: **Wednesdays at 21:00.**
- No resubmissions (except for re-exam, if necessary)
- Individual submission:
 - You are welcome to study together, but should write the solution **individually**.
 - As per UCPH's rule, use of tools involving LLMs (like ChatGPT) is deemed cheating.
- Final grade = the average grade of $n-1$ 'best' HAs
 - $n=8$ planned HAs
 - Submitting all HAs could help when your average is close to the boundaries.



Late Submissions



Late submissions will not be graded
... irrespective of the reason

Late submissions:

- Will not be graded ... irrespective of the reason
- But do submit, because we will consider (i) the number of submissions and (ii) their content when giving the final grade (i.e., it may help in borderline cases)

Sickness:

- Do NOT notify us about sickness/late submissions/etc.
- The final grade formula covers one potential emergency you may have during the course (e.g., sickness).
- If more than one emergency during the course, please, inform us at the end of the course and we will look into it.



Home Assignments: Feedback and Ref Solutions

- We do not hand out written reference solutions (only occasionally).
- But some reference solutions will be provided during the Q&A hour at the end of each lecture.
 - This hour is also meant for other questions related to course material.
 - You are also welcome to ask on Absalon (the **Discussions** forum).
- TAs provide feedback on your submissions:
 - *Short comments* regarding what was wrong when they take points.
 - They are not expected to provide written feedback on how to fix your mistakes.
 - You can ask them such things orally at a TA session (or a Q&A hour).
- In case of complaints:
 - Any questions regarding the feedback? Ask TAs first.
 - We will not consider complaints below 10 points per assignment. Contact the relevant TA first.

