

Course description
Introduction to Reinforcement Learning for Robotics (Summer School)

Introduction to Reinforcement Learning for Robotics (Summer School)

Academic Study Board of the Faculty of Engineering

Teaching language: English
EKA: T540027102
Censorship: Second examiner: None
Grading: Pass/Fail
Offered in: Odense
Offered in: Spring
Level: Bachelor

Course ID: T540027101
ECTS value: 5

Date of Approval: 26-02-2019

Duration: Intensive course

Version: Archive

▼ Course ID

T540027101

▼ Course Title

Introduction to Reinforcement Learning for Robotics (Summer School)

▼ ECTS value

5

▼ Internal Course Code

XSR-RLR

▼ Responsible study board

Academic Study Board of the Faculty of Engineering

▼ Date of Approval

26-02-2019

▼ Course Responsible

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▼ Programme Secretary

Name	Email	Department	City
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▼ Offered in

Odense

▼ Level

Bachelor

▼ Offered in

Spring

▼ Duration

Intensive course

▼ Mandatory prerequisites

Students should have working knowledge of a programming language (C++, Matlab or python).

▼ Learning objectives - Knowledge

- 1) Understand the types of learning problems that can appear in a robotic context
- 2) Describe key concepts, such as decision processes, value, and policy in the broad context of Reinforcement Learning
- 3) Identify robot learning problems as planning or control problems
- 4) Understand the limitations

▼ Learning objectives - Skills

- 1) Analyze and select appropriate Reinforcement Learning techniques to solve robotic problems
- 2) Formulate adequate solutions to Reinforcement Learning problems

▼ Learning objectives - Competences

Solve complex robotics problems using Reinforcement Learning techniques

▼ Content

Content - Key areas:

Introduction to Reinforcement Learning

- Differences between supervised, unsupervised and reinforcement learning.
- Decision Processes

Reinforcement Learning for Planning

- Markov Decision processes, Policies and Value functions
- Policy Iteration and Value Iteration
- Temporal-Difference Learning

Introduction to supervised learning for regression

- Regression problems
- Artificial Neural Networks

Policy Search

- Reinforcement Learning for control
- Algorithms to Optimize the return
- Gradient estimation methods in Reinforcement Learning

Time of classes
2 weeks in August

▼ **URL for MySchedule**

Show full time table

▼ **Teaching Method**

Lectures and Computer simulation exercises

▼ **Number of lessons**

hours per semester

▼ **Teaching language**

English

▼ **Examination regulations**

▼ **Exam regulations**

▼ **Name**

Exam regulations

▼ **Examination is held**

In the end of the semester

▼ **Tests**

▼ **Exam**

▼ **EKA**

T540027102

▼ **Name**

Exam

▼ **Description**

The examination is based on an overall assessment of:

- Attendance (80 %)
- Oral exam

▼ **Form of examination**

Oral exam

▼ **Censorship**

Second examiner: None

▼ **Grading**

Pass/Fail

▼ **Identification**

Student Identification Card

▼ **Language**

English

▼ **ECTS value**

5

▼ **Courses offered**

Period	Offer type	Profile	Programme	Semester
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▼ **Studieforløb**

Profile	Programme	Semester	Period
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