Planning and Optimization

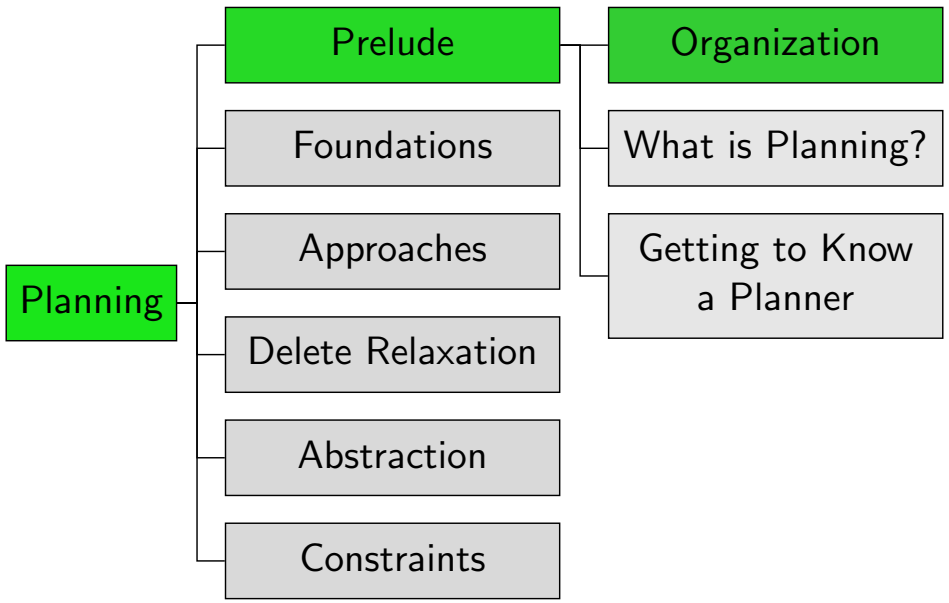
A1. Organizational Matters

Malte Helmert and Gabriele Röger

Universität Basel

September 17, 2025

Content of the Course



People & Coordinates

People: Lecturers

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Gabriele Röger

Lecturers

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People: Assistant

Tanja Schindler

Assistant

Tanja Schindler

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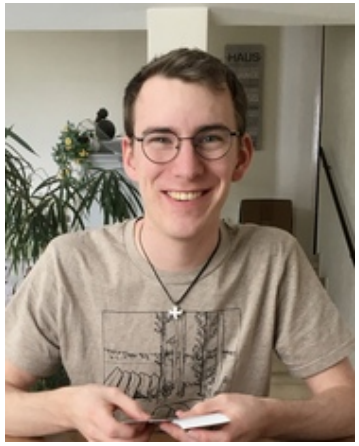
People: Tutors



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Tutors

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Time & Place

Lectures

- time: Mon 14:15–16:00, Wed 14:15–16:00
- place: room 00.003, Spiegelgasse 1

Exercise Sessions

- time: Wed 16:15–18:00
- place: room 00.003, Spiegelgasse 1

first exercise session: today

Communication Channels

- lecture sessions (Mon, Wed)
- exercise sessions (Wed)
- course homepage
- ADAM workspace
- Discord server (invitation link on ADAM workspace)
- email

registration:

- `https://services.unibas.ch/`
- Please register today to receive all course-related emails!

Planning and Optimization Course on the Web

Course Homepage

`https://dmi.unibas.ch/en/studies/computer-science/course-offer-fall-semester-25/lecture-planning-and-optimization/`

- course information
- slides
- link to ADAM workspace
- bonus materials (not relevant for the exam)

Target Audience & Rules

Target Audience

target audience:

- M.Sc. Computer Science
  - Major in Machine Intelligence:
    module Concepts of Machine Intelligence
    module Methods of Machine Intelligence
  - Major in Distributed Systems:
    module Applications of Distributed Systems
- M.A. Computer Science ("Master-Studienfach")
  module Concepts of Machine Intelligence
- M.Sc. Data Science: module Electives in Data Science
- other students welcome

Prerequisites

prerequisites:

- general computer science background: good knowledge of
  - algorithms and data structures
  - complexity theory
  - mathematical logic
  - programming
- background in Artificial Intelligence:
  - Foundations of Artificial Intelligence course (13548)
  - in particular chapters on state-space search

Gaps?

$\rightsquigarrow$ talk to us to discuss a self-study plan to catch up

Exam

- written examination (105 min)
- date and time: January 28, 14:00–16:00
- place: Biozentrum, room U1.131
- 8 ECTS credits
- admission to exam: 50% of the exercise marks
- final grade based on exam exclusively
- no repeat exam (except in case of illness)

Exercise Sheets

exercise sheets (homework assignments):

- solved in groups of two or three ($3 < 4$), submitted in ADAM
- weekly homework assignments
  - released Monday before the lecture
  - have questions or need help?
    $\rightsquigarrow$ assistance provided in Wednesday exercises
  - not sure if you need help?
    $\rightsquigarrow$ start before Wednesday!
  - due following Monday at 23:59
- mixture of theory, programming and experiments
- range from basic understanding to research-oriented

Programming Exercises

programming exercises:

- part of regular assignments
- solutions that obviously do not work: 0 marks
- work with existing C++ and Python code

Exercise Sessions

exercise sessions:

- ask questions about current assignments (and course)
- work on homework assignments
- discuss past homework assignments

Plagiarism

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Plagiarism is presenting someone else's work, ideas, or words as your own, without proper attribution.

For example:

- Using someone's text without citation
- Paraphrasing too closely
- Using information from a source without attribution
- Passing off AI-generated content as your own original work

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Long-term impact:

- You undermine your own learning.
- You start to lose confidence in your ability to think, write, and solve problems independently.
- Damage to academic reputation and professional consequences in future careers

Plagiarism in Exercises

- You may discuss material from the course, including the exercise assignments, with your peers.
- But: You have to independently write down your exercise solutions (in your team).
- Help from an LLM is acceptable to the same extent as it is acceptable from someone who is not a member of your team.

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Immediate consequences of plagiarism:

- 0 marks for the exercise sheet (first time)
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If in doubt: check with us what is (and isn't) OK before submitting
Exercises too difficult? We are happy to help!

Special Needs?

- We (and the university) strive for equality of students with disabilities or chronic illnesses.
- Contact the lecturers for small adaptations.
- Contact the Students Without Barriers (StoB) service point for general adaptations and disadvantage compensation.

Course Content

Learning Objectives

Learning Objectives

- get to know theoretical and algorithmic foundations of classical planning and work on practical implementations
- understand fundamental concepts underlying modern planning algorithms and theoretical relationships that connect them
- become equipped to understand research papers and conduct projects in this area

Course Material

course material:

- slides (online)
- no textbook
- additional material on request

Git Repository

- We use a git repository for programming exercises and for demos during the lecture.
- Setting up the repository is your first task for the exercises.

Demo Examples

When working with the repository, go to its base directory:

Base Directory for Demos and Exercises

```
$ cd planopt-hs25
```

One-time demo set-up (from the base directory)
if the necessary software is installed on your machine:

Demo Set-Up

```
$ cd demo/fast-downward
$ ./build.py
```

Under Construction...

- Advanced courses are close to the frontiers of research and therefore constantly change.
- We are always happy about feedback, corrections and suggestions!