# Foundations of Artificial Intelligence
## 0. Organizational Matters

Thomas Keller and Florian Pommerening

University of Basel

February 20, 2023

People
●○○○○

Format
○○○○○○○

Assessment
○○○○

Tools
○○○

About this Course
○○○○○

# People

**People**
○●○○○

Format
○○○○○○○

Assessment
○○○○

Tools
○○○

About this Course
○○○○○

## Teaching Staff

### Lecturers

Dr. Thomas Keller
- email: tho.keller@unibas.ch
- office: room 04.005, Spiegelgasse 1

Dr. Florian Pommerening
- email: florian.pommerening@unibas.ch
- office: room 04.005, Spiegelgasse 1

People
○○●○○

Format
○○○○○○○

Assessment
○○○○

Tools
○○○

About this Course
○○○○○

# Teaching Staff

## Assistant

Dr. Silvan Sievers

- email: `silvan.sievers@unibas.ch`
- office: room 04.005, Spiegelgasse 1

# Teaching Staff

## Tutors

Esther Mugdan
- email: `esther.mugdan@unibas.ch`



Roman Fries
- email: `r.fries@unibas.ch`



Guillaume Joyet
- email: `guillaume.joyet@unibas.ch`

## Students

prerequisites:

- algorithms and data structures
- basic mathematical concepts
  (formal proofs; sets, functions, relations, graphs)
- complexity theory
- programming skills (mainly for exercises)

People
○○○○○

Format
●○○○○○○

Assessment
○○○○

Tools
○○○

About this Course
○○○○○

# Format

People
○○○○○

Format
○●○○○○○

Assessment
○○○○

Tools
○○○

About this Course
○○○○○

## Structure Overview

Foundations of AI week structure:

- Monday: release of exercise sheet
- Monday and Wednesday: lecture
- Wednesday: exercise session
- Sunday: exercise sheet due
- exceptions due to holidays

People
ooooo

**Format**
oo●oooo

Assessment
oooo

Tools
ooo

About this Course
ooooo

# Time & Place

## Lectures

- Mon 16:15–18:00 in Biozentrum, lecture hall U1.141
- Wed 14:15–16:00 in Biozentrum, lecture hall U1.101

## Exercise Sessions

- Wed 16:15–18:00 in Biozentrum, SR U1.193 (English)
- Wed 16:15–18:00 in Biozentrum, SR U1.195 (German)

first exercise session: February 22 (this week)

## Exercises

exercise sheets (homework assignments):

- mostly theoretical exercises
- occasional programming exercises

exercise sessions:

- initial part:
  - discuss common mistakes in previous exercise sheet
  - answer questions on previous exercise sheet
- main part:
  - we support you solving the current exercise sheet
  - we answer your questions
  - we assist you comprehend the course content

People
ooooo

Format
ooooo●oo

Assessment
oooo

Tools
ooo

About this Course
ooooo

## Theoretical Exercises

theoretical exercises:

- exercises on course homepage every Monday
- covers material of that week (Monday and Wednesday)
- due Sunday of the same week (23:59) via ADAM
- solved in groups of at most two $(2 = 2)$
- support in exercise session of current week
- discussed in exercise session of following week

People
○○○○○

Format
○○○○○●○

Assessment
○○○○

Tools
○○○

About this Course
○○○○○

## Programming Exercises

programming exercises (project):

- project with 3–4 parts over the duration of the semester
- integrated into the exercise sheets (no special treatment)
- solved in groups of at most two ($2 < 3$)
- implemented in Java; need working Linux system for some
- solutions that obviously do not work: 0 marks

People
○○○○○

Format
○○○○○○●

Assessment
○○○○

Tools
○○○

About this Course
○○○○○

Remote Participation

- course is taught in person and
  not optimized for remote participation
- remote participation in lecture possible
  but restricted to students that have good reasons
- request zoom credentials via email sufficiently before lecture
- exercise session: no remote participation

People
○○○○○

Format
○○○○○○○

Assessment
●○○○

Tools
○○○

About this Course
○○○○○

# Assessment

## Course Material

course material that is relevant for the exam:

- slides
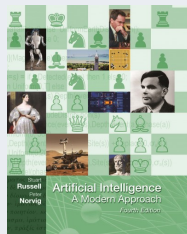- content of lecture
- exercise sheets

additional (optional) course material:

- textbook
- bonus material

### Textbook

Artificial Intelligence: A Modern Approach
by Stuart Russell and Peter Norvig
(4th edition, Global edition)

- covers large parts of the course
  (and much more), but not everything

People
○○○○○

Format
○○○○○○○

Assessment
○○●○

Tools
○○○

About this Course
○○○○○

## Exam

- written exam on Wed, July 05
    - 14:00-16:00
    - 105 minutes for working on the exam
    - location Biozentrum, lecture hall U1.131
- 8 ECTS credits
- admission to exam: 50% of the exercise marks
- class participation not required but highly recommended
- no repeat exam

People
○○○○○

Format
○○○○○○○

Assessment
○○○●

Tools
○○○

About this Course
○○○○○

## Plagiarism

### Plagiarism (Wikipedia)

*Plagiarism is the "wrongful appropriation" and "stealing and publication" of another author's "language, thoughts, ideas, or expressions" and the representation of them as one's own original work.*

consequences:

- 0 marks for the exercise sheet (first time)
- exclusion from exam (second time)

if in doubt: check with us what is (and isn't) OK before submitting

exercises too difficult? Join the exercise session!

People
ooooo

Format
ooooooo

Assessment
oooo

Tools
●oo

About this Course
ooooo

# Tools

## Course Homepage and Enrolment

### Course Homepage

https://dmi.unibas.ch/de/studium/
computer-science-informatik/lehrangebot-fs23/
lecture-foundations-of-artificial-intelligence-1/

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

enrolment:

- https://services.unibas.ch/

## Communication Channels

### Communication Channels

- lectures and exercise sessions
- ADAM workspace (linked from course homepage)
  - link to Discord server
  - forum for Q&A and official announcements
- Discord server (linked from ADAM workspace)
  - opportunity for Q&A and informal interactions
- contact us by email
- meet us in person (by arrangement)
- meet us on Zoom (by arrangement)

People
○○○○○

Format
○○○○○○○

Assessment
○○○○

Tools
○○○

About this Course
●○○○○

# About this Course

People
00000

Format
0000000

Assessment
0000

Tools
000

About this Course
0●000

## Classical AI Curriculum

### "Classical" AI Curriculum

1. introduction

2. rational agents

3. uninformed search

4. informed search

5. constraint satisfaction

6. board games

7. propositional logic

8. predicate logic

9. modeling with logic

10. classical planning

11. probabilistic reasoning

12. decisions under uncertainty

13. acting under uncertainty

14. machine learning

15. deep learning

16. reinforcement learning

People
○○○○○

Format
○○○○○○○

Assessment
○○○○

Tools
○○○

About this Course
○●○○○

## Classical AI Curriculum

### "Classical" AI Curriculum

1. introduction

2. rational agents

3. uninformed search

4. informed search

5. constraint satisfaction

6. board games

7. propositional logic

8. predicate logic

9. modeling with logic

10. classical planning

11. probabilistic reasoning

12. decisions under uncertainty

13. acting under uncertainty

14. machine learning

15. deep learning

16. reinforcement learning

⤳ wide coverage, but somewhat superficial

People
ooooo

Format
ooooooo

Assessment
oooo

Tools
ooo

About this Course
ooooo

# Our AI Curriculum

## Our AI Curriculum

1. introduction

2. rational agents

3. uninformed search

4. informed search

5. constraint satisfaction

6. board games

7. propositional logic

8. ~~predicate logic~~

9. ~~modeling with logic~~

10. classical planning

11. ~~probabilistic reasoning~~

12. ~~decisions under uncertainty~~

13. acting under uncertainty

14. ~~machine learning~~

15. ~~deep learning~~

16. ~~reinforcement learning~~

## Topic Selection

guidelines for topic selection:

- fewer topics, more depth

- more emphasis on programming projects

- connections between topics

- avoiding overlap with other courses
  - Pattern Recognition (B.Sc.)
  - Machine Learning (M.Sc.)

- focus on algorithmic core of model-based AI

People
○○○○○

Format
○○○○○○○

Assessment
○○○○

Tools
○○○

About this Course
○○○○●

## Under Construction. . .



- A course is never "done".
- We are always happy about feedback, corrections and suggestions!