

# Methods 1: Logic

Introduction, overview, & practicalities

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# Logic puzzle

There are two villages. In the honest village ( $H$ ) everybody always speaks the truth. In the dishonest village ( $D$ ) everybody always says the opposite of what is true.

Before you the road splits: one way leads to the honest, the other to the dishonest village.

At the splitting there is a man. He may be from village  $H$  or  $D$ , you don't know.

What do you ask the man to find out where the honest village is?

honest village	man	where're you from?
left	honest	"left"
left	dishonest	"left"
right	honest	"right"
right	dishonest	"right"

# What is logic?

proof

entailment

meaning

All Europeans are human.

All humans are mortal

Therefore, all Europeans are mortal.

# What is a logic?

- there are different kinds of logic
- a logic is a formal system that captures some structural properties of meaning
- this course will cover three logics:
  - 1 propositional logic [meaning of connectives *and, or, not* ...]
  - 2 predicate logic [meaning of quantifiers *all, some, none* ...]
  - 3 modal logic [meaning of epistemic attitudes *belief, knowledge* ...]

# Course content

set theory

3 logics

probability

information theory

# Modeling

insert model plane picture

# Normative models

# Practicalities

- enroll for this course on **moodle**:
  - `https://moodle.zdv.uni-tuebingen.de/course/view.php?id=2876`
- necessary for
  - assessing course material
  - receiving notifications
  - asking questions in the forum
  - submitting homework
  - receiving feedback on homework



# Best practice guide

## 1 self-study

- prepare the assigned reading material before the lecture
- bring questions, know what you don't know, ask and probe

## 2 lecture

- provides motivation, context and overview
- focuses on conceptual understanding

## 3 homework

[start as early as possible each week]

- discussion with others is allowed & encouraged
- write-up & submissions must be made individually
- ask general questions on moodle, but do not share solutions

## 4 tutorials

[go to at least one tutorial every week!]

- start working on homework questions before the tutorial(s)
- emphasis on hands-on support for exercises

# Homework

- **no copying from others**
- submission: **fill me**
  - where, when, how to submit?

[plagiarism will lead to failure]

# Exam

- February 16 2023, 10:00-16:00 (CET)
- take-home exam:
  - released electronically at 10:00 via moodle
  - solvable in ca. 3 hours
  - you may use any material you like (books, handouts, ...)
  - cooperation is forbidden, submissions may not be copied
  - submit electronically at 16:00 the latest via moodle