Principles of Sound Reasoning

Spring Term 2022

Course Information

Course Code: PHIL 222

Class Times: Monday 13:30–15:00 (Room 303), Thursday 13:30–15:00 (Room 303)

Instructor: Dr. Mirja Annalena Holst

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Course Description

The primary aim of this course is to teach students basic but essential skills of analysing, evaluating, and constructing arguments, and to hone their ability to execute these skills in thinking and writing. This ability is not only necessary for their future coursework, but also crucial to rational deliberation and action in everyday life. This course improves students' critical thinking ability by making explicit the basic methods of critical thinking and by linking these methods to various issues and situations in life. We will discuss some of the most useful notions and methods of deductive logic, basic elements of inductive reasoning, including statistic inference and causal inference, as well as common fallacies in reasoning.

Course Aims

The course improves students' ability in logical and critical thinking and makes them aware of common mistakes in everyday reasoning.

Learning Outcomes

Upon successful completion of the course, students will be able to …

- identify and reconstruct arguments, detect implicit premises, and analyse arguments
- understand basic logical concepts
- translate natural language sentences into the formal language of classical logic
- draw truth tables and use them to test arguments for validity
- use the natural deduction system for classical logic to test arguments for validity
- identify and evaluate different kinds of inductive arguments
- understand the basics of causal reasoning
- detect and avoid common fallacies in reasoning

Measurement of Learning Outcomes

Students will be assessed on the basis of in-class work, two quizzes, a midterm exam, and a final exam.

Assessment

- In-class work   10%
- Quizzes   20%
- Midterm Exam   30%
- Final Exam   40%

In-Class Work

This includes class attendance and participation in discussions as well as doing all assigned exercises. You should come to all classes. If you do miss classes, this will decrease your grade (unless you have a reasonable excuse for your absence, shown e.g. by a medical certificate).

Quizzes

The first quiz takes place on 17.02.2022 and the second quiz takes place on 14.04.2022. Each quiz consists of 10 questions, and you have 30 minutes (at the end of the class) to complete it.

Midterm and Final Exam

The midterm exam takes place on 17.03.2022, and the final exam takes place on 09.05.2022. Each exam consists of 20 questions, including multiple choice questions and short answer questions, and you have 90 minutes to complete each exam.

Grading

Course letter grades are assigned at the end of the semester based on this non-standard (!) scale:

- A   85 – 100%
- B   70 – 84%
- C   55 – 69%
- D   40 – 54%
- F   00 – 39%

There will be no make-up exam or assignment, and no extra assignment for extra credit.

Readings

We will read chapters from Joe Y. F. Lau's book, as well as passages from the accompanying webpage:

- Lau, Joe Y. F. (2011): *An Introduction to Critical Thinking and Creativity*, New York: Wiley. [Book]
- Lau, Joe Y. F. (2004–2017): *Critical Thinking Web*, http://philosophy.hku.hk/think/. [Web]

All course texts will be available on our Microsoft Team. In addition to doing the assigned readings, you should study the lecture slides and the exercises, which will be uploaded to Microsoft Team after each class.

Preliminary Schedule

Please note that there might be changes to the preliminary schedule.

Introduction

- 1   10.01.   What is Critical Thinking?   Book §1
- 2   13.01.   What is Logic?   Book §8

Meaning Analysis

- 3   17.01.   Deductive and Inductive Arguments   Book §9, §10.1, §10.2
- 4   20.01.   Argument Analysis   Book §11, §12
- 5   24.01.   Ambiguity and Vagueness   Book §5.1
- 6   14.02.   Definitions   Book §3
- 7   17.02.   Necessary and Sufficient Conditions (QUIZ 1)   Book §4
- 8   21.02.   Basic Logical Concepts   Book §7

Truth Tables

- 9   24.02.   Basics of Sentential Logic   Web SL01, SL02, SL06
- 10   28.02.   Truth Tables 1   Web SL03, SL04
- 11   03.03.   Truth Tables 2   -
- 12   07.03.   Truth Tables 3   -
- 13   10.03.   Truth Tables 4   -

Midterm

- 14   14.03.   Midterm Review   -
- 15   17.03.   MIDTERM EXAM   -

Natural Deduction

- 16   21.03.   Natural Deduction 1   Web SL11, SL12
- 17   24.03.   Natural Deduction 2   Web SL13, SL14, SL15
- 18   28.03.   Natural Deduction 3   -
- 19   31.03.   Natural Deduction 4   -

Inductive Reasoning

- 20   04.04.   Inductive Arguments 1   -
- 21   07.04.   Inductive Arguments 2   Book §21
- 22   11.04.   Causal Arguments 1   Book §15

- 23   14.04.   Causal Arguments 2 (QUIZ 2)   Book §14
- 24   18.04.   Scientific Reasoning   Book §13

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Fallacies and Biases

- 25   21.04.   Fallacies 1   Book §19
- 26   25.04.   Fallacies 2   -
- 27   28.04.   Fallacies 3   -

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Final

- 28   02.05.   Final Review   -
- 29   05.05.   Practice Session   -
- 30   09.05.   FINAL EXAM   -

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