Epistemology

Instructor: Renjie Yang
Email address: 6687@cnu.edu.cn
Office: 首师大文科楼 803
Office hour: Wednesdays 3:00pm - 4:00pm

1. Course Description:

Epistemology, or the theory of knowledge, is a central area of philosophy. It addresses foundational questions related to knowledge, justification, and rationality. The main issues we consider in this course are:

- What can we know?
- How do we know?
- How do machines know?
- What is the general structure of knowledge and justification?

The course contains three modules. In the first module, we will think deeply about the nature of mathematical and empirical knowledge. The emphasis is on the historical development of philosophical ideas that are created to address these foundational issues. Those efforts facilitated the emergence of the modern theories of knowledge and rationality in both science and philosophy. The purpose of this module is to uncover these connections in our intellectual history.

The second module of the course is about the various sources of knowledge. We will examine four different cognitive processes of the human brain, including sensation and perception of space, long-term and working memory, conceptual knowledge, and various types of reasoning. This module incorporates several major empirical theories and key experiments from three branches of cognitive science, including neuroscience, cognitive psychology, and artificial intelligence. We will also investigate the basic structure of machine knowledge and learning processes.

The general conditions that characterize knowledge and justification have puzzled philosophers for thousands of years, and the discussion is still ongoing today. The third module of this course introduces the general philosophical theory of knowledge and justification that contemporary philosophers take seriously.

2. Course Level:

This course is offered at a level accessible to students from all backgrounds. Philosophy is about the establishment of an accurate general understanding of the world or phenomenon of interest. Therefore I will introduce ideas and insights from a wide range of academic disciplines. My teaching philosophy is to present the most sophisticated issues from an elementary point of view. With this mindset, I will not avoid any technical details that are crucial for understanding the literature. Rather I would build the ideas behind the technical results from scratch in a way that the students with few technical backgrounds could understand. Advanced students can pursue their interests in the rather open course project. I am happy to discuss further issues and details during office hours.

3. Aims of the Course:

- Introduce some important issues and well-known arguments in epistemology.
- Provide practice in critical thinking skills.
- Provide practice in succinct, clear writing and presentation.
- Cultivate the ability of conducting research and self-learning on any topic of interest.

4. General Requirements:

- Critical Thinking:
  Critical thinking is the core of successful philosophical training. It includes the cognitive skills of effective reasoning and argumentation, the ability to gain knowledge of the relevant fields, and the willingness to engage in the critical thinking practice. We will discuss specific issues at length so that you can generalize the skills to other areas. Take the opportunity to practice your critical thinking skills and try to learn from this experience.
- Class participation:
  This is a discussion course. We value well-informed contributions to class discussion.
- Careful reading:
  We will talk about your questions and ideas about the readings in class. Be prepared and do the reading before classes so that you can participate in the discussion.
- Language:
  I will lecture in English. To help you understand the lectures, I will divide the materials into smaller modules. After the presentation of each module, I will summarize the main points in Chinese. You can use either Chinese or English in the class discussions.

5. Course Project:

The course project is an opportunity for you to explore an interesting problem of your choice related to epistemology. The purpose of the project is to inform you how to conduct research on an issue you find interesting or important. You can either choose one of the suggested projects I provide or pick your own topic.

- You may work by yourself or in teams of two.
- You will provide: (i) a midterm report (ii) a presentation (iii) final paper
- The report and the paper should be well-written.
- The suggested topics will be posted on March 4.

Proposal. If you would like to choose your own topic, please send me an email and discuss your ideas with me. I will provide help and suggest necessary readings.

Progress Report. Due April 22. 2-3 pages. Include: (i) a high-quality introduction of the issue and the background, (ii) a precise summarization of at least one paper/book chapter in your project readings, (iii) what remains to be done and (iv) a clear description of the division of work among teammates, if applicable.

Presentation. Prepare for 10 minutes presentation and 5 minutes for comment and response. The in-class presentation sections will be held on June 3 and June 10.

Final Paper: 5-6 pages, Due June 17. Submit a docx or pdf file by email. Send it to 6687@*cnu.edu.cn*

6. Course Evaluation:

The final grade follows a Pass/Fail mode. I will keep a more precise grade just for the record: Presentation/Paper/Participation: 30/60/10

7. Readings

The required textbook is

- Richard Feldman. (2003) *Epistemology*. Upper Saddle River, N.J.: Prentice Hall

Here is a list of all the supplementary readings:

- Clark Glymour. (2015) *Thinking Things Through: An Introduction to Philosophical Issues and Achievements*, 2nd edition. A Bradford Book.
- Jennifer M. Groh. (2014) *Making Space: How the Brain Knows Where Things Are*, Harvard University Press.
- E. Bruce Goldstein. (2015) *Cognitive Psychology: Connecting Mind, Research, and Everyday Experience*, Cengage Learning.
- Edward E. Smith, Stephen M. Kosslyn. (2007) *Cognitive Psychology: Mind and Brain*, Pearson/Prentice Hall.
- Stuart J. Russell, Peter Norvig. (2010) *Artificial Intelligence: A Modern Approach*, Pearson/Prentice Hall.

- Eric Bonabeau, "Agent-based Modeling: Methods and Techniques for Simulating Human Systems". *Proceedings of the National Academy of Sciences* May 14, 2002 99 (suppl 3) 7280-7287.

I will send the reading materials to you via email one week before the corresponding class.

The course schedule is on the next page.

Course Schedule:

Time	Content
Feb 26	• Introduction to Epistemology • Reading: None
Mar 4	• Proofs and Mathematical Knowledge • Reading: Glymour Chapter 2 • **Project Topics Out**
Mar 11	• Frege and Modern Logic • Reading: Glymour Chapter 5
Mar 18	• Skepticism and Empirical Knowledge • Reading: Glymour Chapter 9
Mar 25	• Bayesian Epistemology • Reading: Glymour Chapter 8
Apr 1	• Neuroscience: Perception • Reading: Groh Chapter 4
Apr 8	• Neuroscience: Memory • Reading: Groh Chapter 9
Apr 15	• Cognitive Psychology: Knowledge • Reading: Goldstein Chapter 9
Apr 22	• Cognitive Psychology: Reasoning • Reading: Smith and Kosslyn Chapter 10, 2-4 • **Project Milestone Due**
Apr 29	• Artificial Intelligence: Machine Learning • Reading: Russell and Norvig Chapter 18, 1-2, 7
May 6	• Artificial Intelligence: Agent-Based Modeling • Reading: Eric Bonabeau, Agent-based modeling: Methods and techniques for simulating human systems
May 13	• Theory of Knowledge: The Traditional Analysis • Reading: Feldman Chapter 1, 2
May 20	• Evidential Theories: Foundationalism vs. Coherentism • Reading: Feldman Chapter 4
May 27	• Non-evidential Theory: Reliablism • Reading: Feldman Chapter 5
Jun 3	• **Presentation and Discussion**
Jun 10	• **Presentation and Discussion**
Jun 17	• **Final Paper Due**