

Logic 邏輯 (UGED 1111B)
Course Outline for Summer Term, 2017/18

Lecture Hours : Tuesday and Thursday 14:30-16:15 (between May 15 and June 28 inclusive)
Classroom : LSK T2
Language Used : Cantonese and English
Lecturer : Dr. WAN Shun Chuen 溫信傳博士 (Philosophy Department)
Email Address : shunchuenwan@gmail.com
(NOTE: this is the only working email for students to contact me)
Office Address : Room 417, Fung King Hey Building (KHB), central campus

Must Read for Prospective Students

1. This course will be taught in Cantonese but the lecture material and the examination will be mostly in English. Technical terms are accompanied usually by Chinese translations.
2. Since logical sentences are symbolisations of natural language, and logic operations (object language 對象語言) *per se* is similar to some mathematical processes, therefore if you are good at English (the meta-language 後設語言 we use) and mathematics, you will have a big chance of enjoying this subject.
3. My logic course will focus on formal logic 形式邏輯 and moderately less on informal logic 非形式邏輯. Students who expect to handle every week linguistic analysis 語理分析, informal fallacies 非形式謬誤 or scientific method should enroll a critical thinking course.
4. Registered students must visit *Blackboard* regularly for updated information of the course. All teaching material—course outline, handouts, readings, announcements, etc.—will be kept in just one folder, namely the “Course Content” folder.
5. For students with special education needs, please notify me in person when term begins. As it usually takes considerable time to book a room, arrange an extra helper, etc.

COURSE DESCRIPTION AND OBJECTIVES

This course is to develop the students' ability to analyze and evaluate arguments from a logical point of view. It will provide students with a basic understanding of concepts like premises, implication, validity, and fallacies. Students will learn the principles of deductive inferences and techniques of applying them for determining the validity of arguments.

LEARNING ACTIVITIES include mainly lectures, in-class exercises/discussions, test and exam.

LEARNING OUTCOMES

By attending the course, students are expected

1. to identify and explain the basic concepts, principles and other essential elements in logic as a science——truth analysis, argument identification and classification;
2. to identify and explain the basic concepts, principles and other essential elements in deductive argument examination——basic deductive forms, validity, etc.;
3. to analyze how an argument goes wrong——formal fallacy analysis;

COURSE SYLLABUS

1. Introduction
 - * two different forms of reasoning: formal logic and informal logic
2. some basic techniques in formal logic
 - * symbolisation of sentences
 - * truth-functional operators 真值函數運算符號
 - * truth tables 真值表
 - * necessity 必然 and contingency 適然
3. arguments 論證 and proofs 證明
 - * to assess the goodness of deduction: validity 有效 (and soundness 對確)
 - * the following methods will be introduced to assess validity and/or invalidity
 1. truth table method 真值表法
 2. natural deduction 自然演繹法 (method of proof), also formal fallacies 形式謬誤
 3. truth tree method 真值樹圖
 - * examples from a variety of disciplines will be used in demonstration
 - * problems in the form of logic puzzles (for instance those on truth-tellers and liars) will be used commonly in teaching and assessments (see last section for assessment)
 - * predicate logic 謂詞邏輯
 - basic principles, symbolisations [and proofs] [if time allows]
 - * syllogistic logic 三段論式邏輯
 - categorical syllogism 定言三段論, square of opposition 對待方陣, conversion 位換, obversion 質換, contraposition 異質位換
 - * induction 歸納法 [if time allows]
 - inductive strength and defeasibility 可修正性, and Mill's methods 穆勒法

GENERAL REFERENCES

The following is a PRELIMINARY listing of books you may wish to consult throughout the course. And all of them are available in our library. I must emphasize that they are NOT textbooks for this course.

Hurley, J. P. (2012) *A Concise Introduction to Logic*, 11th edition, Boston, MA: Wadsworth.

This is the edition I use commonly. It is a standard textbook covering both formal and informal logic and the material is rich—it contains detailed explanation of technical terms and rules, many examples, exercises and suggested answers for selected questions.

You should beware that in Hurley's book some logic notations and formats of rule applications differ from what I use. In test and exam, you are required to follow the system I teach.

You may not be able to get the most updated edition (newer than 11th) and earlier editions are acceptable. Some copies, probably older editions, are already reserved in our various libraries. As a general reference, Hurley (2012) is resourceful. Yet it is over 700 pages and covers much more than we will discuss. The following is shorter, thus more easily accessible.

Weston, A. (2009) *A Rulebook for Arguments*, 4th edition, Hackett Publishing Company.
(early editions are also acceptable)

This one is non-technical and short (under 100 pages). Although its content suits more for critical thinking, I still recommend it as a reader friendly introduction for our course.

You may also consult the followings for more detailed explanations, examples and exercises. When I don't specify the year of publication, it means that any edition will be all right.

- Copi, I. and Cohen, C. *Introduction to Logic*, Prentice Hall. (with various editions, like Hurley (2012) also with lots of examples, exercises and suggested answers for selected questions) (中譯本：柯比：《邏輯導論》修訂本，香港：香港公開大學出版社，2000。根據 1968 年第三版譯，同時略去練習。)
- Salmon, W. C. *Logic*, N.J.: Englewood Cliffs. (the digital version of the 1984 edition is available here: <http://www.ditext.com/salmon/logic.html>) (中譯本：《邏輯》何秀煌譯，臺北：三民書局。) (This one is shorter than Hurley and Copi, but without exercises.)

For Chinese references, I recommend the following two.

- 陳波 (2015 [2002]) 《邏輯學是什麼》，北京：北京大學出版社。
新版內容比較豐富，不過舊版基本上也完全可以接受。
- 香港中文大學哲學系編譯 (1982) 《中譯邏輯學詞彙》，香港：香港中文大學出版社。
顧名思義，翻譯時參考用。

SUGGESTED REFERENCES FOR SPECIFIC TOPICS

The following readings are optional. They are useful as they provide more detailed explanations, examples and exercises related to the lecture topics. Usually, they cover more than I will teach.

A. Basic Techniques

1. 陳波（2015 [2002]），第二章〈邏輯是關於推理和論證的科學〉，頁 45-82。
2. Weston, A. (2009) Chapters. I “Short Arguments: Some General Rules,” pp. 1-7, and VI “Deductive Arguments,” topics #22-25 and #28, pp. 37-47.
3. Hurley (2012) Part I Informal Logic, Chapter 1 “Basic Concepts,” pp. 1-63.
4. Salmon (1984) Chapters 1 “Argument” and 2 “Inference”

B. Deductive Arguments

1. 陳波（2015 [2002]），第三章〈命題邏輯〉，頁 83-123。
2. Hurley (2012) Part II Formal Logic, Chapter 6 “Propositional Logic,” pp. 310-379.
3. Salmon (1984) Chapters 4 “Deductive and Inductive Arguments” and 5 “Validity”

C. Syllogism

1. 陳波（2015 [2002]）《邏輯學是什麼》，第四章〈詞項邏輯〉，頁 125-163。
2. Hurley (2012) Chapters 4 “Categorical Propositions” and 5 “Categorical Syllogism,” pp. 197-309.
3. Salmon (1984) Chapters 13 “Categorical statements” and 14 “Categorical Syllogisms”

D. Inductive Arguments

1. 陳波（2015 [2002]）《邏輯學是什麼》，第六章〈歸納邏輯〉，頁 193-239。
2. Hurley (2012) Chapters 9 “Analogy” and 10 “Mill’s Methods,” pp. 509-553.
3. Salmon (1984) Chapters 19 “Inductive Correctness,” 20 “Induction by Enumeration” and 28 “Mill’s Methods”

I will assign more references and internet resources upon specific topics and such instructions will be available on *Blackboard*. Moreover, you are most welcome to have a word with me when you want to explore further than what I suggest. And you could contact me via email (see above) or in person (preferably with an appointment first).

TENTATIVE ASSESSMENT METHODS AND EXPLANATION

Assessment	Total scores	
Exam, part A	45	(to be held in class on June 14, Thursday, starts by 14:30) location may be changed, to be announced in class and on <i>Blackboard</i>
Exam, part B	55	(to be held in class on June 28, Thursday, starts by 14:30)
total	100	

Note: There will be no make-up assessment for students who miss the test or the final exam.

SOME EXPLANATION ON THE ASSESSMENT METHODS:

- ☞ Exam (part A) may consist of any of the following: multiple choice, true/false and problem solving short questions (not essay type). While exam (part B) will consist mainly of problem solving short questions (not essay type). Note that for all multiple choice questions, all true/false questions and some problem solving short questions, wrong answers will get mark deducted.
- ☞ Short questions in both exams range from symbolisation of sentences, problems of truth-tellers and liars, natural deduction, tree method, truth table (long and short form), predicate logic and others.
- ☞ In both exams, for most questions, only a correct answer is needed and it is NOT necessary to write down the steps of reasoning. However, for some other questions, the answer as well as the steps of reasoning are required (for instance in natural deduction or tree method, etc.), in such cases ONLY the logic notation and the logic operation system I teach will be accepted.
- ☞ Exam (part A) lasts about 50 minutes and exam (part B) lasts just over an hour. Both exams are conducted in English and closed-books, except that in both exams, a list of “Valid Forms for Sentential Logic” and “Truth Tree Rules” will be provided when necessary.