

CCC8001 Logic and Critical Thinking

2nd Term, 2012-13

COURSE PARTICULARS

Course Instructor: Dr. Michael Johnson

Office: Room HSH219, Ho Sin Hang Building

Office Hours: Mondays 15:00 to 16:00

Email: michael.dracula.johnson@gmail.com

Office Telephone: 2616 7052

Course Website: <http://michaeljohnsonphilosophy.com/logic-and-critical-thinking-2013/>

Meeting Times:

Monday 13:30 to 14:50 Leung Kau Kui (LKK) 105

Thursday 13:30 to 14:50 LKK 102

COURSE DESCRIPTION

The primary aim of this course is to teach students basic but essential skills of analyzing, evaluating, and constructing arguments, and to hone their ability to execute the skills in thinking and writing. The course will discuss some of the useful notions and methods of deductive logic, the basic elements of statistical inference, experimental design, and causal reasoning, as well as common fallacies in reasoning.

LEARNING OUTCOMES

Students are expected to develop the following abilities:

- The ability to recognize and analyze arguments in everyday language, to detect hidden or implicit premises, and to extract the logical form of an argument
- The ability to show the deductive validity or invalidity of an argument, to recognize and criticize the flaws of a weak argument, and to develop counter-arguments
- The ability to evaluate the strength of evidential support for scientific hypotheses, especially causal hypotheses, in relatively simple cases
- The ability to present arguments cogently in speech and in writing

MEASUREMENT OF LEARNING OUTCOMES

Students' progress towards the learning outcomes will be measured by

- Participation and performance in various class activities, which reflect their ability to apply the logical notions and methods to real cases, and their willingness to engage in critical thinking

- Written assignments, in which students demonstrate their ability to explain course material and present arguments in writing
- A final exam, which tests their overall grasp of the course content

ASSESSMENT

There will be a final examination as the summative assessment. Other assessment components include class discussions, in-class or take-home assignments, short essay writing, quizzes and/or midterm exam.

- Attendance: 10%.
- Four homework assignments, each worth 5% of the grade, for a total of 20%.
- One in-class midterm on 11 March, worth 30%.
- One cumulative final exam, worth 40%.

INDICATIVE CONTENT

Here is a list of topics that will be covered in the course. I may include other topics as I see fit.

- Key concepts in logic: argument, deductive validity, inductive strength, soundness, logical truth/tautology, sufficient conditions, necessary conditions, etc.
- Formal sentential logic: symbolization of argument forms, truth table method, valid rules of inference, natural deduction
- Gentle introduction to predicate logic
- Definitions: types of definitions, stipulative definitions, evaluation of definitions
- Inductive arguments: analogy, statistical generalization, causal reasoning, etc.
- Restructuring and criticizing arguments
- Common fallacies: Ad hominem, appeal to authority, appeal to consequences, bandwagon, begging the question, denying the antecedent, affirming the consequent, equivocation, false dilemma, post hoc, slippery slope, straw man
- Basic reasoning with probabilities
- Basic statistics: sampling, random sampling, sampling error

IMPORTANT NOTE

Students shall be aware of the University regulations about dishonest practice in course work and the possible consequences as stipulated in the Regulations Governing University Examinations.

RECOMMENDED READINGS

Salmon, M. H., *Introduction to Logic and Critical Thinking* (5th ed.), Wadsworth, 2006.

Lau, J. Y. F., *An Introduction to Critical Thinking and Creativity: Think More, Think Better*, Wiley, 2011.

Lau, J. Y. F., *Critical Thinking Web*, <http://philosophy.hku.hk/think/>, 2004.

Fisher, A., *Critical Thinking: An Introduction*, Cambridge University Press, 2001.

Wright, L., *Critical Thinking: An Introduction to Analytical Reading and Reasoning*, Oxford University Press, 2001