

17 Aug, 2021

IDPO 1020 Cognitive Foundations of University Education: Critical Thinking and Data Literacy

Course Outline (prepared by IDPO 1020 teaching team)

Course instructors

Prof JAISINGH, Jeevan, Associate Professor of Business Education/ISOM

Prof ZENG, Bei, Professor/PHYS

Prof NAM, Sai Lok, Assistant Professor of Humanities Education/HUMA

Course Description

This course provides an introduction to critical thinking and data literacy. Students will be equipped with critical tools to analyse problems of reasoning, evaluate the truthfulness of evidence, examine the fallacies of thinking, as well as the ability to construct valid arguments and reasonable solutions for their personal and professional life.

Course ILOs

Upon completion of this course, students are expected to be able to do the following:

- 1 Identify and analyse relevant information, data, and sources for problems
- 2 Clarify assumptions made in arguments
- 3 Construct valid arguments using analytical skills, data, and evidence
- 4 Establish relevant criteria and standards for justifiable solutions
- 5 Evaluate implications and consequences of the solutions
- 6 Make and communicate decisions critically using data and evidence

Course Highlights

- This is a pilot course of one of the Common Core Foundations.
- The course is proposed to be taught in a blended-learning mode with flexible modules that students can choose based on their interests. However, the online component will be replaced by lectures, and there is only one flexible module from each school in this pilot.
- The lectures provide basic introduction to logic, critical thinking, and cognitive bias.
- The seminars (the flexi-modules) are delivered with problem-based learning approach to enhance active learning.

Assessment

1	In-class quizzes	To check students' understanding of the content covered in the common lectures	20%
2	Course participation	Students are expected to engage actively in the project-based learning seminars	20%
3	Short essays x 4	Students have to submit one short essay for each flexi-module	60%

Weekly Schedule

Week	Topics
1	1. Introduction: course arrangement and why critical thinking and data literacy are essential in common core education; 2. What is critical thinking.
2	1. Arguments; 2. Premises and conclusion; 3. Charity, explicit and implicit premises.
3	Critical thinking and Data Literacy in personal life (1)
4	Critical thinking and Data Literacy in personal life (2)
5	1. Deductive reasoning; 2. Inductive reasoning; 3. Empirical thinking and scientific method.
6	Critical thinking and Data Literacy in Sciences (1)
7	Critical thinking and Data Literacy in Sciences (2)
8	1. Formal fallacy; 2. Informal fallacy.
9	Critical thinking and Data Literacy in Engineering (1)
10	Critical thinking and Data Literacy in Engineering (2)
11	1. Cognitive bias; 2. Fake news, system bias, knowledge.
12	Critical thinking and Data Literacy in Business (1)
13	Critical thinking and Data Literacy in Business (2)

17 Aug, 2021

Reading Materials

1. Chatfield, Tom. *Critical thinking : Your guide to effective argument, successful analysis & independent study* (First ed.). 2018

Supplementary Readings

2. Haber, Jonathan, and M.I.T. Press. *Critical Thinking*. MIT Press Essential Knowledge Series. 2020.
3. Salmon, Wesley C. *Logic*. Prentice-Hall Foundations of Philosophy Series. Englewood Cliffs, N.J.: Prentice Hall, 1963.
4. Copi, Cohen, Rodych, Copi, Irving M., Cohen, Carl, and Rodych, Victor. *Introduction to Logic*. Fifteenth ed. 2018.
5. Boardman, Frank, Nancy Cavender, and Howard Kahane. *Logic and Contemporary Rhetoric : The Use of Reason in Everyday Life*. Thirteenth ed. 2018.