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

Course instructors

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Course Description

This course provides an introduction to critical thinking and data literacy. Students will be equipped with critical tools to analyze problems of reasoning, evaluate the truthfulness of evidence, examine the fallacies of thinking, as well as the ability to construct valid arguments andreasonable 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 analyze 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

1. This is a pilot course of one of the Common Core Foundations under the new structure of Common core program, starting from 2021-22 academic year.
2. The lectures provide basic introduction to logic, critical thinking, and cognitive bias.
3. 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 contentcovered in the common lectures	**20%**
2	Class participation	Students are expected to engage actively in class discussion	**20%**
3	Short essays x 3	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) (Flexi-module)
4-5	1. Deductive reasoning; 2. Inductive reasoning; Critical thinking and Data Literacy in Sciences and Engineering (1) (Flexi-module)
6-7	3. Abductive thinking and scientific method; 4. Assessing evidence Critical thinking and Data Literacy in Sciences and Engineering (2) (Flexi-module)
8	1. Formal fallacy; 2. Informal fallacy.
9	Critical thinking and Data Literacy in Personal Life (2) (Flexi-module)
10-11	Cognitive bias
12	Critical thinking and Data Literacy in Business (1) (Flexi-module)
13	Critical thinking and Data Literacy in Business (2) (Flexi-module)

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

Supplementary Readings
2. Copi, Cohen, Rodych, Copi, Irving M., Cohen, Carl, and Rodych, Victor. *Introduction to Logic*. Fifteenth ed. 2018.