Cognitive Foundations of University Education

Critical Thinking and Data Literacy

CORE1901 (L1-L2) - Fall 2023

The Hong Kong University of Science and Technology

Syllabus (Tentative)

Course Schedule: Tues & Thurs 09:00 – 10:20 (LTJ)

Course Instructors

Lectures

- Prof. HUNG, Jenny, Assistant Professor/HUMA (hmjhung@ust.hk)

Tutorials - Science and Technology Group

- Prof. LIU, Y.S. Marshal, Associate Professor of Engineering Education/CBE (keysliu@ust.hk)
- Prof. VONG, Kenward, Assistant Professor/CHEM (kvong@ust.hk)

Tutorials - Business Group

- Prof. JAISINGH, Jeevan, Associate Professor of Business Education/ISOM (jeevan@ust.hk)
- Dr SAUERWEIN, Meike, Lecturer I/ENVR (meike@ust.hk)

Tutorials - Personal Life and Society Group

- Prof. ZUERN Tobias Benedikt, Assistant Professor/HUMA (hmtzuern@ust.hk)
- Prof. Zheng Wenjuan, Assistant Professor/SOSC (wjzheng@ust.hk)

Instructional Assistants

- Ms. CHOY, Yee Lam (Stephanie) (ylcsteph@ust.hk)

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. Articulate assumptions made in arguments
3. Construct valid arguments using analytical skills, data, and evidence
4. Justify solutions with relevant criteria and standards
5. Evaluate implications and consequences of the solutions
6. Communicate decisions effectively using data and evidence

Course Highlights

1. One of the Foundations courses of the University's Common Core Program which is designed to enhance students' critical thinking and problem-solving competencies. These competencies are transferable which can be used throughout their undergraduate study.
2. Students will learn 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 in the lectures.
3. The tutorials are delivered with problem-based learning approach to enhance active learning.

Assessment

In-lecture Quizzes	5%
Mid-term Quiz (Open book) (11 Oct 2023)	15%
Two Essays	20% X2
Final Examination (29 Nov 2023)	25%
Class Participation	15%

Textbook

Chatfield, Tom. 2018. Critical Thinking: Your Guide to Effective Argument, Successful Analysis & Independent Study. Sage Publications Ltd. (All readings will be uploaded to Canvas.)

Course Schedule (tentative)

Lectures at LTJ (Weeks 1-6)

	Date	Content	Readings
Module 1: Argumentation	Sept 4	Introduction. What is an Argument?	Chatfield, ch. 1
	Sept 6	Reconstructing an Argument	Chatfield, ch. 2
Module 2: Reasoning	Sept 11	Deduction	Chatfield, ch. 3
	Sept 13	Induction	Chatfield, ch. 4
	Sept 18	Abduction	Chatfield, ch. 5
Module 3: Fallacies	Sept 20	Formal Fallacies	Chatfield, ch. 8
	Sept 25	Informal Fallacies	Chatfield, ch. 10 (selected)
Module 4: Cognitive bias	Sept 27	What is a Heuristic?	Chatfield, ch. 9
	Oct 4	The Anchoring & Representativeness Heuristic	Chatfield, ch. 11
	Oct 9	Loss aversion & Confirmation bias	No readings
	Oct 11	Mid-term Quiz	No readings

Tutorials (Weeks 7-12)

Oct 16, 18, 25, 30

Nov 1, 6, 8, 13, 15, 20, 22, 27

Please refer to Canvas for more information.

Holidays:

Oct 2 (the day after National Day), Oct 23 (Cheung Yeung Festival)

Final Exam:

Nov 29 (the last class)