



INTRODUCTION TO MATHEMATICAL LOGICS AND ITS APPLICATIONS IN ARTIFICIAL INTELLIGENCE

(MATS3810)

Introduction

There are four two-hour sessions covering elementary topics in logics (e.g. propositional logic and predicate logic, valid consequence, proof, syntax and semantics) suitable for gifted secondary school students, and its application to artificial intelligence (using Answer Set Programming – ASP and the corresponding freeware clingo), such as solving graph problems, n-queen problem, Sudoku, and plan generation in block world etc. so that students will be able to appreciate the usefulness of the declarative logic-based approach in the field of artificial intelligence.

Programme Type / Level

Across Domains and Interdisciplinary Workshop (Level 4) ([Token-required](#))

Instructor(s)

Dr Fung Tze-ho
Head of Research Division, HKAGE

The academic training of Dr Fung Tze-ho is in the area Logic Programming. He studied in Imperial College, University of London and obtained his MSc Degree and PhD Degree in Computing. The focus of these research studies is the use of logic programming in the field of Artificial Intelligence.

Target Participants



- S1 – S6 HKAGE student members
- Class size: 20

All applicants **MUST** attend the screening test held on **9 Feb 2019** in **HKAGE**

Medium of Instruction



Cantonese with English handouts

Certificate



E-Certificate will be awarded to participants who have:

- ❖ Attending **at least 3 sessions AND**
- ❖ Satisfactory performance in assessment

Intended Learning Outcomes



Upon completion of the programme, participants should be able to:

1. Understand the basic concepts of a logical system such as alphabet, valid consequence, proof, syntax and semantics, soundness and completeness;
2. Attain basic understanding of two classical logics, namely: propositional logic and predicate logic;
3. Understand simple applications of Answer Set Programming (ASP), which is a declarative logic-based language for solving a number of problems in artificial intelligence.

Application Deadline

4 Feb 2019

Application Result Release Date 22 Feb 2019

If student members withdraw from the programme after the Application Deadline, the token will be deducted.

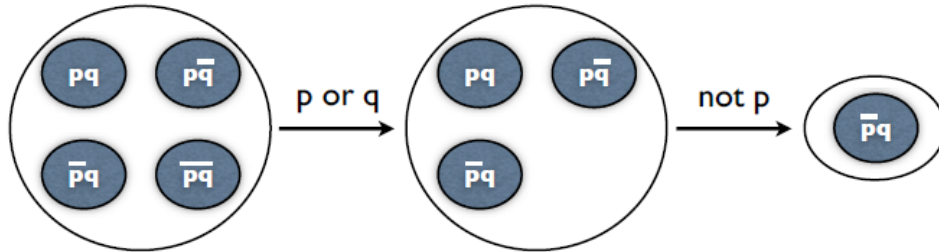
Schedule (Tentative)



Session	Date	Time	Venue (HKAGE)	Content
	9 Feb 2019	2:30 p.m. – 3:30 p.m.	Room 303	Screening Test
1	23 Apr	2:30 p.m. – 4:30 p.m.	Room 204	Propositional Logic
2	24 Apr			Predicate Logic
3	25 Apr			Answer Set Programming – ASP
4	26 Apr			Programming in clingo

Remarks: For any assessment to be held in the programme, no make-up will be arranged, including Screening Test.

Sample Examples for the Programme



If a farmer owns a donkey he beats it. $\forall x \forall y ((Fx \wedge Dy \wedge Oxy) \rightarrow Bxy)$.

Enquiries



For enquiries, please contact us at 3940 0101 after language selection, press "1".