A4CSC001C

(Token- required)

[Gifted Programme]

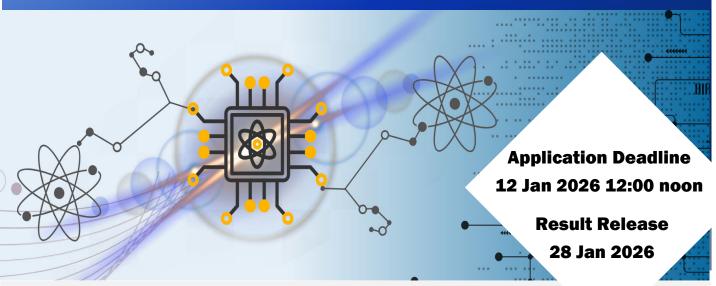
Computer Science Course (Level IV)

Quantum Leap - Mastering the

Principles and Applications of

Quantum Computing (Phase I)

Instructors from HKUST



Intended Learning Outcomes

Upon completion of the gifted programme, gifted students should be able to:

- 1. Identify fundamental concepts of quantum computing and the differences between classical and quantum computers;
- 2. Demonstrate the representation of quantum bits (qubits) and single-qubit gates, utilizing "bra-ket" notation in practical scenarios;
- 3. Analyze the interactions of multiple qubits and the concept of entanglement, identifying the role of fundamental quantum logic gates in these interactions;
- 4. Design quantum circuits with qubits and logic gates, formulating algorithms for execution;
- 5. Enhance students' skills in problem solving, critical and analytical thinkings.

Gifted Programme Introduction

Step Beyond the Binary. Take the Quantum Leap.

The computers of today have changed the world, but they are hitting a physical wall. To solve the impossible problems of tomorrow - from simulating life-saving drugs to modelling complex climate systems - we need a new kind of physics. We need Quantum Computing.

"Quantum Leap" is your gateway into this revolution. This programme is designed to take you behind the headlines and into the logic of the future. We will journey beyond the limitations of classical bits into the multidimensional world of Qubits, exploring the fundamental building blocks that allow quantum machines to calculate what was once thought impossible.

Join us to uncover the profound differences between classical and quantum logic, and discover the race toward Quantum Supremacy — the threshold where quantum computers outperform the strongest supercomputers on Earth.

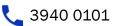
Tentative Schedule:

 Phase II: 16 May 2026 to 20 Jun 2026 Phase III: 27 Jun 2026 to 29 Aug 2026

Schedule

Session	Date	Time	Venue
Interview <mark>*</mark>	24 Jan 2026	TBC	HKUST
1	7 Feb 2026	2:00 p.m 5:00 p.m.	HKUST
2	14 Feb 2026		
3	28 Feb 2026		
4	7 Mar 2026		
5	14 Mar 2026		
6	21 Mar 2026		
7	28 Mar 2026		
8	11 Apr 2026		
9	18 Apr 2026		
10	25 Apr 2026		
11	2 May 2026		
12	9 May 2026		

Please refer to 'Next Page' for interview details.



Suitable for

S4 to S6 HKAGE student members in 2025/26 school year

Class size: 40

Pre-requisite

Students should be able to:

- · Understand concepts of Trigonometry and Linear Algebra;
- Possess basic experience with Python programming (preferred)

Medium of Instruction

· English (supplemented with Cantonese) with English Handouts

Interview

Interview will be conducted in group format. Only selected students could attend the interview. Students who are selected to attend the interview will receive notification email on or before 19 Jan 2026. If students who are selected to join the interview are absent without any reasons and prior notification provided, it will result in a lower priority in joining this programme next time.

Tentative Interview Schedule:

Date: 24 Jan 2026 (Sat)

Venue: HKUST

· Format: Face-to-face mode

Certificate

E-Certificate will be awarded to gifted students who have:

- · attended at least 8 sessions; and
- completed all the assignments with satisfactory performance