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[ **Gifted Programme** ]

**Computer Science Course (Level IV)**

# Quantum Leap - Mastering the Principles and Applications of Quantum Computing (Phase I)

Instructors from HKUST

**Application Deadline:**

**Batch 1: 12 Jan 2026 12:00 noon**

**Batch 2 : 20 Jan 2026 12:00 noon**

**Result Release**

**28 Jan 2026**

**Application Deadline:**

**Batch 3: 11 Feb 2026 12:00 noon**

**Result Release**

**23 Feb 2026**

## 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	Remark
Interview*	24 Jan 2026	2:00 p.m. – 5:00 p.m.	HKUST	
1	7 Feb 2026	2:00 p.m. – 5:00 p.m.	HKUST	*Attendance records for the first three sessions of students who enroll via Batch 3 application will not be counted and will not affect their overall attendance records.
2	14 Feb 2026			
3	28 Feb 2026			
4	7 Mar 2026	2:00 p.m. – 5:00 p.m.	HKUST	
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 (Batch 1 & 2 application)

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 the following dates:

- Batch 1 application: by 19 Jan 2026
- Batch 2 application: by 22 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.

### Interview Schedule:

- Date: 24 Jan 2026 (Sat)
- Venue: HKUST
- Format: Face-to-face mode

## ◆ Screening Question for Batch 3 application

- Please answer the screening question in the online application form.
- \*Please note that the question must be answered by the student applicant, and it can only be attempted once. The answer cannot be changed once the application is submitted. Selection is based on students' performance in answering the question. Only students who can demonstrate motivation and the knowledge of Quantum Computing in the question can be enrolled in the programme

## ◆ Certificate

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

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