



C4STM001C

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**STEM Course (Level IV):**

# Sustainable Future Phase I - Healthy Life Style in Smart Environment

Representatives from Hong Kong Baptist University



**Application Deadline**

**15 Aug 2022 12:00  
noon**

## **Intended Learning Outcomes**

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

1. explain the sustainability from biological and biomedical, chemistry, physics, mathematics and statistics, and computational science point of views ;
2. evaluate the global warming from different scientific aspects ;
3. interpret the COVID pandemic from different aspects;
4. the inter-disciplinary approaches for interpreting and solving real problems ;
5. collaborate with each individual and small parties to make a better living environment.



## ◆ Introduction

To encourage closer academic ties between educational institutions for the benefit of gifted education in Hong Kong, the Faculty of Science, Hong Kong Baptist University and HKAGE develop a theme-based STEM program entitled “Health Life Style in Smart Environment” for the coming year. This ONE-year programme includes THREE individual phases that will advocate interdisciplinary approaches with focused on the environment and health, biomedical science, analytical chemistry, data analytics, and artificial intelligence. Students who fulfil the courses assessment in each phase, will be qualified for joining the upper level courses (Phase II and III courses). Basically, the Phase I courses will be conducted mainly on a lecture basis. All courses will adopt an interactive and self-motivated mode of teaching and learning.

This series of Phase I course aims to provide students with comprehensive training on different aspects under the Program theme. The course will introduce the theories and basic concepts in different areas such as sustainability and modern agriculture technology, global warming, food safety, the science of pandemic, methodology of a healthy lifestyle, operation principles and technologies of sensors, and essential mathematical models and statistical methods. Students who have completed the Phase I course with satisfactory assessment will be eligible for applying for Phase II courses.

This course is under the collaboration of HKAGE and the Faculty of Science, Hong Kong Baptist University. Phase II: Lectures with Laboratory session

- Around 30 students from Phase I would be selected.
- Tentative schedule: Saturdays from Jan 2023 to May 2023;
- Tentative Duration: 60 hrs

Phase III: Student-led Project under supervision of faculty members

- Around 10 students from Phase II would be selected.
- Tentative schedule: Flexible sessions from Jun 2023 to Mar 2024
- Tentative Duration: 250 hrs

## ◆ Target Participants

- S2 – S5 HKAGE student members in 2021/22 school year only
  - Class size: 80
- \* First-come-first-served.

## ◆ Pre-requisite

No special prerequisites are needed

## ◆ Medium of Instruction

English with English handouts

## ◆ Certificate

E-Certificate will be awarded to participants who have:

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



## ◆ Schedule

Session	Date	Time	Venue
1	20 Aug	9:00 a.m. – 1:00 p.m.	Zoom Meeting
2	27 Aug		
3	3 Sep		
4	10 Sep		
5	17 Sep		
6	24 Sep		
7	8 Oct		
8	15 Oct		
9	<del>29 Oct</del> 22 Oct		
10	<del>5 Nov</del> 29 Oct		
11	<del>12 Nov</del> 5 Nov	11:00 a.m. – 1:00 p.m.	Online assessment

\*Hong Kong Baptist University is scheduled premises under the Cap. 599F, all persons entering the base, except for exempted persons, are required to scan the “LeaveHomeSafe” QR code and comply with the requirement of the Vaccine Pass. For details, please refer to the latest Government announcement in a timely manner.



## ◆ Programme Outline

Chapter	Topics	In-charge department of HKBU
1	Sustainability and agriculture 1.1 Biology of sustainability and modern agriculture technology 1.2 Science of the fertilizer and pesticides 1.3 Genetically modified food 1.4 Food security and food safety 1.5 Energy and consumer goods 1.6 Statistical methods for data analysis	BIOL BIOL/ CHEM BIOL BIOL/ CHEM CHEM MATH
2	Science of global warming 2.1 Biological and health impacts 2.2 Impact of chemicals on air pollution 2.3 Statistical methods for understanding the global warming 2.4 Sensing the environment	BIOL/ CHEM BIOL/ CHEM MATH PHY
3	Science of pandemic 3.1 Global disease burden and public health 3.2 Anti-bacterial technique and technology 3.3 Operation principles and technologies of Smart Sensors for Healthy Lifestyle Assessments 3.4 Sensor technology components 3.5 Integration (benefits and limitation) of Smart Sensors 3.6 Probability theory for understanding screening test of COVID-19 (or other diseases) 3.7 Mathematical model of pandemic	BOIL BIOL/ CHEM PHY PHY PHY MATH MATH
4	Data and smart city 4.1 Computer programming and simulations 4.2 Wisdom of the crowd 4.3 The science of decision making 4.4 Principle and application of AI technology in real situation 4.5 Smart energy sensors for big energy data collection and analysis	COMP COMP COMP COMP PHY

\*BIOL: Department of Biology

CHEM: Department of Chemistry

PHY: Department of Physics

MATH: Department of Mathematics

COMP: Department of Computer Science