



STEM Course (Level IV):

Sustainable Future Phase II - Healthy Life Style in Smart Environment

Representatives from Hong Kong Baptist University



**Students with
satisfactory
performance in Phase I
and recommended by
the instructor ONLY**

Intended Learning Outcomes

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

1. evaluate and interpret the food safety and public hygiene by chemical analytical and biomedical methods;
2. understand the process involved in recycling and renewal of wastes;
3. develop an automatic IoT weather station;
4. use R for applied probability and statistics;
5. develop IOS Mobile application and integrate machine learning models into IOS application.



◆ 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. Phase II course will be run in laboratory workshop basis that focused on hands-on and practical training; in Phase III, students are requested to applying the learnt knowledge and practical skills for problem solving in the real situation. All courses will adopt interactive and self-motivated mode of teaching and learning.

Phase II programme aims to provide students a practical training. It includes 10 tailor-made practical classes that focus on the discipline of Biology, Chemistry, Physics, Mathematic, and Computer Science. Students will get hand-on training on wide spectrum such as the biological and chemical training on various aspects of public health, food safety and material recycling, development and integrate machine learning models into the iOS mobile application, making of models for the smart environmental study. With these practical skills, students will be able to handle the challenging topics in the Phase III course. Flexible online tutorial sessions are arranged for consultations.

This course is under the collaboration of HKAGE and the Faculty of Science, Hong Kong Baptist University.

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

- Student who have completed Sustainable Future Phase I (C4STM001C) and recommended by the instructor ONLY
- Class size: 30

◆ 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 16 sessions; AND
- completed all the assignments with satisfactory performance



◆ Schedule

Session	Date	Time	Venue
/	4-Mar	10:00 a.m. — 1:00 p.m.	Hong Kong Baptist University
/	(Postponed)	2:00 p.m. — 5:00 p.m.	Hong Kong Baptist University
1	11 Mar	10:00 a.m. – 1:00 p.m.	Hong Kong Baptist University
2		2:00 p.m. – 5:00 p.m.	Hong Kong Baptist University
3	18 Mar	10:00 a.m. – 1:00 p.m.	Hong Kong Baptist University
4		2:00 p.m. – 5:00 p.m.	Hong Kong Baptist University
5	25 Mar	10:00 a.m. – 1:00 p.m.	Hong Kong Baptist University
6		2:00 p.m. – 5:00 p.m.	Hong Kong Baptist University
7	1 Apr	10:00 a.m. – 1:00 p.m.	Hong Kong Baptist University
8		2:00 p.m. – 5:00 p.m.	Hong Kong Baptist University
9	15 Apr	10:00 a.m. – 1:00 p.m.	Hong Kong Baptist University
10		2:00 p.m. – 5:00 p.m.	Hong Kong Baptist University
11	22 Apr	10:00 a.m. – 1:00 p.m.	Hong Kong Baptist University
12		2:00 p.m. – 5:00 p.m.	Hong Kong Baptist University
13	29 Apr	10:00 a.m. – 1:00 p.m.	Hong Kong Baptist University
14		2:00 p.m. – 5:00 p.m.	Hong Kong Baptist University
15	6 May	10:00 a.m. – 1:00 p.m.	Hong Kong Baptist University
16		2:00 p.m. – 5:00 p.m.	Hong Kong Baptist University
17	13 May	10:00 a.m. – 1:00 p.m.	Hong Kong Baptist University
18		2:00 p.m. – 5:00 p.m.	Hong Kong Baptist University
19	20 May	10:00 a.m. – 1:00 p.m.	Hong Kong Baptist University
20		2:00 p.m. – 5:00 p.m.	Hong Kong Baptist University

*20 hours of online self-learning is included in this programme. Arrangement to be announced in class.



◆ Programme Outline

Chapter	Topics
1	<ul style="list-style-type: none">• Evaluation of food safety from the biological and molecular approaches• Evaluation of public hygiene from microbiological approach
2	<ul style="list-style-type: none">• Understand and applications of the concepts of SDG on public and environmental health issues
3	<ul style="list-style-type: none">• Analysis of food nutrient from the chemical approach• Screening test of plastic products
4	<ul style="list-style-type: none">• Turning spoiled milk into Bio-renewable plastics
5	<ul style="list-style-type: none">• Development of hardware (IoT Weather Station) using experimental gadget
6	<ul style="list-style-type: none">• Software development and experiment of IoT system
7	<ul style="list-style-type: none">• iOS mobile application development (Such as User interface Design, User interaction, Navigation Components, Working with remote data, Data visualization with Swift Charts, Working with IoT devices) with SwiftUI Integrate machine learning models into iOS application
8	<ul style="list-style-type: none">• Building machine learning models with CoreML• Using machine learning models in iOS application
9	<ul style="list-style-type: none">• Applied probability (such as Discrete/Continuous random variables) using R
10	<ul style="list-style-type: none">• Applied statistics (such as Parametric tests, Non-Parametric tests, Regression analysis) using R