



香港資優教育學苑
The Hong Kong Academy for Gifted Education

香港特別行政區政府教育局資助
Subvented by the Education Bureau, The Government of the HKSAR

E3BME001W-2

(Token-required)

Biomedical Engineering Workshop (Level III): Medical Data Analysis

Dr Gary TAM

Programme Officer, Talent Development Division, HKAGE



Application Deadline
14 Feb 2024 12:00 noon

Result Release
23 Feb 2024

Intended Learning Outcomes

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

1. Describe the scope and main purpose of Biomedical Engineering.
2. Explain the basic concepts of some selected topics in Medical Data Analysis.
3. Carry out calculations for tumour classification using Weighted Voting method.
4. Recognise that biomedical engineering is a promising area to develop a career.

◆ Introduction

Biomedical Engineering (BME) is an interdisciplinary field in which biology, medicine, and engineering technologies are combined and applied innovatively to solve human health problems. This workshop will first give a brief overview of BME. Then, an area of BME – Medical Data Analysis – will be introduced. Selected topics in it will also be discussed, e.g. analysis of DNA microarray data, brain signal processing, and brain-computer interface.

Remark: This workshop has 70% content the same as Biomedical Engineering Talk (Level I): Medical Data Analysis (E1BME001T). The 30% added content is mainly about the analysis of DNA microarray data, where more explanation will be given concerning feature extraction and classification steps. Students also need to carry out calculations in a classification method.

The instructor, Dr Gary Tam, has worked on research in Bioinformatics (an area belongs to BME) for about 10 years. His research mainly focused on analysis of DNA microarray data from medical experiments, topics included gene selection, tumour classification and gene regulatory network reconstruction.

◆ Schedule

| Session | Date | Time | Venue |
|---------|--------|------------------------|-----------------|
| 1 | 18 May | 10:00 a.m. – 1:00 p.m. | Room 204, HKAGE |

◆ Target Participants

- S3 to S6 HKAGE student members in 2023/24 school year
- Class size: 30
- Student members would be selected randomly by the computer system. The decision of HKAGE on the result of the selection should be final.

◆ Pre-requisite

- Students are recommended to be good at scientific reasoning and mathematical calculation.
- Students need to bring their calculators to the lesson.

◆ Medium of Instruction

Cantonese (supplemented with English) with English handouts

Remark: E3BME001W on 4 May has the same content as this workshop, and E3BME001W will be conducted in English. Interested students please apply either E3BME001W or E3BME001W-2 only.

◆ Certificate

E-Certificate will be awarded to participants who have:

- attended the session; AND
- completed all the assignments with satisfactory performance.