



E1MAT008C

(Token- required)

Discrete Math, Probability,
Statistics Course (Level I)

Probability Paradox

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Application Deadline
14 Mar 2022 12:00 n.n

Result Release
25 Mar 2022

Intended Learning Outcomes

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

1. consolidate the basic concept of theoretical probability and apply the law to real-life problems;
2. apply the concepts of probability, permutation and combination to solve practical problems;
3. solve simple questions involving the total probabilities and conditional probability of events;
4. explain and apply all aspects of the learned probability techniques in various real-life; problems
5. develop problem-solving skills through the investigation of statistics paradoxes



◆ Introduction

Building on basic knowledge of probability, the course aims to further develop students' ability and to explore their interests in various aspects of probability. This course covers several essential topics in the study of probability. They include the study of counting methods, multiplication law of probability, independence of events and conditional probabilities. The theories learned could be consolidated through problem solving activities and case studies approach.

Popular Mathematics writer, Mr. Martin Gardner mentioned in his book "Hexaflexagons and Other Mathematical Diversions" that Probability Theory is a field of mathematics unusually rich in paradoxes, which are sometimes difficult to believe even after one is confronted with their proofs. The course also seeks to give students a taste of probability paradox and invites them to interpret the unexpected results. At the end of the course students will have mastered the basic skills in problem solving related to probability and be able to apply them in daily life situations.

◆ Schedule

Session	Date	Time	Venue
1	7 May	9:30 a.m. – 12:30 p.m.	HKAGE Room 27, Buddhist Kok Kwong Secondary School (MAP)
2	14 May		
3	21 May		
4	28 May		

◆ Target Participants

- P4 to P6 HKAGE student members only in 2021/22 school year
- Class size: 40

* Students who completed "Probability - When luck meet with Mathematics" (E1MAT007C/MATP1521) are suggested to apply.

* Priority will be given to student members who are awarded Certificate of Distinction or Certificate of Merit in "Probability-When luck meet with Mathematics" (E1MAT007C/MATP1521)

This programme is same as Discrete Math, Probability, Statistics Course (Level 1): Probability Paradox (MATP2522) in 19/20 school year.

◆ Pre-requisite

Students should be able to:

- basic ideas of probability and simple skills to solve problems related to probability
- meaning and Calculation of Percentage

◆ Medium of Instruction

English with English Handouts

◆ Certificate

E-Certificate will be awarded to participants who have:

- attended at least 3 sessions; and
- completed all the assignments with satisfactory performance



◆ Screening

Please answer the screening question in the online application form.

*The screening question is designed to help the applicant understand the course level and the course content. 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 mathematics/probability in the screening question can be enrolled in the programme.

◆ Sample Notes

The Choice of a "Millionaire"

In the game show "Who Wants to Be a Millionaire", Susan has to decide whether to leave the game with the prize worth \$250,000 or to attempt the last two questions for the million-dollar prize. If she gets a question wrong, the prize drops to \$10,000. What do you think?

Why does the teacher always pick on me?

There are 30 students in the class. In each lesson, the teacher randomly selects 10 students to answer the questions. But it so happens that there is always one student picked up by the teacher at least twice in the same lesson. The teacher claimed that all students are randomly selected. Do you believe it?

The Birthday Problem

How large must a class be to make the probability of finding two students with the same birthday at least 50%?

Time-bound appointment

Two persons A and B plan to meet in the evening between 8 pm to 9 pm in Tsim Sha Tsui. Anyone who arrives early should wait 20 minutes and then leave. What is the likelihood that they will meet with each other?

