香 港 資 優 教 育 學 苑
The Hong Kong Academy for Gifted Education

# Probability Paradox (MATP2522)

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| Introduction | Building on the knowledge acquired in the programme " *Probability- When luck meet with Mathematics* ", this course aims to further develop students' ability and to explore their interests in various aspects of probability. The 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.<br><br>The theories learned could be consolidated through problem solving activities and case-studies approach. Mr. Martin Gardner, a popular Mathematics writer, 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 this course students will have mastered the basic skills in problem solving related to probability and be able to apply them in daily life situations. |
| Programme Type / Level | Discrete Math, Probability, Statistics Course (Level 1) (Token-required) |
| Instructor(s) | Mr. Li Kwok Kwan（Former Vice-Principal of TWGHs Sun Hoi Directors' College, Senior Secondary School Mathematics and Computer Teacher） |
| Pre-requisite | Students should be able to have:<br>● Basic ideas of probability and simple skills to solve problems related to probability<br>● Meaning and Calculation of Percentage |
| Target Participants | ➢ P4 to P6 HKAGE student members<br>➢ Class size: 30<br>*** Students who completed "Probability -When luck meet with Mathematics" (MATP1521) are suggested to apply.**<br>*** Priority will be given to student members who are awarded Certificate of Distinction or Certificate of Merit in "Probability-When luck meet with Mathematics" (MATP1521)** |
| Medium of Instruction | English with English handouts |
| Certificate | **E-Certificate** will be awarded to participants who have:<br>1. Attended **AT LEAST 3** sessions AND<br>2. Completed all the assessments with satisfactory performance |
| Intended Learning Outcomes | Upon completion of the programme, participants should be able to:<br>1. Understand the concept of the multiplication law of probability and apply the law to real-life problems;<br>2. Apply the concepts of Permutation and Combination to solve practical problems;<br>3. Solve simple questions involving the total probability and conditional probability of events;<br>4. Explain and successfully apply all aspects of learned probability techniques in various practical problems. |

## Screening

Please answer the screening question in the online application form.
*The screening question is designed to help the applicant understands 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 knowledge of probability in the screening question can be enrolled in the programme.

## Application Deadline

**21 Jan, 2019**

## Application Result Release Date

**1 Feb, 2019**

Student members may withdraw from the programme on or before the deadline. Otherwise, the token will be deducted.

## Schedule

| Session | Date | Time | Venue |
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| 1 | 2 Mar 2019 | 9:30 a.m. – 12:30 p.m. | *HKPC Building, Classroom 106 |
| 2 | 9 Mar 2019 | | |
| 3 | 16 Mar 2019 | | |
| 4 | 23 Mar 2019 | | *HKPC Building, Classroom 120 |

*Address: 78 Tat Chee Avenue, Kowloon, Hong Kong ( Map)

## Sample Example for the Programme

**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 ?

**Olympic Game**

There are 16 basketball teams in the final round of the Olympic Games. The host country of Olympic Game has to decide how to arrange the matches, to be fair, but also to be feasible. Can you suggest an arrangement for the competition? How many matches do we have to arrange for your proposal?

## Enquiries

For enquiries, please contact us at 3940 0101 after language selection, press "1".