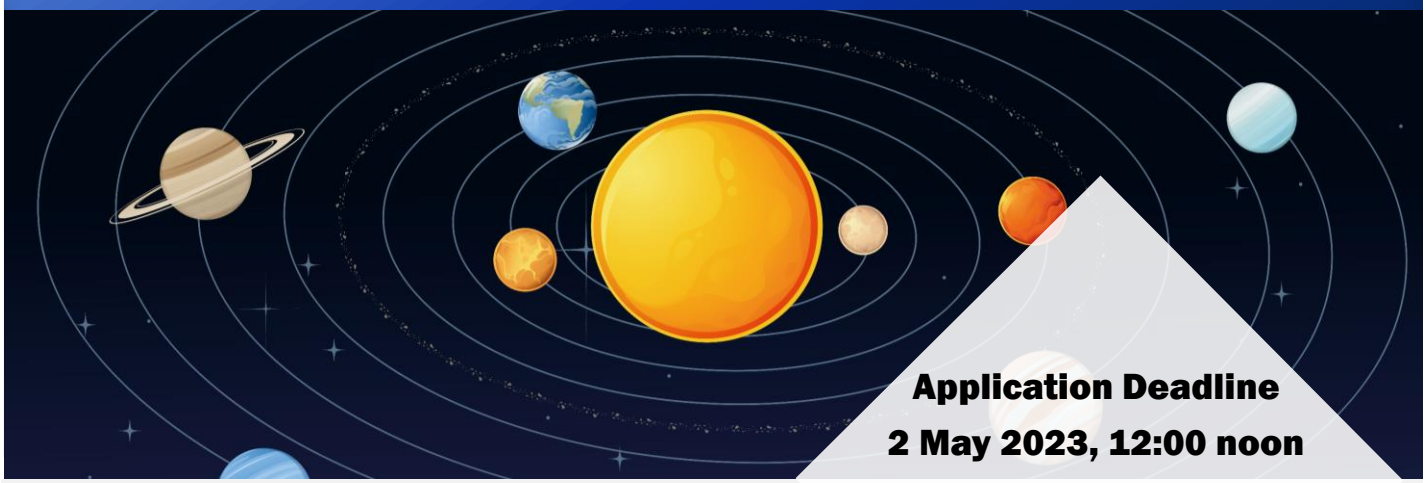
香 港 資 優 教 育 學 苑
The Hong Kong Academy for Gifted Education

E1MAT022C
(Token- required)

Across Domains and Interdisciplinary Course (Level I)

Math of the Solar System - Size, Distance and Time

Mr Ng Ching Kong
(Headmaster of Stewards Pooi Kei Primary School)



Application Deadline
2 May 2023, 12:00 noon

Result Release
12 May 2023

Intended Learning Outcomes

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

1. understand the basic structure and information of the Solar System;
2. use scientific notation in dealing with big numbers;
3. use computer (eg Excel, Google Map) to measure and create a scale model of learner's own solar system;
4. apply astronomy software in identifying celestial objects;
5. understand how Lorentz factor is derived and the related phenomenon such as Time Dilation & Length Contraction;
6. reflect on self identity with comparison to the vast universe.

If student members withdraw from the programme after the Application Deadline, the token will be deducted.

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Introduction

Math is always essential for exploring our interesting and mysterious physical world. From the perspective of learning, providing students with problems and examples demonstrating math's applications in everyday life gives math meanings. Space Math is then considered by NASA to offer such math applications through one of the strongest motivators – Space. By raising and solving 'problems' identified in our solar system, e.g. in the process of creating a scale model of the system, it is expected that this programme could enhance students' understanding of mathematical concepts and their application.

This programme is co-organized with Stewards Pooi Kei Primary School.

Schedule

Session	Date	Time	Venue
1	20 Jul	9:15 a.m. – 12:15 p.m.	2 Lok Ha Square, Fo Tan, Shatin, Stewards Pooi Kei Primary School (Map)
2	21 Jul		
3	22 Jul		
4	24 Jul		
5	25 Jul		

Target Participants

- P4 to P6 HKAGE student members
- Class size: 35

Pre-requisite

Students should be able to know the following Math skills and Science concepts.

- our solar system is a vast system which includes the Sun and the eight planets;
- measurement units (km and AU) and unit conversion;
- the distance from Earth to the Sun;
- multiplication of multiple digit numbers;
- circumference and its relation to radius;
- the Least Common Multiple (LCM).

Medium of Instruction

Cantonese with English handouts

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 the across domains and interdisciplinary knowledge in the screening question can be enrolled in the programme

Certificate

E-Certificate will be awarded to participants who have:

- attended at least 4 sessions; and
- completed all the assignments with satisfactory performance

Enquiries 3940 0101 programme@hkage.org.hk

Sample Notes

A coronal mass ejection from the sun travels 1.5 x 10^{13} centimeters in 17 hours.
What is its speed in kilometers per second?

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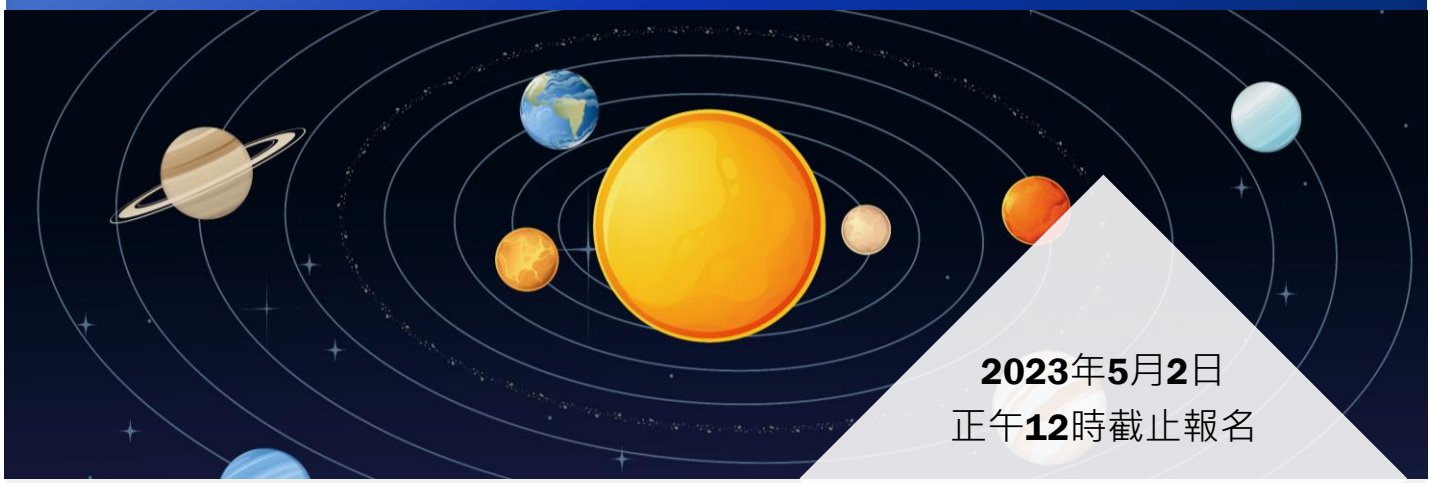
E1MAT022C
(代幣課程)

跨範疇與跨學科課程（程度一）

太陽系的數學 — 大小、距離和時間

黃清江校長
（培基小學校長）



2023年5月2日
正午**12**時截止報名

2023年5月12日
報名結果發佈

預期學習成果

完成本課程後，學員應能：

1. 認識太陽系的基本結構資訊；
2. 利用科學記數法處理龐大的數字；
3. 運用電腦（例如：**Excel, Google Map**）度量並製作我們的太陽系比例模型；
4. 運用天文學軟件辨認星體；
5. 明白勞侖茲因數 **(Lorentz factor)** 的推論方式及與其相關的現象，如「時間膨脹」、「長度收縮」；
6. 與浩瀚的宇宙的比較從而反思自我。

如學員於截止報名日期後取消報名，其代幣將不獲退還。

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課程簡介

要探索我們這個有趣而神秘的物理世界，數學是不可或缺的。從學習的角度來看，讓學生接觸一些能夠顯示日常生活中如何應用數學的難題和例子，可以讓他們更明白數學的意義。美國太空總署的Space Math科普計劃便是利用人們最感興趣的一個範疇 --- 太空，來展示現實中如何應用數學。本課程藉著製作太陽系的比例模型，提出並解答太陽系中的「問題」，以期提升學生對數學概念及其應用的理解。

此課程由本學苑與培基小學合辦。

日程表

課節	日期	時間	地點
1	7月20日	上午9:15 – 下午12:15	新界沙田火炭樂霞坊2號 培基小學 (位置圖)
2	7月21日		
3	7月22日		
4	7月24日		
5	7月25日		

對象

- 小四至小六的香港資優教育學苑學員
- 名額：35

先備知識

學生應能掌握以下的數學技能和科學的概念：

- 我們的太陽系是一個龐大的系統，其中包括太陽和八個行星；
- 量度單位（公里和AU）及單位換算；
- 地球與太陽的距離；
- 多位數乘法；
- 周長及其與半徑的關係；
- 最小公倍數（LCM）。

講授語言

粵語授課與英文筆記

甄選

請作答網上報名表格的甄選題目

* 甄選題目旨在讓學員對所報讀的課程內容及程度有更深的了解。題目必須由學員作答。學員只可作答一次，報名表格一經提交，學員不得更改答案。學苑將根據學員的答題表現進行甄選。學員必須在答案中展示其跨範疇與跨學科知識及學習動機，方獲取錄。

證書

學員必須達到以下要求方能完成此課程，並獲發電子證書：

- 出席最少4節課堂；及
- 完成所有作業並表現良好。

查詢

3940 0101 programme@hkage.org.hk

◆ 筆記範例

A coronal mass ejection from the sun travels 1.5 x 10^{13} centimeters in 17 hours.
What is its speed in kilometers per second?