Enrichment Program for Gifted Learners (Summer Program 2025)
優才增益課程 (暑期課程 2025)

Course Introduction 課程簡介

The **"Enrichment Program for Gifted Learners (EPGL)"** offered by the Center for the Development of the Gifted and Talented (CDGT) will be held from July to August in face-to-face / blended learning mode and is now open for application. EPGL offers short courses in Chemistry, Computer Science, Engineering, Humanities & Arts, Life Science, Mathematics, Physics and Social Science to students from senior primary to secondary school. The program emphasizes diversified in-class activities that give inspiration, enhance students' thinking skills and expand their creative capacity. Students can also experience the teaching style and learning environment of a university under the guidance of HKUST's faculty and professional instructors.

香港科技大學資優教育發展中心將於 7 月至 8 月份舉辦「優才增益課程 」，採用面授模式及混合學習模式教學，現正接受報名。優才增益課程提供短期課程，科目涵蓋化學、計算機科學、工程、人文藝術、生命科學、數學、物理及社會科學等不同範疇，供有興趣的高小至中學學生選讀。課程著重多元化的課堂活動，啟發學生的思考及創意能力，並在科大教授、教員及專業導師的指導下，體驗大學的教學模式和學習環境。

Programming Fun with mBot x Scratch
mBot x Scratch 趣味編程

(Course Code 課程編號：D001)

Description
課程簡介

:

With the recent advances in artificial intelligence (AI) technology, digital computers are providing a new future for human society. The world has changed - those who are kids today will be the adults that will live with this paradigm-shifting change. This course opens a door for kids to an entry level of machine intelligence through utilization of programing (Scratch) and robot (mBot) control, and offers them a steppingstone to explore the knowledge and a glimpse of this fundamentally changed future society.

Scratch is a programming language developed by MIT Media Lab. With drag-n-drop, learners can easily create projects with audio and video effects, and share creations with others. mBot is a do-it-yourself educational robot kit created by robotics experts.

The first half of this course will focus on sharpening the basic logical skills of the students through Scratch. Then we will proceed to teach students developing their own software to control the robotic device mBot. Students will build the mBot robots themselves from separate mechanical pieces in the first class. Then they will learn the basic skills for putting the intelligence into the otherwise dumb mBot and transforming the robot into an intelligent self-driving autonomous vehicle. This involves putting advanced abilities like dynamic sensing, dynamic decision-making, and inter-vehicle communication into the mBot robot and utilizes them to do self-driving – which is one of the hottest topics in the industry today.

Basic programming concepts, e.g. variables, arrays, controls, loops, data abstraction and objects, are infused into the course too. These are universal principles for any modern programming language, and will be beneficial if kids want to go further in coding.

The course will conclude with a rally competition of teams of mBots on a "line-chasing" map to practice what they have learnt from this course.

隨著人工智慧（AI）技術的最新進展，數位計算機為人類社會提供了嶄新的未來。世界已經改變了── 今天的孩子將成為生活在未來新世界的成人。本課程透過教授編程（Scratch）和控制機械人（mBot），讓孩子開始接觸初階程度的機器智能，為他們打開探索相關知識的大門，一窺未來的社會。

Scratch 是麻省理工學院媒體實驗室開發的程式語言。透過「拖放」，學生可以輕鬆創建具有音訊和視訊效果的項目，並與他人分享創作。mBot 則是一款專為教育設計、雙輪外型的車輛機械人。

本課程的前半部分主要透過 Scratch 來提高學生的基本邏輯思考能力；後半部分則教導學生開發自己的軟體來控制 mBot 機械人。課程首課，學生將使用數十個獨立的機械部件來自行組裝 mBot，然後學習 Scratch 及利用 Scratch 邏輯來控制機械人等基本知識，把平平無奇的 mBot，轉變為智能化自動駕駛汽車 ── 這亦是當今業界最熱門的科研項目之一。這涉及到為 mBot 置入 1) 動態感知、2) 動態決策、3) 車間通訊等高等技能。

課程同時滲透了計算機科學的基本概念，例如面向對象、參數、控制、交互等；將加強學生的邏輯思維及分析能力。這些概念適用於任何編程語言，可以幫助孩子在未來接觸更加深入、真正的編程領域。

課程的最後一堂將以團隊形式在「追線」地圖上進行 mBot 拉力賽，讓學生實踐所學的知識。

Instructor 導師	:	**Dr. Alex Lam ——** Dr. Lam received his Ph.D. degree in Electronic and Computer Engineering from the McGill University of Canada in 2011. Since then he has been teaching at the Department of Computer Science and Engineering of HKUST, teaching various courses at the undergraduate level. He has experience in developing diverse course materials and he enjoys teaching and sharing the joy of learning with his students. He feels that computer programming offers the best platform for the youth to unleash their full logical thinking capability.
		林岳博士 —— 於 2011 年在加拿大麥基爾大學電子及計算機工程系取得哲學博士學位。林博士參與不少香港科技大學的教學活動。他非常熱愛教學，享受與同學一起分享學習及思考的樂趣。他深信透過有系統地學習電腦編程，同學能更全面完整地發展他們的邏輯思考能力，為將來的個人發展打下良好基礎。
Date & Time 日期及時間	:	**Robot Assembly, Lectures & Practice** **Jul 21, 23, 25, 28, 30 (Mon, Wed, Fri)【2:00pm – 5:00pm】** **Project Demonstration & Presentation** **Aug 1 (Fri)【2:00pm – 5:00pm】** *(In case of bad weather, make-up class(es) will be held on Aug 4 and/or Aug 6. Please refer to the latest updates by CDGT.)* **機械人組裝、講課及編程實踐** **2025 年 7 月 21、23、25、28 及 30 日（週一、週三、週五）** **【下午 2 時至 5 時】** **項目示範及報告** **2025 年 8 月 1 日（週五）【下午 2 時至 5 時】** *（倘遇惡劣天氣，補堂將於 8 月 4 日及／或 8 月 6 日進行，請留意本中心的最新公布。）*
Language 教學語言	:	Cantonese supplemented with simple English (Lecture notes in Chinese) 粵語輔以英語（中文課程筆記）
Requirements 修讀條件	:	P.5 – P.6 students who are interested in computer science and programming (Suitable for students with no or less background in Scratch) 小五至小六對計算機科學及編程有興趣之學生（適合對編程沒有或只有少許認識的學生）
Award 獎勵	:	Students with 80% attendance, have submitted all the assessment assignments and taken part in the final competition will be issued a certificate 學生出席率達 80%，並遞交編程功課，及參與最後的比賽，將獲頒發證書乙張
Course Fee 費用	:	HKD 4,600 港幣 4,600 元
Materials Required **須自備材料**	:	**Each student is required to bring along with their own Makeblock mBot2 for lessons. (Reference price of mBot2: HKD$1,258).** For purchase method and details, please refer to the website of Makeblock's Authorized Distributor in Hong Kong below: https://www.dtsl.asia/products/makeblock-mbot2-programmable-robotics-kit **每名學生必須自備一部個人的 Makeblock mBot2 編程教學機械人上課（參考價為港幣 1,258 元）。** 有關購買方法及詳情，請瀏覽 Makeblock 授權之香港代理商網頁： https://www.dtsl.asia/products/makeblock-mbot2-programmable-robotics-kit

Mathematics of Linear Functions: Concepts and Techniques
線性函數的數學：基本概念與應用

(Course Code 課程編號：M108)

Description 課程簡介	:	Linear functions are a fundamental concept and essential problem-solving tool in higher mathematics. They have a wide range of applications not only in pure and applied mathematics but also in fields such as science, engineering, and economics. This course will guide students in exploring linear functions, covering key areas that are vital for future studies in mathematics. The topics covered include vectors, systems of linear equations, matrices, the relationship between matrices and linear functions, simultaneous equations, and determinants. Through engaging face-to-face classroom activities and exercises, students will deepen their understanding of these concepts and enrich their mathematical knowledge. 線性函數是高等數學中重要的基本概念和解題工具。它在純數、應用數學、科學、工程、經濟等多個領域中有著廣泛的應用。本課程將引導學生初步探索線性函數，認識一些在未來數學學習中的重要主題。 課程內容包括向量、線性方程組、矩陣、矩陣與線性函數之間的關係、聯立方程和行列式。通過對面對面的課堂活動和練習，學生將加深對這些概念的理解，並豐富他們的數學知識。
Instructor 導師	:	**Mr. Cheng Wing-cheong ——** holds a master's degree from the Hong Kong University of Science and Technology. He taught at the Department of Mathematics of the University from 2014 to 2024 as an Instructional Assistant Coordinator. During this period, he also served as the Officer of the Mathematics Support Center. He has extensive experience in delivering gifted educational courses to cultivate students' mathematical abilities and has been teaching Level 1 Mathematics for Dual Program, offered by the Center for the Development of the Gifted and Talented, HKUST since 2018. 鄭永昌先生 —— 香港科技大學碩士。在 2014 至 2024 年間任教於科技大學數學系，除了任職教學助理統籌，亦擔任數學輔導中心主任。鄭永昌先生在資優教育上擁有豐富的教學經驗，致力培養學生的數理才能。自 2018 年起，他在科技大學資優教育發展中心教授雙修課程之數學階段一的課程。
Date & Time 日期及時間	:	**Lectures** **Jul 15, 17, 22, 24, 29 & 31 (Tue & Thu)** **【10:00am – 12:30pm】** *(In case of bad weather, make-up class(es) will be held on Aug 5 and/or Aug 7. Please refer to the latest updates by CDGT.)* **講課** **2025 年 7 月 15、17、22、24、29 及 31 日（週二及週四）** **【上午 10 時至下午 12 時 30 分】** *（倘遇惡劣天氣，補堂將於 8 月 5 日及／或 8 月 7 日進行，請留意本中心最新公布。）*
Language 教學語言	:	English supplemented with Cantonese (lecture notes in English) 英語輔以粵語（英文課程筆記）
Requirements 修讀條件	:	P.5 – P.6 students who are interested in mathematics 對數學有興趣的小五至小六學生
Award 獎勵	:	Students who have attained 80% attendance and completed all assessment activities with passing grades will be issued a certificate 學生出席率達 80%，並完成及通過所有評核，將獲頒發證書乙張
Course Fee 費用	:	HKD 3,800 港幣 3,800 元

Description 課程簡介	:	Diseases play a significant role in human life, affecting our health and well-being. They vary in their nature, with some being infectious, caused by pathogens like bacteria and viruses, while others are non-infectious, resulting from genetic factors or lifestyle choices. Understanding these differences is crucial for prevention and treatment, enabling us to lead healthier lives.

Throughout this interactive course, students will become "disease detectives", investigating common illnesses such as common cold, asthma and cancer through understanding their major symptoms, and discovering the links between causes, symptoms, effective remedies and preventive measures.

Join us in this adventure to unravel the mysteries of illness and become champions of health in your community!

擁有健康的身體才能有美滿的生活。為什麼有些疾病會傳染，而另一些則不會傳染？我們應該怎樣預防疾病？又如何及時分辨它們？充分認識疾病，才能有效保障我們的健康。

本互動課程將帶領學生瞭解一些常見疾病如何影響我們、講解疾病的傳染性、探索不同疾病的來源、如何對症下藥，以及怎樣可以保持健康。在整個課程中，學生將化身"疾病偵探"，透過了解主要症狀來偵查感冒、流感和哮喘等常見疾病，並發現有效的治療方法和預防措施。

現在就開始探索疾病背後的奧秘，成為家庭社區的健康小先鋒！

Instructor 導師	:	**Dr. Amy Kwok —** Dr. Kwok obtained her Ph.D. majoring in molecular biology and endocrinology in the University of Hong Kong. She worked in research laboratories and life science companies in recent years. She is experienced in teaching and mentoring young students in undergraduate courses and summer internship programs. She has a keen interest in applying interactive in-class activities such as discussion and scenario-based problem-solving exercises to improve students' initiative and understanding of the subjects.

郭可茵博士 —— 郭博士畢業於香港大學分子生物學及內分泌學，之後致力於學術研究及就職於生命科技行業。郭博士曾教授本科生課程及指導暑期實習課程，對於教導年輕學生有豐富經驗。郭博士熱愛教學，尤其擅於活用富有互動元素的課堂活動，比如小組討論、基於場景解決問題練習等等，以增加學生的自主學習性和對學習主題的認知及了解。

Date & Time 日期及時間	:	**Lectures** **Jul 19, 26 & Aug 2, 9, 16 (Sat)** 【**10:00am – 12:30pm**】

(In case of bad weather, make-up class(es) will be held on Aug 23 and/or Aug 30. Please refer to the latest updates by CDGT.)

講課
2025 年 7 月 19、26 日及 8 月 2、9、16 日（週六）
【**上午 10 時至下午 12 時 30 分**】

（倘遇惡劣天氣，補堂將於 8 月 23 日及／或 8 月 30 日進行，請留意本中心最新公布。）

Language 教學語言	:	Cantonese supplemented with English (Lecture notes in Chinese) 粵語輔以英語（中文課程筆記）

Requirements 修讀條件	:	P.4 – P.6 students who are interested in health sciences 對健康科學有興趣的小四至小六學生
Award 獎勵	:	Students who have attained 80% attendance and completed all assessment activities with passing grades will be issued a certificate 學生出席率達 80%，並完成及通過所有評核，將獲頒發證書乙張
Course Fee 費用	:	HKD 3,200 港幣 3,200 元

Secondary Section 中學組

Intriguing Plants: From Physiology to Biotechnology
植物的奧妙：由生理學到生物技術

(Course Code 課程編號：B203)

Description 課程簡介	:	How do seedless plants reproduce? Why do plant stems grow towards light? What features protect plants from herbivores? In our daily lives, we encounter a wide variety of plants, many of which have unique adaptations that help them thrive in their habitats. This course will introduce students to the diversity of plants, as well as their basic structures and growth. Students will also explore different defence mechanisms of plants, their applications in human society, and the technique of plant tissue culture. In addition to informative lectures, a series of hands-on experiments will allow students to gain technical and analytical skills related to plant science. Interactive activities and scientific presentations will further develop their critical thinking and problem-solving abilities. 無籽植物如何繁衍？為什麼植物的莖部會向光生長？植物怎樣保護自己免受草食動物的侵害？在日常生活中，我們會遇到各式各樣的植物，許多植物都有獨特的結構，以便更好地適應其棲息地。本課程將會介紹植物的多樣性、其基本結構及生長過程。學生亦會探索植物的不同防禦機制、在人類社會中的應用，以及植物組織培養的技術。 除了課堂外，學生亦會參與一系列的實驗活動，學習有關植物科學的技術和分析。課程還包括互動活動和科學報告，進一步培養學生的批判思維和解難能力。
Instructor 導師	:	**Dr. Amy Li** — Dr. Li is currently a Lecturer in Division of Life Science, HKUST. She received her Ph.D. in Microbiology from McGill University, Canada. Apart from a dozen of research publications in international academic journals, Dr. Li has over 10 years of local and overseas teaching experience in various biology courses, such as Plant Biology and Plant Biotechnology. She is particularly good at integrating a combination of teaching strategies and class activities to develop students' critical thinking and communication skills, as well as inspire their interest in further study. **李嵐博士** — 李博士為現任香港科技大學生命科學部講師。她於加拿大麥基爾大學取得微生物學博士學位。除了在國際學術期刊上發表十幾篇研究論文外，李博士亦擁有超過 10 年的本地及海外教育經驗，例如教授植物生物學及植物生物技術等不同級別的生物學課程。她尤其善於靈活運用多種教學模式及課堂活動去訓練學生的批判性思維和溝通能力，以及啟發他們對深入學習的興趣。
Date & Time 日期及時間	:	**Aug 5, 7, 12, 14, 19 & 21 (Tue & Thu)【10:00am – 1:00pm】** *(In case of bad weather, make-up class(es) will be held on Aug 26 and/or Aug 28. Please refer to the latest updates by CDGT.)*

2025 年 8 月 5、7、12、14、19 及 21 日（週二及週四）【10:00am – 1:00pm】

（倘遇惡劣天氣，補堂將於在 8 月 26 及／或 28 日進行，請留意本中心的最新公布。）

Language 教學語言	:	Cantonese supplemented with English (lecture notes in English) 粵語輔以英語（英文課程筆記）
Requirements 修讀條件	:	S2 or above students with genuine interest in plant science 對植物學有興趣之中二或以上學生
Award 獎勵	:	Students who have attained 80% attendance will be issued a certificate 學生出席率達 80%，將獲頒發證書乙張
Course Fee 費用	:	HKD 4,800 港幣 4,800 元

Look Inside Our Body ─ Animal Physiology
「解剖」動物生理學

(Course Code 課程編號：B808)

Description 課程簡介	:	In this course, we will use a comparative approach to examine the physiology of selected animal systems (such as the circulatory, nervous and sensory systems) with an emphasis on vertebrates. We will also examine how physiological systems are integrated and thus allow animals to respond in different environments. Moreover, dissection demonstrations will be conducted by the instructor, through which students can observe the structures and feel the textures of various animal organs, including hearts, lungs and eyes. 本課程會以脊椎動物的生理結構為基礎，集中觀察幾個重要的系統，例如循環、神經與感官系統等，進而探討不同物種怎樣透過系統與系統之間的聯繫，去適應不同的生活環境。導師亦會在課堂上示範解剖動物器官（如心臟、肺、眼），讓學生可以第一身觀察器官的結構和感受器官的質感。
Instructor 導師	:	**Dr. Philip Lam** ── Dr. Lam received his Ph.D. in Molecular Pharmacology and Toxicology from University of Southern California, USA. He is currently an Assistant Professor of Science Education at the Division of Life Science, HKUST. He has years of substantial teaching experience. He is familiar with various new pedagogical strategies such as e-learning and blended learning. Dr. Lam believes that it is of utmost importance to provide students with a learning environment that nurtures critical thinking. **林陽博士** ── 林博士畢業於美國南加州大學分子藥理及毒理學，現任香港科技大學生命科學部理學教育助理教授，有多年教學經驗，熟悉各種新穎的教學模式，如網絡化學習和混成學習。林博士重視為學生提供一個可以培養批判性思維的學習環境。
Date & Time 日期及時間	:	**Jul 16, 18, 21, 23 &25 (Wed, Fri and Mon)** **【Class A: 10:00am – 1:00pm】** **【Class B: 3:00pm – 6:00pm】** *(In case of bad weather, make-up class(es) will be held on Jul 28 and/ or Jul 30. Please refer to the latest updates by CDGT.)* **2025 年 7 月 16、18、21、23 及 25 日（週三、週五及週一）** **【A 班:上午 10 時至下午 1 時】** **【B 班:下午 3 時至下午 6 時】** *（倘遇惡劣天氣，補堂將於 7 月 28 及／或 30 日進行，請留意本中心的最新公布。）*

Language 教學語言	:	Cantonese supplemented with English (lecture notes in English) 粵語輔以英語（英文課程筆記）
Requirements 修讀條件	:	Students who have a genuine interest in animal biology 所有對動物生物學有興趣的學生
Award 獎勵	:	Students with 80% attendance will be issued a certificate 學生出席率達 80%，將獲頒發證書乙張
Course Fee 費用	:	HKD 4,200 港幣 4,200 元

The Chemical Adventures of Sherlock Holmes: Chemistry in Forensic Science
福爾摩斯的化學歷險記：鑑證科學中的化學原理

(Course Code 課程編號：C105)

Description 課程簡介	:	Public perceptions of forensic science are heavily influenced by TV shows like *CSI: Crime Scene Investigation*, which often prioritize dramatic, high-tech imagery over an accurate understanding of its role in the criminal justice system. However, forensic science has undergone revolutionary advancements in recent decades, particularly with the advent of DNA profiling. These breakthroughs allow investigators to extract critical evidence—such as microscopic traces of body fluids, drugs, or explosives—of sufficient quality to play a pivotal role in criminal investigations and trials. Today, forensic science is an indispensable tool in the criminal justice process, providing answers to investigative questions more effectively than many other methods.

This course offers students a comprehensive introduction to the theories, techniques, and analytical tools used in forensic science. Topics include the analysis of fingerprints, bloodstains, DNA profiling and sequencing, drug chemistry, and fibers, among others. Students will also conduct project-based studies on topics of their choice. To enhance understanding, laboratory demonstrations and hands-on explanations will illustrate how to analyze samples using various forensic instruments, providing students with a unique perspective on science that helps uncover the truth.

鑑證科學在刑事司法程序的重要性與日俱增，然而公眾的理解主要基於電視節目，例如 CSI（犯罪現場調查），這些節目使用高科技圖像來產生戲劇性的效果，卻忽略解釋背後的科學原理。過去幾十年，科學上有眾多突破性的發展，尤其是發現了 DNA 分析技術，徹底改變了鑑證學。我們可以從體液、藥物和爆炸物等的微量痕跡中獲得足夠及有質量的證據，蛛絲馬跡都會成為調查中的關鍵。鑑證科學現已成為刑事司法議程不可或缺的一環。

本課程將向學生介紹鑑證科學的理論、技術和分析工具，其中包括指紋、血跡分析、DNA 分析、DNA 測序、藥物化學、纖維等的分析。學生可就自己感興趣的題目進行專題研習。此外，課程將提供實驗室演示和解釋，讓學生瞭解如何使用法醫科學儀器來分析樣品，了解有助揭露真相的科學。

Instructor 導師	:	**Dr. Veronica Tse —** Dr. Tse is an Assistant Manager (Laboratory) at the Department of Chemistry, HKUST. With a diverse educational background, she holds a bachelor's degree in Chemistry, a bachelor's degree in Health Science, a master's degree in Analytical Chemistry, and a Ph.D. degree in Chinese Medicine. Her expertise encompasses analytical chemistry, instrumental analysis, biomolecular analysis, and Traditional Chinese Medicine (TCM) research. Her extensive teaching experience spans various fields, including organic chemistry, inorganic chemistry, biomolecular chemistry, and analytical chemistry. She has successfully instructed chemistry laboratory courses, sharing her knowledge with students in a practical setting. Currently, she is actively involved in teaching general, synthetic, biomolecular, and

pure chemistry laboratory courses at the Department of Chemistry, as well as courses offered by the Center for the Development of the Gifted and Talented at HKUST. Additionally, she contributes to postgraduate-level laboratory courses, further enriching the academic experience for advanced students.

謝惠佩博士 ——現任香港科技大學化學系實驗室助理經理，她擁有化學學士學位、健康科學學士學位、分析化學碩士學位和中醫藥博士學位。她擅長分析化學、儀器分析、生物分子分析和中醫藥研究。謝博士擁有豐富的教學經驗，教授不同化學領域的實驗課程，包括有機化學、無機化學、生物分子化學和分析化學。她目前在化學系教授普通化學、合成化學、生物分子化學和純化學實驗室課程，以及由資優教育發展中心提供的課程。她還參與研究生程度的實驗室課程。

Date & Time 日期及時間	:	**【Class A】: Jul 15, 17, 22, 24, 29 & 31* (Tue & Thu)** **【10:00am – 1:00pm】** * Jul 31 will be the day for oral presentation and final exam. **【Class B】: Jul 16, 18, 23, 25, 30 & Aug 1* (Wed & Fri)** **【10:00am – 1:00pm】** * Aug 1 will be the day for oral presentation and final exam. *(In case of bad weather, make-up class(es) will be held on Aug 5 and/ or Aug 7 for Class A, and Aug 6 and/ or Aug 8 for Class B. Please refer to the latest updates by CDGT.)* **【A 班】：2025 年 7 月 15、17、22、24、29 及 31 日*（週二及週四）** **【上午 10 時至下午 1 時】** **7 月 31 日為口頭匯報及評核。* **【B 班】：2025 年 7 月 16、18、23、25、30 及 8 月 1 日*（週三及週五）** **【上午 10 時至下午 1 時】** **8 月 1 日為口頭匯報及評核。* *（倘遇惡劣天氣，（A 班）補堂將於 8 月 5 及／或 7 日進行；（B 班）將於 8 月 6 及／或 8 日進行，請留意本中心的最新公布。）*
Language 教學語言	:	English supplemented with Cantonese (lecture notes in English) 英語輔以粵語（英文課程筆記）
Requirements 修讀條件	:	Secondary school students interested in the chemistry and techniques used in forensic science 對鑑證科學中使用的化學知識和技術感興趣的中學生
Award 獎勵	:	Students who have attained 80% attendance and completed all assessment activities with passing grades will be issued a certificate 學生出席率達 80%，並完成及通過所有評核，將獲頒發證書乙張
Course Fee 費用	:	HKD 4,800 港幣 4,800 元

Description
課程簡介

:

Drugs play a vital role in our lives by preventing, diagnosing, and treating diseases. But have you ever wondered how the medications that heal us are created? This course invites students to discover the secrets of Pharmaceutical Chemistry, where the realms of chemistry, medicine, and manufacturing technologies converge.

Students will explore fundamental concepts of pharmaceutical chemistry, including the physicochemical parameters of drug molecules, mechanisms of drug action, drug synthesis, formulation of common dosage forms, and drug analysis. Through engaging laboratory demonstrations, students will learn how to extract, isolate, identify, and analyse the active ingredients in pharmaceutical products using instrumental methods. Lessons will also incorporate interactive activities such as group discussions and presentations, enriching the overall learning experience for students.

藥物在我們的生活中扮演著重要的角色，幫助我們預防、檢測和治療疾病；但你知道藥物是如何研發出來的嗎？本課程將帶領學生一起揭開藥物化學的神秘面紗，探索這個由化學、醫藥和製藥技術交匯的領域。

學生將了解藥物化學的基礎知識，包括藥物分子的物理化學特性、藥物作用機制、合成方法、常見劑型的配方及藥物的分析方法。透過實驗示範，學生會學習如何提取、分離、和使用儀器來鑑定和分析藥物中的活性成分。課堂亦會結合互動式學習活動，如小組討論和匯報，豐富整體的學習體驗。

Instructor
導師

:

Prof. Ho-Wai Dennis Chan ─ Dr. Chan is an Adjunct Associate Professor in the Department of Chemistry, HKUST. He specializes in organic synthesis of compounds with pharmaceutical potential and application of organometallic reagents in chemical synthesis. He currently teaches a University Common Core course (in science and technology area) and practical chemistry courses in the Department of Chemistry covering various areas of chemistry realm ─ including organic chemistry, inorganic chemistry, biomolecular chemistry, material chemistry and pure chemistry. He also supervises final year undergraduate students in completing their capstone projects. He has extensive experience in teaching gifted students and has been teaching a variety of courses offered by the Center for the Development of the Gifted and Talented, HKUST since 2007.

陳浩懷教授 ─ 香港科技大學化學系兼任副教授。他擅長有機化學合成和有機金屬試劑在化學合成中的應用。他目前在化學系任教大學共同核心課程（科學和技術領域）和化學系的實驗課程，涉及化學領域的各個專業─包括有機化學、無機化學、生物分子化學合成和分析、材料化學製備和分析及高級化學合成和分析，還負責監督四年級本科生完成他們的畢業論文。陳博士於資優學生教學方面擁有豐富經驗，自 2007 年起為香港科技大學資優教育發展中心任教多項課程。

Dr. Man Sing CHEUNG ─ Dr. Cheung is currently an Assistant Manager (Laboratory) in the Department of Chemistry, HKUST. His research area mainly focuses on theoretical organic and organometallic chemistry, with the emphasis on designing catalysts and other useful materials. He is experienced in teaching chemistry to various types of students. He now teaches laboratory courses of general chemistry and synthetic chemistry in the Department of Chemistry and the chemistry courses offered by the Center for the Development of the Gifted and Talented, HKUST.

張文星博士 ─現任香港科技大學化學系的實驗室助理經理。他的研究領域主要集中於有機理論及有機金屬化學，著重於設計催化劑和其他有用的材料。張博士對於教導不同類型學生有豐富經驗。他現於化學系教授基礎化學和合成化學的實驗室課程，以及由資優教育發展中心提供的化學課程。

Date & Time 日期及時間	:	**Jul 15, 17, 22, 24, 29 & 31* (Tue & Thu)【10:00am – 1:00pm】** * Jul 31 will be the day for oral presentation and final exam.

(In case of bad weather, make-up class(es) will be held on Aug 5 and/or Aug 7. Please refer to the latest updates by CDGT.)

2025 年 7 月 15、17、22、24、29 及 31 日*（週二及週四）【上午 10 時至下午 1 時】
*7 月 31 日為口頭匯報及評核。

（倘遇惡劣天氣，補堂將於 8 月 5 及／或 7 日進行，請留意本中心的最新公布。）

Language 教學語言	:	English supplemented with Cantonese (lecture notes in English) 英語輔以粵語（英文課程筆記）
Requirements 修讀條件	:	S3 or above who have an interest in the chemistry of pharmaceutical ingredients. Basic understanding of organic chemical structures would be preferred. 對藥物成分化學有興趣之中三或以上學生。對有機化學結構有基本了解者優先。
Award 獎勵	:	Students who have attained 80% attendance and completed all assessment activities with passing grades will be issued a certificate 學生出席率達 80%，並完成及通過所有評核，將獲頒發證書乙張
Course Fee 費用	:	HKD 4,800 港幣 4,800 元

Python for Everyone
Python 編程初探

(Course Code 課程編號：D002)

Description 課程簡介	:	The ability to code computer programs is an important part of literacy in today's society. Coding allows you to use computer as a tool to express yourself and realize your creative ideas. This course is a programming course for everyone, teaching the popular Python programming language. No pre-requisite knowledge in programming is needed. The course introduces programming fundamentals, such as variables and expressions, program control flow with branches and loops, functions, strings, and lists. Via lectures and programming exercises, you will be able to write simple Python programs to solve practical problems. Learning to program is ultimately about learning to think logically and to approach problems methodically. Such abilities can be carried ahead and prepare you for any advanced programming courses in the future.

每個人都可以學習編程！學習寫程式可讓電腦成為你的工具，幫你表達自己實現創意。本課程是專門為初學者設計的編程課，教授流行的 Python 編程語言，不需任何先修知識。課程將由編程的基礎知識開始，介紹變量和表達式、條件語句、循環、函數、字符串、列表等。透過講課、編程練習，課程將滲透編程的基本思維，從而幫助學生逐步掌握利用編程解決問題的能力，並強化學生的邏輯思維及分析問題的能力。這些概念適用於任何編程語言，可以幫助你在未來接觸更加深入的高級編程課程。

Instructor 導師	:	**Dr. Cecia Chan ——** Dr. Chan is a lecturer at the Department of Computer Science and Engineering, HKUST. She received her Ph.D. from the Chinese University of Hong Kong and joined HKUST in 2012. Dr. Chan has a strong passion in education and has rich experience in teaching students from different backgrounds and at different levels. She teaches computer programming courses for both undergraduate and postgraduate students, including two popular languages, C++ and Python, and fundamental courses on Big Data. Her research interests include information extraction, text mining, machine learning, and knowledge system.

陳祈博士 —— 現任香港科技大學電腦科學及工程學系講師。陳博士畢業於香港中文大學，於 2012 年加入香港科技大學。陳博士熱心教學，並擁有豐富的教學經驗，曾教授來自不同背景及不同程度的學生。陳博士教授多個為大學本科生及研究生而設的程式編寫課程，包括 C++ 及 Python 這兩種常用的編程語言，以及大數據基礎課程。陳博士的研究興趣包括信息提取、文本挖掘、機器學習和知識系統等。

Date & Time 日期及時間	:	**Jul 15, 17, 19, 22, 24 & 26 (Tue, Thu & Sat)** **【10:00am – 12:30pm】** *(In case of bad weather, make-up class(es) will be held on Jul 29 and/or Jul 31. Please refer to the latest updates by CDGT.)* **2025 年 7 月 15、17、19、22、24 及 26 日（週二、週四及週六）** **【上午 10 時至下午 12 時 30 分】** *（倘遇惡劣天氣，補堂將於 7 月 29 及／或 7 月 31 日進行，請留意本中心的最新公布。）*
Language 教學語言	:	English 英語
Requirements 修讀條件	:	Students with basic computer skills and interested in computer science and programming 熟悉一般電腦操作，對計算機科學及編程有興趣的學生
Award 獎勵	:	Students who have attained 80% attendance and completed programming exercises and projects will be issued a certificate 學生出席率達 80%，並完成編程功課，將獲頒發證書乙張
Course Fee 費用	:	HKD 4,000 港幣 4,000 元

Introduction to Game Development with Godot Engine
以 Godot 引擎學習遊戲開發

(Course Code 課程編號：D004)

Description 課程簡介	:	Do you enjoy playing computer games or mobile games? Have you ever thought of creating your own game? This course is designed to introduce students to the fundamentals of game development using the Godot Game Engine. Throughout the course, students will explore:

- **What is a Game Engine?** Discover the functionality of game engines, with a special focus on the features of the Godot Game Engine.
- **Programming Basics:** Gain hands-on experience with GDScript, Godot's built-in scripting language, while learning essential programming concepts.
- **Game Mechanics:** Dive into key elements such as animation and collision detection that make games captivating and fun.
- **Game Development:** Bring creativity to life by developing a 2D game under guidance.

By the end of this course, students will be cultivated with skills and knowledge to continue the journey in game development and turn any game ideas into reality.

你喜歡玩電腦遊戲或手機遊戲嗎？你是否曾經想過製作屬於自己的遊戲？本課程將帶領學生以 Godot 遊戲引擎為基礎，學習開發遊戲的基本知識。在課程中，學生將探索包括：

- **什麼是遊戲引擎？**了解遊戲引擎的功能，特別聚焦於 Godot 遊戲引擎的特點。
- **程式設計基礎**：透過 GDScript（Godot 的內建語言）獲得實作經驗，並學習基本的程式設計概念。
- **遊戲要素**：學習製作遊戲的關鍵元素，如動畫和碰撞檢測等效果。
- **遊戲製作**：在指導下親身創作出一款 2D 遊戲，把創意變為現實。

課程結束時，學生將具備繼續探索遊戲開發的基本技能和知識，並能將自已的遊戲創意付諸實現。

Instructor 導師	:	**Dr. Cecia Chan ──** Dr. Chan is a lecturer at the Department of Computer Science and Engineering, HKUST. She received her Ph.D. from the Chinese University of Hong Kong and joined HKUST in 2012. Dr. Chan has a strong passion in education and has rich experience in teaching students from different backgrounds and at different levels. She teaches computer programming courses for both undergraduate and postgraduate students, including two popular languages, C++ and Python, and fundamental courses on Big Data. Her research interests include information extraction, text mining, machine learning, and knowledge system. **陳祈博士 ──** 現任香港科技大學電腦科學及工程學系講師。陳博士畢業於香港中文大學，於 2012 年加入香港科技大學。陳博士熱心教學，並擁有豐富的教學經驗，曾教授來自不同背景及不同程度 的學生。陳博士教授多個為大學本科生及研究生而設的程式編寫課程，包括 C++ 及 Python 這兩種 常用的編程語言，以及大數據基礎課程。陳博士的研究興趣包括信息提取、文本挖掘、機器學習和 知識系統等。
Date & Time 日期及時間	:	**Jul 15, 17, 19, 22, 24 & 26 (Tue, Thu & Sat)** **【2:30pm – 5:00pm】** *(In case of bad weather, make-up class(es) will be held on Jul 29 and/or Jul 31. Please refer to the latest updates by CDGT.)* **2025 年 7 月 15、17、19、22、24 及 26 日（週二、週四及週六）** **【下午 2 時 30 分至 5 時】** *（倘遇惡劣天氣，補堂將於 7 月 29 及／或 7 月 31 日進行，請留意本中心的最新公布。）*
Language 教學語言	:	English supplemented with Cantonese (lecture notes in English) 英語輔以粵語（英文課程筆記）
Requirements 修讀條件	:	Secondary students with basic computer skills and interested in computer science and programming 熟悉一般電腦操作，對計算機科學及編程有興趣的中學生
Award 獎勵	:	Students who have attained 80% attendance and completed all programming exercises and project with passing grades will be issued a certificate. 學生出席率達 80%，並完成及通過所有編程功課及項目，將獲頒發證書乙張
Course Fee 費用	:	HKD 4,000 港幣 4,000 元

An Engineering Perspective: Renewable Energies & Energy Conversion
工程視覺：可再生能源及能量轉換

(Course Code 課程編號：E105)

Description
課程簡介

: Energy plays a significant role in both our daily lives and society. Without energy, we would not be able to perform any activities, as simple as cooking meals, taking a hot shower, charging smart devices to manufacturing, construction, etc. Energy shortage is one of the global challenges in the 21st Century and renewable energies are increasing in-demand as alternative energy solutions. This course will introduce students to different types of renewable energies, such as wind, solar, marine energies, etc. and how these natural resources can be converted into usable forms of energy through energy conversion processes.

Students will work as a group and study i) a variety of energy conversion systems based on some exciting real-world applications of energy and its transfer, ii) the efficiencies of different energy conversion processes, and examine their impact on the environment. Various energy transformation systems, e.g. turbine or equivalent component will be demonstrated.

The course emphasizes on hands-on learning experience - through engaging in comprehensive measurement, and testing of solar energy, students will deepen their understanding of its principle and mechanism. Small group activities will also help students cultivate their skills in communication, problem solving as well as a teamwork spirit.

能源對我們社會及日常生活十分重要。缺乏能源，許多活動會變得難以進行，小至日常煮食、洗熱水澡、充電；以至製造、生產以及建築等，都會受到影響。能源短缺是廿一世紀全球面臨的挑戰之一。為解決能源危機，世界對再生能源的需求日益增加。本課程將會介紹不同類型的可再生能源，例如風能、太陽能、海洋能等，探討這些自然資源如何透過能量轉換過程化為可供我們利用的再生能源。

學生將以小組形式，研習多種能量轉換系統、能量及其傳輸的現實應用，並探索不同能量轉換過程之效率，明白它們對環境所帶來的影響。課堂將會展示各種能量轉換系統，例如渦輪或相類結構。

學習過程著重實踐 ─ 學生親手參與綜合測量、太陽能測試實驗，深入理解能量轉換的運作原理。透過小組活動，學生更可培養溝通、解難技巧以及團隊合作的精神和技巧。

Instructor
導師

: **Prof. Robin Ma ──** Prof. Ma is an Associate Professor of Engineering Education in the Department of Mechanical and Aerospace Engineering (MAE) at HKUST. He is also a Chartered Engineer of Institution of Mechanical Engineers (IMechE), UK. He obtained his Ph.D. in the School of Materials Science and Engineering at the University of New South Wales (UNSW), Sydney. He has been active in engineering education for over 15 years. He has also had an increasing involvement with new approaches to education, including experiential learning, blended learning and undergraduate research. He believes that this broader contemporary approach is beneficial for students, especially for engineering students preparing for professional careers. He received the School of Engineering Teaching Award and the MSc program Teaching Excellence Appreciation Award in 2015 and 2018, respectively. On the other hand, Prof. Ma is the Director of the Center for Industry Engagement and Internship (IEI) in the School of Engineering (SENG) at HKUST, assisting students to find overseas and local internships and jobs. Prof. Ma is an advisor of two local technology start-up companies.

馬諾宏教授──現任香港科技大學機械及航空航天工程系工程教育副教授，同為英國工程師學會註冊工程師，於澳洲新南威爾斯大學材料及科學工程學系取得博士學位，擁有超過 15 年工程教育的經驗。透過不同的教學方式，例如體驗式學習，混合式學習和本科研究，幫助學生確認自己的興趣。在 2015 及 2018 分別獲得香港科技大學工學院本科卓越教學獎和學分碩士卓越教學獎。馬教授目前同為科大工學院業界交流及實習中心總監，幫助工學院學生尋找海外及本地實習交流機會。現時在香港與學生共同擁有兩間科技創業公司。

Date & Time 日期及時間	:	**Aug 18, 19, 20, 21, 22 & 25 (Mon to Fri)** **【2:00pm – 4:30pm】**

(In case of bad weather, make-up class(es) will be held on Aug 23 and/or Aug 26. Please refer to the latest updates by CDGT.)

2025 年 8 月 18、19、20、21、22 及 25 日（週一至週五）
【下午 2 時至 4 時 30 分】

（倘遇惡劣天氣，補堂將於 8 月 23 及／或 26 日進行，請留意本中心的最新公布。）

Language 教學語言	:	English supplemented with Cantonese (lecture notes in English) 英語輔以粵語（英文課程筆記）
Requirements 修讀條件	:	S1 - S6 students who are interested in mathematics, physics, energy and engineering 對數學、物理、再生能源及工程學有興趣之中一至中六學生
Award 獎勵	:	Students who have attained 80% attendance and completed all assessment activities with passing grades will be issued a certificate 學生出席率達 80%，並完成及通過所有評核，將獲頒發證書乙張
Course Fee 費用	:	HKD 4,200 港幣 4,200 元

"Crafting" Engineering in the Air
「匠」心飛行

(Course Code 課程編號：E106)

Description 課程簡介	:	This exciting hands-on course guides students through the complete process of building and flying their own aircraft. Students will learn the basics of aerodynamics and flight principles by constructing a realistic model aircraft.

Through hands-on experience in this course, students will be cultivated with practical skills, teamwork spirit and real-world problem-solving skills, together with enough theories to understand why planes fly. Students will also experience the thrill of seeing their own aircraft take to the skies in the final session.

本課程將介紹空氣動力學和飛行原理的基礎知識，引領學生實踐所學，親手製作出搖控飛機。

通過構建搖控飛機的模型，學生除了能明白飛行的基本理論及奧妙，過程中亦著重培訓其實作技巧，訓練團體合作的精神，以及在現實世界中的解難能力。在最後一節課堂上，學生更將親身體驗到自己製作的飛機翱翔天際的成就感。

Instructor 導師	:	**Prof. Larry Li** — Associate Professor in the Department of Mechanical and Aerospace Engineering at the Hong Kong University of Science and Technology (HKUST). He received his BASc and MASc in Mechanical Engineering from the University of British Columbia (Canada), where he was a Natural Sciences & Engineering Research Council Scholar in the Applied Fluid Mechanics Laboratory. He then went on to study for a PhD at the University of Cambridge (UK), where he was a Bill & Melinda Gates Scholar. After graduating, he stayed on at Cambridge as a Research Associate before joining HKUST in 2014. His research focuses on fluid mechanics, thermoacoustics and nonlinear dynamics, with applications ranging from aircraft propulsion to spray painting. He has investigated a variety of thermofluid phenomena, including global instabilities in open shear flows, non-Newtonian atomization in crossflows, and forced/mutual synchronization of thermoacoustic modes. His industrial experience

includes time spent at Rolls-Royce (UK), LB Foster (Canada) and Coanda Research & Development (Canada).

李建邦教授 —— 現任香港科技大學機械及航天工程系的副教授。李教授在加拿大英屬哥倫比亞大學取得了機械工程學士和碩士學位，期間曾擔任應用流體力學實驗室的自然科學與工程研究理事會學者。及後，李教授取得比爾·梅琳達·蓋茨獎學金，於劍橋大學攻讀博士學位，並在博士後獲聘為劍橋大學副研究員，直到 2014 年加入香港科技大學。李教授研究領域涵蓋流體力學、熱聲學和非線性動力學，應用範圍包括於飛機推進和噴塗等領域。李教授對各種熱流體動力學的現象有深入探究，包括開放剪切流的全局不穩定性、橫流下的非牛頓霧化，以及受迫／相互同步的熱聲效應。除了具備在學術上和教育上的豐富經驗外，李教授還擁有在英國的 Rolls-Royce、加拿大的 LB Foster 和 Coanda Research & Development 等業界知名公司的工作經驗。

CK Leung ——— Experienced educator and aviation enthusiast with over three decades of teaching experience in Hong Kong. After obtaining his Teacher's Certificate from Northcote College of Education, he furthered his studies, culminating in a Bachelor of Education from Cheltenham & Gloucester College of Higher Education. His passion for aviation education is reflected in his achievements with the Hong Kong Air Cadet Corps, where he received both a Principal Coach Level Certificate and the Medal for Meritorious Service. A licensed model pilot certified by the Aero Sports Federation of China, Leung has led teams to success in international competitions, including first-place finishes in the British Model Flying Association's Payload Challenge. His unique combination of educational expertise and aviation skills continues to inspire the next generation of aviation enthusiasts.

梁澤鑫先生 ——— 在香港擁有超過三十年的教學經驗，同時為一位資深航空愛好者。梁先生於羅富國教育學院取得教師證書，並在切爾滕納姆和格洛斯特高等教育學院獲得教育學士學位。他持有香港航空青年團的教練員資格和功勳獎章，致力投身於航空教育的領域上。梁先生更是中國航空運動聯合會認證的模型飛行員，曾帶領團隊在英國模型航空聯合會的「負載挑戰賽」中取下第一名的佳績。梁先生結合了他在教育界上的專長和在航空技能上的豐富經驗，一直樂於啟發並培養下一代的航空愛好者。

Date & Time 日期及時間	:	**Aug 4, 6, 8, 11, 13, 14 & 15 (Mon, Wed, Thu & Fri)** **【9:30am – 12:30pm】** *(In case of bad weather, make-up class(es) will be held on Aug 18 and/or Aug 19. Please refer to the latest updates by CDGT.)* **2025 年 8 月 4、6、8、11、13、14 及 15 日（週一、週三、週四及週五）** **【上午 9 時 30 分至中午 12 時 30 分】** *（倘遇惡劣天氣，補堂將於 8 月 18 及／或 19 日進行，請留意本中心的最新公布。）*
Language 教學語言	:	English supplemented with Cantonese (lecture notes in English) 英語輔以粵語（英文課程筆記）
Requirements 修讀條件	:	S2 or above with a foundation in physics, mathematics, and/or integrated science/science/STEM, and are interested in aviation or aerospace engineering. 中二或以上具備物理、數學及／或綜合科學／科學／STEM 之基礎知識，並對航空或航天工程學感興趣之學生。
Award 獎勵	:	Students who have attained 80% attendance will be issued a certificate 學生出席率達 80%，將獲頒發證書乙張。
Course Fee 費用	:	HKD 5,600 港幣 5,600 元

Music Speaks: An Introduction to Composition
會說話的音樂：作曲入門

(Course Code 課程編號：H002)

Description 課程簡介	:	Composition is the process of creating music that expresses your thoughts and emotions. When listening or playing masterpieces by Bach and Mozart, have you ever wondered how classical music works? How did Debussy and Satie convey the beauty of impressionistic style? And why are the tunes and harmony by John Williams and Joe Hisaishi so catchy and enchanting?

This course will let students understand some basic principles of classical music and tonal contemporary music, and the elements of writing a beautiful melody and a good harmony. Students will explore the variety of styles and characters of musical writing — fundamental composition techniques that equip young composers to develop their musical ideas into an interesting musical piece. Under guidance, each student will create a unique music piece of their own at the end of the course.

作曲是透過創作音樂來表達思想和情感的過程。你聆聽或演奏巴赫與莫扎特的經典作品時，有否想過古典音樂包含哪些原理？德布西與薩提如何透過音樂表達優美的印象派音樂風格？為何約翰威廉斯與久石讓的旋律與和聲如此引人入勝？

這個課程讓學生理解古典音樂和有調性的當代音樂之基本原理，導師亦會講解寫作優美旋律及和聲的要素。學生將探索不同音樂風格與寫作技巧，將創作意念變成動人的音樂作品，讓年青作曲家打好音樂創作的基礎。在導師的指導下，學生將於課程中創作屬於自己獨一無二的音樂作品。

Instructor 導師	:	**Dr. Phoebus Lee** —— Dr. Lee graduated from the Chinese University of Hong Kong. He is a composer and educator. His compositions and papers have reached numerous international musical festivals and academic platforms, such as festivals in Hong Kong, Japan, Italy, Israel, Latvia, Shanghai, Singapore, Switzerland, Taiwan. His music covers a wide range of genres including solo, chamber, vocal, choral, orchestral, for moving pictures, and for art gallery.

Dr. Lee has extensive experience in music education. He is a part-time lecturer at the Chinese University of Hong Kong, Baptist University of Hong Kong and the Education University of Hong Kong, and a teacher at various colleges and schools for HKDSE Music curriculum. He also served as tutor of composition programmes organized by the Hong Kong Composers Guild and Young Composers Workshop of Hong Kong Arts Festival. He was often invited by the Education Bureau to give workshop, consultation and adjudication service at various composition and creativity programmes.

李家泰博士——李博士畢業於香港中文大學。他熱衷於音樂創作、當代音樂研究、音樂教育及創意推廣。他曾於多個國際音樂節與學術平台發表作品與論文，包括香港、日本、意大利、以色列、拉脫維亞、上海、新加坡、瑞士、台灣的音樂節。作品涵蓋獨奏、室內樂、聲樂、合唱、管弦樂團、影片配樂、畫展委約等。

李博士從事音樂教育多年，現為香港中文大學、香港浸會大學和香港教育大學兼職講師，同時亦於不同院校教授高中文憑試音樂課程。他曾獲香港作曲家聯會、香港藝術節及教育局等之邀請，於中小學作曲培訓計劃及青年作曲家工作坊擔任導師，為中小學生與老師主持講座，以及為作曲與創藝活動提供諮詢和出席評審。

Date & Time 日期及時間	:	**Lecture** **Jul 16, 18, 21, 23, 25 & 28 (Wed, Fri & Mon)【10:00am – 1:00pm】**

Composition Showcase
Aug 4 (Mon)【10:00am – 1:00pm】

(In case of bad weather, make-up class(es) will be held on Jul 30 and/or Aug 6. Please refer to the latest updates by CDGT.)

講課
2025 年 7 月 16、18、21、23、25 及 28 日（週三、週五及週一）
【上午 10 時至下午 1 時】

作品展示及分享
2025 年 8 月 4 日（週一）【上午 10 時至下午 1 時】

（倘遇惡劣天氣，補堂將於 7 月 30 日及／或 8 月 6 日進行，請留意本中心的最新公布。）

Language 教學語言	:	Cantonese supplemented with English (lecture notes in English) 粵語輔以英語（英文課程筆記）
Requirements 修讀條件	:	Secondary students with ABRSM Grade 5 Theory and/or Grade 5 Practical (or equivalent in standard). Students major in Chinese instrument are also welcome. 考獲皇家音樂學院樂理五級及／或術科五級（或同等程度）的中學生。主修中樂的學生亦可報名。
Award 獎勵	:	Students who have attained 80% attendance and completed all assessment activities with passing grades will be issued a certificate 學生出席率達 80%，並完成及通過所有評核，將獲頒發證書乙張
Course Fee 費用	:	HKD 5,400 港幣 5,400 元
Remarks 備註	:	**Enrolled students need to prepare their own earphone/headphone with 3.5mm plug for use with computers during lessons.** **獲取錄的學生須自備 3.5mm 的耳機以連接電腦上課。**

A Mathematical Introduction to Game Theory
淺談博弈論的數學原理

(Course Code 課程編號：M204)

Description 課程簡介	:	Game theory is about the interactions of decision-makers and the study of how their actions are affected by the others. Game theory is not only applied to traditional games, but can also be extended to explain different social science aspects, such as economic, political, or social phenomena. In this course, we will introduce the fundamental concepts of game theory with various examples. Topics to be covered mainly include basic mathematical formulation of strategic games, Nash equilibrium, dominated action, best response function, mixed strategies, models of oligopoly. Students can learn how to predict when and how individual actions could influence others' decisions, and to maximize one's own benefits. 博弈論是一門關於決策者互動的科學，旨在分析參與者所選擇的策略如何影響其他人的決策。博弈論不只應用於遊戲，亦適用於不同的社會科學領域，例如解釋經濟、政治及社會現象。 本課程會運用不同例子講解最基本的博弈論概念。課題包括策略遊戲中的數學基礎、納殊均衡、支配性策略、均衡策略中的最佳選擇、混合型策略、以及寡占市場的模型。學生能了解如何能影響別人的決策，及如何以適當決策謀取最佳的自身利益。
Instructor 導師	:	**Dr. Alan Chu ——** Dr. Chu received his Ph.D. in Mathematics from HKUST. He has been actively involved in teaching applied mathematics in different aspects at undergraduate level. Course topics include probability and statistics, financial mathematics, mathematics on the

battlefield, solving mathematical problems using MATLAB, and applied graph theory.
Dr. Chu has received the HKUST Din-Yu Hsieh Teaching Award in 2019. His current research areas include the level set method, image processing, and numerical solution of Partial Differential Equations (PDEs).

朱冠麟博士 ── 朱博士於香港科技大學數學系取得博士學位。他積極參與教學，擅長教授本科生有關不同領域上的應用數學原理。朱博士教授的課程主題包括概率與統計、金融數學、戰場上的數學理論、運用數學軟件 MATLAB 解決生活上的問題，及應用圖論等等。

朱博士於 2019 年獲得香港科技大學謝定裕教學獎項。他目前的研究領域包括水平集方法、圖像處理及偏微分方程中的數值解。

Date & Time 日期及時間	:	**Aug 13, 15, 18, 20, 22 & 25 (Wed, Fri & Mon)** **【10:00am – 1:00pm】** *(In case of bad weather, make-up class(es) will be held on Aug 27 and/or Aug 29. Please refer to the latest updates by CDGT.)* **2025 年 8 月 13、15、18、20、22 及 25 日（週三、週五及週一）** **【上午 10 時至下午 1 時】** *（倘遇惡劣天氣，補堂將於 8 月 27 及／或 8 月 29 日進行，請留意本中心的最新公布。）*
Language 教學語言	:	Cantonese (lecture notes in English) 粵語（英文課程筆記）
Requirements 修讀條件	:	S1 or above with interest in applying mathematics to solve real-life problems 對以應用數學來解決現實生活中問題感興趣之中一或以上學生
Award 獎勵	:	Students who have attained 80% attendance and completed all assessment activities with passing grade will be issued a certificate 學生出席率達 80%，並完成及通過所有評核，將獲頒發證書乙張
Course Fee 費用	:	HKD 4,600 港幣 4,600 元

Nobel Prizes in Physics that Shaped Our World
影響世界的諾貝爾物理學獎
<Blended Learning Mode 混合學習模式>　　　　　　　　　　　　　　*(Course Code 課程編號：P103)*

Description 課程簡介	:	The Nobel Prize in Physics may sound somewhat strange to the general public, yet the discoveries and inventions awarded have brought about far-reaching impact on our daily lives. In this course, the selected Nobel Prizes in Physics are categorized into several fields ─ solid state physics, quantum physics, nuclear physics, particle physics, astrophysics, etc. The underlying concepts, theories and experiments involved will be introduced and explained in layman's terms. We hope that students would be inspired by the wonders of physics, and could also recognize how physics has changed the perspective we perceive our world and even the universe. 對於普羅大眾而言，「諾貝爾物理學獎」或許有點陌生。然而，這些獲獎的發現與發明卻為我們的日常生活帶來深遠的影響。本課程挑選了部分「諾貝爾物理學獎」項目，並將之歸納為以下範疇：固態物理、量子物理、核子物理、粒子物理、天體物理等，以深入淺出的方式來闡明當中所涉及的概念、理論和實驗。我們希望學生能夠從這些獎項所引發的奇跡中得到啟發，並認識到物理學是如何改變我們對世界，乃至宇宙的認知。

Instructor 導師	:	**Dr Nidhi Pant ⸺** Lecturer at the Department of Physics, HKUST. She received her Ph.D. in Cosmology. Before joining HKUST, she worked as a research associate at The Chinese University of Hong Kong (2021-2022). She also worked as a Claude Leon and SKA postdoctoral fellow at the University of the Western Cape, Cape Town and postdoctoral researcher at Inter University center for Astronomy and Astrophysics (IUCAA) in Pune, India. At HKUST, she has been teaching undergraduate (common core) and post graduate courses. She has been actively involved in outreach activities since the beginning of her career. She firmly believes that STEM education empowers learners to explore new academic opportunities and take control of their education. **Dr Nidhi Pant ⸺** 香港科技大學物理學講師，持有宇宙學博士學位。她曾於南非開普敦的西開普大學，以及印度的薩維特里巴伊菲勒普納大學的聯校天文學和天體物理學中心，擔任博士後研究工作。在 2021 至 2022 年間，她於香港中文大學任職研究人員。其後，她加入香港科技大學，教授本科生的核心課程及研究生課程。Dr. Pant 自投身教育行業起已積極參與外展活動，深信 STEM 教育能讓學生培養自主學習，在學術領域中探索更多的機會及可能性。
Date & Time 日期及時間	:	**Face-to-Face (Lecture): Jul 18 & 26 (Fri & Sat)【3:30pm – 6:00pm】*** **Online (Lecture): Jul 22, 24 & 29 (Tue & Thu)【5:30pm – 8:00pm】** **Face-to-Face (Exam): Aug 2 (Sat)【11:00am – 1:30pm】*** *In case of bad weather, Face-to-Face (Lecture) on Jul 18 & 26 will be switched to online mode; while Face-to-Face (Exam) will be rescheduled on **Aug 9 (Sat)**. Please refer to the latest updates by CDGT.)* 面授（講課）：**2025 年 7 月 18 及 26 日（週五及週六）【下午 3 時 30 分至下午 6 時】*** 網上（講課）：**2025 年 7 月 22、24 及 29 日（週二、週四）【下午 5 時 30 分至下午 8 時】** 面授（評核）：**2025 年 8 月 2 日（週六）【上午 11 時至下午 1 時 30 分】*** **倘遇惡劣天氣，7 月 18 及 26 日之面授（講課）將改為網上授課；而面授（評核）將會安排於 **8 月 9 日（週六）** 進行，請留意本中心的最新公布。*
Language 教學語言	:	English (lecture notes in English) 全英語（英文課程筆記）
Requirements 修讀條件	:	S1 – S3 students who are interested in physics 對物理學有興趣的中一至中三學生
Award 獎勵	:	Students who have attained 80% attendance and completed all assessment activities with passing grades will be issued a certificate 學生出席率達 80%，並完成及通過所有評核，將獲頒發證書乙張
Course Fee 費用	:	HKD 3,800 港幣 3,800 元

Becoming Me and Being Me: Understanding Self through Psychology
心理學與個人成長 — 自我·自處

(Course Code 課程編號：SC001)

Description
課程簡介

: This course is designed for secondary school students who are interested in psychology. Throughout this course, students will explore the fundamentals and current debates in psychology, while emphasizing the practical application of psychological theories in the daily lives, such as using self-help skills when faced with stressors and challenges. Students are expected to gain higher self-understanding through exploring topics, including personality development, psychological well-being and stress management, social behavior, and the maintenance of healthy relationships. By joining lectures and class activities, this course will lead students to uncover the pervasive influence of psychology, ways of application of theories and strategies to take care of self-mental health and its profound impacts on our daily interactions and experiences.

此課程專為對心理學感興趣的中學生而設。學生將會探索心理學的基礎理論以及當前具爭議性的議題，同時著重教授在日常生活中如何實際應用所學到的心理學知識。課程將涉獵性格發展、心理健康及壓力管理、社會行為和維繫健康的人際關係等主題，從而讓學生加深自我認知；導師將透過講課和課堂活動，揭示心理學如何影響我們日常生活中的交流和經歷體驗，並探討對個人心理健康作自我照顧的態度與技巧。

Instructor
導師

: **Mr. Kelvin Tang ——** Registered Counselling and Educational Psychologist from Hong Kong Psychological Society, works for local universities, being dedicated to delivering psycho-educational support and advisory services to school-aged students with diverse learning needs (such as students with Attention Deficit / Hyperactivity Disorder, gifted potentials), their parents, teachers, and other professionals. Mr. Tang also has previous work experience in providing school-based educational psychology services for local mainstream primary and secondary schools through the Education Bureau.

鄧軍樂先生 — 香港心理學會註冊輔導及教育心理學家，現主要在本港不同大學工作，致力於為有多元學習需要的中、小學生（如注意力不足／過度活躍症、資賦優異的學生等等）、及其家長、相關的教育和專業人員提供教育心理支援與諮詢服務。鄧先生亦曾於教育局擔任校本教育心理學家，為本地主流的中、小學提供教育心理服務。

Date & Time
日期及時間

: **Aug 8, 11, 13, 15, 18, 20 &22 (Fri, Mon & Wed)【10:00am – 12:30pm】**

(In case of bad weather, make-up class(es) will be held on Aug 25 and/or Aug 27. Please refer to the latest updates by CDGT.)

2025 年 8 月 8、11、13、15、18、20 及 22 日（週五、週一及週三）
【上午 10 時至下午 12 時 30 分】

（倘遇惡劣天氣，補堂將於 8 月 25 及／或 8 月 27 日進行，請留意本中心的最新公布。）

Language
教學語言

: Cantonese (lecture notes in English)
粵語（英文課程筆記）

Requirements
修讀條件

: All S3 or above students who are interested in psychology are welcome to join.
對心理學有興趣，中三及以上的學生

Award
獎勵

: Students who have attained 80% attendance and completed all assessment activities with passing grades will be issued a certificate
學生出席率達 80%，並完成及通過所有評核，將獲頒發證書乙張

Course Fee
費用

: HKD 4,400
港幣 4,400 元