JS3130

Bachelor of Science (Honours) Scheme in Spatial Data Science and Smart Cities

For Entry in Sept 2026 and Onwards

空間數據科學及智慧城市(榮譽)理學士組合課程

2026年9月或以後入學

Programmes offered:
BSc (Hons) in Land Surveying and Geo-Informatics
BSc (Hons) in Urban Informatics and Smart Cities

可選擇修讀課程:
土地測量及地理資訊學 (榮譽) 理學士學位
城市信息學及智慧城市 (榮譽) 理學士學位

The UNIQUE Land Surveying, Geo-Informatics and Smart Cities
Bachelor's Degree Programme in Hong Kong
全港唯一土地測量、地理資訊學及智慧城市學士課程

THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學

LSGI
DEPARTMENT OF
LAND SURVEYING AND GEO-INFORMATICS
土地測量及地理資訊學系

Introduction 概述

The Department of Land Surveying and Geo-Informatics (LSGI) is one of the world's leading departments in the discipline of Geomatics education and research. With 40 years of history, we are the ONLY department among local tertiary institutions offering such education, training and research programmes in land surveying, geo-informatics, and utility management and surveying, including BSc, Master and PhD.

The department's teaching and research place an emphasis on the acquisition, modelling, analysis, and management of spatially referenced data with a wide-range of applications. These include urban geo-informatics, smart cities, spatial big data analytics, mobile mapping, urban disaster mitigation, positioning and navigation, utility surveys and management, planetary mapping, urban 3D modelling and remote sensing for environmental studies.

The department has a suite of well-equipped laboratories supporting study and research in the areas of cadastre survey, digital cartography, geographic information systems, geomatics computing, hydrographic survey, navigation, photogrammetry, remote sensing, laser scanning, geodesy, engineering survey, deformation and geohazards and underground utility imaging and diagnosis. Students and researchers work with the state-of-the-art facilities and are tutored by world-renowned academic staff members, thus having a variety of opportunities for a future career.

Our programmes are oriented towards the specific needs of Hong Kong, as well as the global job market. Our applied research is focused on the needs of industrial, commercial and community. Our graduates are able to apply the learned theories in practice as our programmes are application-oriented. Besides, through our partnerships and consultancy work with the industry and businesses as well as through our community service work, the department maintains close relationships with the professional world and the community.

土地測量及地理資訊學系(LSGI)是全球同類地理資訊學系中最優秀的學系之一，學系在國際著名期刊所發表的論文數量和論文引用率均位列前茅。擁有四十年歷史的LSGI乃本港大專院校中唯一提供土地測量、地理資訊科技及管線設施測繪與管理專業教育、培訓和研究課程(包括學士、碩士及博士學位課程)的學系。

LSGI教學與研究的重點是獲取、建模、分析和管理空間數據以滿足各種不同的應用需求，包括城市地理資訊、智慧城市、空間大數據分析、移動測繪、城市減災、定位和導航、管線設施測繪及管理、行星測繪、城市三維建模及以遙感進行環境研究。

LSGI設有一系列先進及設備完善的實驗室，以提供在地籍測量、數碼化制圖、地理資訊系統、地學計算、水文測量、導航、攝影測量、遙感、激光掃描、大地測量、工程測量、地表變形災害監測、地下管線成像與診斷等領域的教學和研究。學生和研究人員可以使用這些先進的實驗設備以及與國際知名的教授學者交流研討。除了各種研究項目，學生還會有很多參與具體實踐工作的機會。

我們的研究和課程切合香港及世界發展的需要。我們的研究工作具實用性及以應用為主，切合工業、商業和社會的需要。同樣藉着我們以應用為中心的課程，LSGI畢業生均能夠把所學的理論運用在實際項目中。通過與有關工商業夥伴的合作及交流，我們能與各有關行業保持密切連繫。

Our Programmes 課程簡介

The Department offers the following programmes:

本學系提供以下課程

- *Bachelor of Science (Hons) in Land Surveying and Geo-Informatics**
  土地測量及地理資訊學(榮譽)理學士學位*
- *Bachelor of Science (Hons) in Urban Informatics and Smart Cities**
  城市信息學及智慧城市(榮譽)理學士學位*
- *Master of Science / Postgraduate Diploma in Geomatics*
  測繪及地理資訊學理學碩士學位 / 深造文憑
- *Master of Science / Postgraduate Diploma in Urban Informatics and Smart Cities*
  城市信息學及智慧城市理學碩士學位 / 深造文憑
- *Doctor of Philosophy / Master of Philosophy*
  哲學博士 / 哲學碩士

*Admission under the BSc (Hons) Scheme in Spatial Data Science and Smart Cities (JS3130).
課程收生透過「空間數據科學及智慧城市(榮譽)理學士組合課程」(JS3130) 進行。

Undergraduate Programmes 本科課程

For Entry in Sept 2026 and onwards   2026年9月或以後入學

Scheme Code 組合編號	JS3130	
Scheme 組合	BSc (Hons) Scheme in Spatial Data Science and Smart Cities	空間數據科學及智慧城市(榮譽)理學士組合課程
Programme Offered 學位課程	1) BSc (Hons) in Land Surveying and Geo-Informatics 2) BSc (Hons) in Urban Informatics and Smart Cities	1) 土地測量及地理資訊學(榮譽)理學士 2) 城市信息學及智慧城市(榮譽)理學士
Normal Duration 一般修讀年期	4 Years 年	
Mode 修讀模式	Full-time	全日制
Credit Requirements* 學分要求*	120 Credits 學分 * The number of credits required for graduation is subject to update. *畢業所需的學分數可能有所更新	
Fund Type 資助模式	UGC Fund	教資會資助
Secondary Major^ 第二主修^	Artificial Intelligence and Data Analytics (AIDA) (36 credits) (Actual number of credits may vary depending on the subject choices.)	人工智能和數據分析 (36學分) (實際所需學分因科目選擇而有所不同)

^Eligible students in BSc (Hons) in Land Surveying and Geo-Informatics can pursue AIDA as secondary major in Year 2 of study.
合資格的土地測量及地理資訊學(榮譽)理學士學生可於二年級選擇加入第二主修「人工智能和數據分析」。

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Entrance Requirements 入學資格

JS3130

BSc (Hons) Scheme in Spatial Data Science and Smart Cities
(Land Surveying and Geo-Informatics / Urban Informatics and Smart Cities)
空間數據科學及智慧城市(榮譽)理學士組合課程 (土地測量及地理資訊學/城市信息學及智慧城市)

- *For HKDSE applicants:* 持有香港中學文憑考試成績的申請人
  University's General Entrance Requirements 理大一般入學要求

HKDSE Subjects 科目	Core Subjects 主要科目				Elective Subjects (including M1/M2) 選修科目(包括M1/M2)	
	Chinese Language 中國語文	English Language 英國語文	Mathematics 數學	Citizenship and Social Development 公民與社會發展科	1st Elective 第一選修科目	2nd Elective 第二選修科目
Level Requirement 考獲級別	3	3	2	Attained 達標	3	3

There is no compulsory subject requirement in JUPAS admission. Preferred subject(s) with the highest weighting for admission score calculation include(s):

English Language, Mathematics, Mathematics (Extended part - Calculus and Statistics), Mathematics (Extended part - Algebra and Calculus), Physics, Combined Science (with Physics), Integrated Science, Geography, Information and Communication Technology.

大學聯招辦法沒有必修科目, 以下學科為計算分數權重最高的科目：
英文、數學、數學（延伸部分－微積分及統計學）、數學（延伸部分－代數及微積分）、物理、組合科學（包含物理科）、綜合科學、地理、資訊及通訊科技。

Admission Score Calculation Mechanism: **Any Best 5 Subjects**
入學成績計算機制：任何最佳5科成績

For details of non-JUPAS and non-local applications, please refer to the website of LSGI or PolyU.
有關非大學聯招辦法及海外學生報讀的申請，請查閱大學網站。

Application Procedures 申請程序

Prospective students can obtain application materials and submit applications via the PolyU website at www.polyu.edu.hk/study.
申請者可透過理大網站 www.polyu.edu.hk/study 索取申請資料及提交申請。

Scholarship 獎學金

Partnering with professional bodies and industry (e.g. HSBC, HKIS, RICS, ESRI, etc), we offer students more than 10 scholarship schemes, annually over HK$300,000.
大學、學系與專業團體及業界為學生提供多項獎學金計劃，每年金額逾港幣$300,000。

JS3130
BSc (Hons) Scheme in Spatial Data Science and Smart Cities
空間數據科學及智慧城市(榮譽)理學士組合課程

Award Programmes:
1. BSc (Hons) in Land Surveying and Geo-Informatics
2. BSc (Hons) in Urban Informatics and Smart Cities

學位課程:
1. 土地測量及地理資訊學(榮譽)理學士
2. 城市信息學及智慧城市(榮譽)理學士

Scheme Aim

The aims of the LSGI Scheme are underpinned by the philosophy that our graduates should be capable of coping with the rapidly changing market conditions in Hong Kong, mainland China and the region and with the demands of their future professions in land surveying, geo-information technology, utility management and surveying, as well as urban informatics and smart cities.

課程目的

空間數據科學及智慧城市(榮譽)理學士組合課程的主要目標是讓我們的畢業生能夠應對香港、中國內地及各地瞬息萬變的市場狀況，投身於土地測量、地理資訊科學、管線測量及管理，以及城市資訊學和智慧城市相關行業。

Characteristics

This scheme programme provides a unique land surveying and geo-informatics (LSGI) education in Hong Kong that meets the societal demands. We nurture students to develop essential knowledge in our scheme: spatial data science and smart cities. The scheme then extends to application areas and job market, such as surveying and mapping, engineering surveying and underground utility imaging & diagnosis, transportation and logistics.

Spatial data science, as an essential part of the smart cities, integrates data from all kinds of geo-spatial technologies (GPS, location sensors, data from social media, mobile devices, satellite imagery, etc). The purpose is to build data visualization for understanding related phenomena and studying trends in complex relationships between people and places. It benefits various areas, including transportation, urban planning, information technology, real estate, environment, public health, social welfare and infrastructure monitoring.

課程特色

本課程為全港唯一跨學科的土地測量和地理資訊學學士課程，培訓相關的專才以應對社會的需求。學生於組合課程學習下，學習有關空間數據科學和智慧城市的主題知識。組合課程延伸至不同的應用領域及就業市場，例如測繪、工程測量和地下管線成像與診斷、運輸和物流等。

空間數據科學作為智慧城市的重要基礎知識，結合各種地理空間科技(自動導航系統、位置傳感器、社交媒體數據、移動設備、衛星圖像等)的數據。目的是建構數據可視化，以發掘分析人類與地理位置之間的複雜關係、現象及趨勢。學科知識應用於廣泛的領域，包括交通、城市規劃、資訊科技、房地產、環境、公共衛生和社會福利及基礎設施監測等。

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BSc Programmes 學士學位課程

All students joining the scheme will have common year one study and can apply for one of the below programmes at the end of year one (subject to academic performance of Year 1 study):

1. The **BSc (Hons) in Land Surveying and Geo-Informatics** programme is the only local bachelor's degree programme in land surveying and geo-informatics accredited by the Hong Kong Institute of Surveyors (HKIS), the Royal Institute of Chartered Surveyors (RICS) and other related local/international professional bodies. The major study directions include:
    i) Land Surveying (topographic, cadastral, engineering, hydrographic, cartography, navigation, location-based services, etc);
    ii) Geo-information Technology (Geo-IT) (geographic information system, digital map, remote sensing, intelligent transport, environmental studies, urban planning, building information modelling, etc.); and
    iii) Underground Utility Surveying and Management (digital map of underground, condition assessment, design, construction & maintenance of water supplies, drainage, sewer, power, gas, etc.).

Students admitted to the BSc (Hons) in Land Surveying and Geo-Informatics programme have the opportunity to pursue a *Secondary Major in Artificial Intelligence and Data Analytics* (AIDA). This programme consists of interdisciplinary and integrated courses aimed at providing students with a solid foundation in geo-science, programming, statistics, mathematics, as well as advanced topics in big data, AI, and their applications in smart cities. The goal is to nurture graduates with expertise in the multi-disciplinary AIDA technologies.

Data acquisition by UAV

New in 2024

2. The **BSc (Hons) in Urban Informatics and Smart Cities** programme, launched in 2024/25, is designed to equip students to face the challenges and opportunities posed by data-driven urban environments in rapidly urbanizing global cities. The programme covers the education of principles and theories in urban science, as well as practical skills in urban and spatial data analytics. This enables students to effectively utilize emerging technologies such as the Internet of Things, cloud computing, and AI, to better comprehend and serve the ever-evolving smart cities. The programme is accredited by The Hong Kong Institute of Surveyors (HKIS), and is seeking accreditation from other professional bodies.

The department maintains strong partnerships with the industry and professional bodies and frequently invites industry experts to deliver guest lectures to students.

Professional Recognition 專業認可

The Hong Kong Institute of Surveyors (HKIS)
香港測量師學會

The Royal Institution of Chartered Surveyors (RICS)
英國皇家特許測量師學會

The Hong Kong Institution of Engineering Surveyors (HKIES)
香港工程測量師學會

The Land Surveyors Board Malaysia (LJT)
馬來西亞土地測量師局

The Land Surveyors Board Singapore (LSB)
新加坡土地測量師局

The Chartered Institution of Civil Engineering Surveyors (ICES)
英國特許土木工程測量師學會
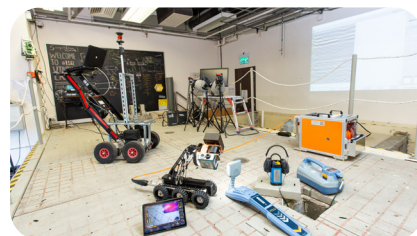
組合課程的學生於一年級綜合學習後，可申請以下其中一個為主修課程 (需按學生一年級的學術表現而定)：

一) 「**土地測量及地理資訊學(榮譽)理學士**」課程獲得香港測量師學會、英國皇家特許測量師學會、其他相關本地及國際專業團體的專業認可，乃全港唯一獲相關專業資格認證的學士學位課程。主要學科包括：

1. 土地測量 (地形、地籍、工程、水文等測量，以至地圖繪製、導航、定位的服務應用等)；
2. 地理資訊科技 (Geo-IT) (地理資訊系統、數碼地圖、遙感、智能交通、環境研究、城市規劃、建築信息建模等)；以及
3. 管線設施測繪與管理 (地底數碼地圖，管線狀況評估，當中包括供水、排洪、排污、供電、天然氣和燃油等系統的設計，建設及維修。

主修土地測量及地理資訊學(榮譽)理學士學位課程的學生另可申請第二主修「**人工智能及數據分析(AIDA)**」，該課程包括跨學科的學習，旨在為學生提供的地球科學、程式設計、統計學、數學等基礎，以致應用於大數據、人工智能及智慧城市相關應用的進階學習，培養具備新興科技解難技術的畢業生。

3D Model of PolyU

2024年課程 >

二) 於2024/25年推出的「**城市信息學及智慧城市(榮譽)理學士**」課程旨在裝備學生應對數據發展和快速城市化所迎來的挑戰與機遇。該課程包括城市科學原理和理論的學習，以及城市和空間數據分析的應用。讓學生掌握物聯網、雲端計算、城市大數據和人工智能等新興技術，並應用於建設智慧城市中不同的解難及優化項目。課程已獲香港測量師學會認證，並正在申請其他本地及國際的專業認可。

學系與業界及專業團體保持密切聯繫，並不時邀請行業專家為學生進行客座講座。

Instrumentation in Underground Utility Survey Lab

UAV Photogrammetry & Laser Scanning
Geospatial Database Management & Design
Land Boundary Survey
BIM Management
Survey Instrumentation
Utility Systems and Design
Geomatics Algorithms & Programming
Geomatics Project Management
Big Earth Data and Geospatial AI
Spatial Big Data Analytics
Geophysical Survey of Utilities
Geo-referencing Systems
Intelligent Transportation Systems
Hydrographic Surveying
Photogrammetry
3D GIS
Geo-referencing Systems
Remote Sensing
Land Surveyors in Society
Surveying
Utility Surveying & Management
Mobile GIS & Location Based Services
Geodesy
Digital Terrain Modelling
Geographic Information Science
Land Boundary Dispute Resolution
Geophysical Imaging & Diagnosis of Utilities
Engineering Surveying
Satellite Positioning Systems
Cartography & Geovisualization
Construction & Maintenance of Utility Networks
Mapping Science
Urban Informatics & City Planning
Industrial Safety for Surveying and Geo-Informatics

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Career Prospects 就業前景

Through various disciplines of land and utility surveying, geo-informatics, urban informatics and smart cities, students can develop all-round abilities that complement their professional careers:

- Land Surveyors in the Government (e.g. Lands Department, Highways Department, Planning Department, etc.), statutory organizations, construction and consulting companies, land surveyors' firms, etc., responsible for the measurement of natural land features (mountains, valleys, rivers, etc.) and infrastructure (roads, buildings, etc.) in the disciplines of topographic, cadastral, engineering and hydrographical surveying.

- GIS/ Geospatial Analysts/ Specialists in construction and environmental consultancy, logistics management, intelligent transport systems, urban planning and real estate, responsible for 3D modelling and visualisation, applications of location based services (e.g. advanced mobile systems for navigation and service information provision), and Internet spatial information delivery and service (e.g. Google maps).

- Utility Surveyors in private firms involved in surveying planning, construction, maintenance and management of underground facilities and utilities such as power, water, drainage, gas, communications and energy services, responsible for mapping, imaging of positions and conditions, and diagnosis of the unseen and complex underground utilities.

透過土地及管線測量、地理資訊學、城市信息學及智慧城市等學科範疇，培養學生全面技能，有助其畢業後投身各個專業：

- 專業土地測量師
  可投身政府 (如地政總署、路政署、規劃署等)、法定組織、建築、顧問公司或土地測量師事務所等，負責測量不同自然地貌 (山脈、山谷、河流等) 和基礎設施（道路、建築物等) 的地理形態，以及地形測量、地籍測量、工程測量及水文測量等工作。

- 地理資訊科技分析員/專家
  可從事建築環境管理、 物流、智能交通系統、城市規劃或房地產等專業。負責三維建模和可視化、定位服務的科研和應用（如移動導航和資訊服務系統）以及互聯網空間資訊和服務等（如谷歌地圖）。

- 管線設施測量師
  可投身有關地下設施及公用設施的私人機構，包括電力、水、排水、天然氣、通訊和能源服務等。以協助規劃、建造、維修及管理複雜的地下設施。

7

Teaching & Learning Activities 教與學

Student Exchange Programme 交換生計劃

The Student Exchange Programme provides students with opportunities to enhance their practical skills and professional knowledge by studying at our overseas partner universities. The programme also cultivates independence, enhances students' interpersonal and problem-solving skills, and exposes them to a multicultural environment. In recent years, our students had set foot in various countries, and spent a semester in renowned institutes like the Technical University of Munich, KTH Royal Institute of Technology, University of Calgary, University of Leeds, University of New South Wales and Wuhan University, and gained invaluable and enriching learning experiences.

透過提供到海外合作大學學習的機會，讓學生提升專業的技能和知識。計劃亦有助學生培養獨立性，增強溝通和解決問題的能力，並得以在多元文化的環境下學習。過去幾年我們的學生曾到訪不同國家，在慕尼黑工業大學、皇家理工學院、卡爾加里大學、利茲大學、新南威爾斯大學和武漢大學等知名學府留學，豐富學習體驗。

UK 英國

Canada 加拿大

Germany 德國

Sweden 瑞典

Visit & Study Tour 交流團

Korea 韓國

Xuzhou 徐州

Italy 意大利

Local & Overseas Work Integrated Education (WIE) 本地及海外企業實習教育

We place great significance on students' practical training and connecting classroom theory with workplace applications. The WIE programme (both local and overseas) enhances the development of all-round students with professional competence, which is important in the face of an ever-changing and increasingly competitive environment.

大學十分重視學生的實習培訓，讓學生能將課程理論運用於實際工作上。本地及海外企業實習教育培育學生的專業技能，以面對迅速變化及競爭激烈的環境。

Field Scheme/ Survey Camp 測繪實習

Student Awards 學生獎項

2023 Outstanding Student Awardee

Innovation and Technology Scholarship Award 2022

Lo Pan Scholarship 2023/24

Awardees in HKIS Scholarship and Dissertation Awards in 2023

Laboratories and Facilities 實驗室及教學設施

Programme Enquiries 課程查詢

Programme Enquiry 課程查詢

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