物理根基，創智未來

關於AP

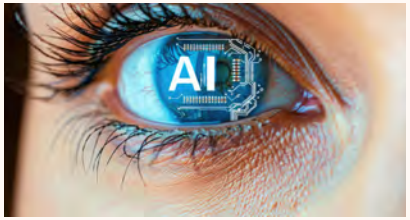
應用物理學系 (AP) 創立於1987年，一直以成為國際一流物理學系為目標，匯聚頂尖學者，緊貼尖端科技發展和社會需求，聚焦新材料、人工智能、大數據、光電子等高端領域。多年來，AP培養具備基礎知識、應用技能、商業思維、國際視野和創新精神的創科人才，服務於大專院校、科研機構、工商業和創新產業等。AP亦在多個世界學科及研究排名中取得優秀成績。

39th
納米科學與技術
全球最佳大學排名
2025 U.S. News & World Report

72nd
材料科學
QS World University Rankings 2025 by Subject

97th
物理科學
2025 Times Higher Education
世界大學科目排名

科研成果



致力於追求科研及應用技術的卓越突破，AP秉持創新精神，積極推動技術轉移，推動科學知識的發展。本系擁有四位全球最廣獲徵引的研究人員及十一位躋身全球前2%頂尖科學家，展現出卓越研究實力。研究範疇涵蓋多項領域，包括綠色能源與碳中和、機器學習與計算物理、納米材料、光子學、等離激元學以及量子物理學。近期重要研究成果包括：柴揚教授所領導的團隊成功開發融合脈衝神經網路的事件驅動視覺傳感器，相關論文已於2023年發表於《自然 - 電子》；郝建華教授發現新型二維材料$CuCrP_2S_6$的獨特電極化特性，突破性成果刊登於《自然 - 通訊》。

科研學習

擁有超過30個實驗室作為教學及科研用途，當中包括與科技龍頭－華為共同建立人工智能聯合實驗室、材料與器件中心實驗室及無塵室。成績優秀的學生有機會參與學系教授的科研項目，如：太陽能電池、快速檢測病毒生物傳感器、新能源材料等。

物理學(榮譽)理學士
副主修人工智能及數據分析(AIDA)
或創新及創業(IE)

#JS3030 | **25** 取錄人數 | **4年** 全日制 | **UGC funded**

4年時間 同步完成主修及副主修課程

物理為主修課程，學生於第一年修讀基礎課程，第二年起則按個人發展意向選擇副主修 AIDA 或 IE。副主修比一般的課程內容更深入。畢業時，學生將頒獲以下其中一個學士學位：

- 物理學 (榮譽) 理學士 - 副主修人工智能及數據分析
- 物理學 (榮譽) 理學士 - 副主修創新及創業

快速銜接學士與碩士學位課程

成績優異的學生可在較短時間內和用較便宜的學費，完成由應用物理學系所提供的物理學理學士學位，副主修人工智慧與數據分析／創新與創業，以及取得由醫療科技及資訊學系所提供的醫學物理碩士學位。

課程特色

著重實際應用

除了設備完善的實驗室及參與學系科研機會，我們與世界各地的大學、科研機構及公司有緊密聯繫，為學生提供實習交流機會，實踐所學，擴闊視野。

跨學科課程

將主修的物理學，融合AIDA / IE，為學生提供基礎及新興知識，助其輕鬆踏上各種職業道路，例如創科、醫療保健和工業應用。

著重全面發展

課堂設計積極培養學生多元思維、溝通技巧、領導才能、創意、批判思考及解難等「軟技能」，培育新一代創科專才。

科目一覽

以下為4年課程內修讀的科目摘要 (只節錄本課程的核心科目)，畢業所需總學分為134。

大學核心課程 (GUR) (27學分)

Cluster Areas Requirements (CAR)
Language and Communication Requirements (LCR)
Tomorrow's Leaders
Healthy Lifestyle
Introduction to Artificial Intelligence and Data Analytics
Introduction to Innovation and Entrepreneurship

主修-物理 (AIDA學生需修畢71學分；IE學生需修畢74學分)

Mechanics and Robotic Motion
Quantum Mechanics for Scientists and Engineers
From Semiconductor to Intelligent Devices
Scientific Instrumentation and Automation
Designing Sensing Systems for Internet of Things in Smart Cities
Energy Conversion and Storage with Machine Learning

二選一

副主修

人工智能及數據分析 (AIDA) (36 學分)

Programming Fundamentals and Applications
Artificial Intelligence
Data Structures and Algorithms
Machine Learning
Integrated Capstone Project
Quantitative Skills and Experimental Design for Scientists

獲頒學士學位

物理學(榮譽)理學士
副主修人工智能及數據分析
Bachelor of Science (Honours) in Physics with a Secondary Major in Artificial Intelligence and Data Analytics

副主修

創新及創業 (IE) (33 學分)

Management and Organisation
Business Innovation Project
Company Attachment
Creativity, Innovation and Entrepreneurship
Innovation and Entrepreneurship Colloquium
GBA Immersion / Field Study for Innovation Ecosystems

獲頒學士學位

物理學(榮譽)理學士
副主修創新及創業
Bachelor of Science (Honours) in Physics with a Secondary Major in Innovation and Entrepreneurship

就業方向

擁有跨學科知識及技能的畢業生，可向不同行業發展或進修深造。

資訊科技相關

數據科學家 Data Scientist
AI軟件工程師 AI Software Engineer
系統架構師 System Architect
系統分析師 System Analyst
程式分析員 Analyst Programmer
資訊科技顧問 IT Consultant

工業相關

科技顧問 Technology Consultant
工程師 Engineer
系統開發人員 System Developer

醫療服務相關

醫學物理師 Medical Physicist
實驗室經理 Lab Manager
定量研究員 Quantitative Researcher

研究與開發相關

研究助理 Researcher
材料工程師 Materials Engineer
研發工程師 R&D Engineer
技術官 Scientific/Technology Officer

金融服務相關

定量研究員 Quantitative Researcher
數據科學家 Data Scientist
金融工程師 Quant Developer

教育相關

教師 Teacher
講師 Instructor
教學助理 Teaching Assistant

Physics Foundation for an Intelligent Future

About AP

The Department of Applied Physics (AP) was founded in 1987, and we are devoted to become a world-class physics department. We brought in high-caliber scholars and researchers with diverse expertise to enrich our curriculum and scientific innovations, with a strong focus on the development of cutting-edge technologies such as new materials, artificial intelligence, big data and optoelectronics. Over the years, AP has nurtured talents with fundamental and applied scientific knowledge, skills, and innovative mindset. Our graduates are welcomed by employers and have made significant contributions to the industries and the community. We achieved remarkable results in various University rankings.

39th
Best Universities for Nanoscience and Nanotechnology
2025 U.S. News & World Report

72nd
Materials Science
QS World University Rankings 2025 by Subject

97th
Physical Sciences
Times Higher Education (THE) World University Rankings 2025 by subject

Research Excellences

AP is dedicated to becoming a world-class institution, excelling in both fundamental research and applied development. We encourage innovation and support technology transfer to advance scientific knowledge. Our faculty includes 4 highly cited researchers and 11 scientists ranked in the top 2% globally, reflecting our commitment to excellence. Our research spans critical areas, including green energy and carbon neutrality, machine learning, nanomaterials, photonics, plasmonics, and quantum physics. Recent achievements showcase our leadership in these fields. Prof. Chai developed an event-driven visual sensor integrated with a pulse neural network, published in Nature Electronics in 2023. Prof. Hao's team discovered the unique polarization properties of the new two-dimensional material $CuCrP_2S_6$, featured in Nature Communications.

Research and Innovation

AP is well-equipped with more than 30 world-class research laboratories for teaching and research purpose, including a joint AI laboratory with Huawei, University Research Facility in Materials Characterization and Device Fabrication, as well as Cleanroom facilities. Students with outstanding academic performance results are actively recruited to join research projects led by our academic staff, working on forefront topics like photovoltaics, biosensor for virus detection and new energy materials.

BSc (Hons) in Physics with a Secondary Major in Artificial Intelligence and Data Analytics (AIDA) or Innovation and Entrepreneurship (IE)

#JS3030 | **25** Intakes | **4** years Full time | **UGC** funded

Acquire a Major with a Secondary Major degree in 4 years

Students enrolled to our Physics programme follow a common curriculum in the first year, before they choose a Secondary Major in either AIDA or IE in Year Two, according to their own preference. They will graduate with one of the following degrees upon successful completion of the corresponding graduation requirements:

- Bachelor of Science (Honours) in Physics with a Secondary Major in Artificial Intelligence and Data Analytics
- Bachelor of Science (Honours) in Physics with a Secondary Major in Innovation and Entrepreneurship

Fast-track Integrated Bachelor's and Master's Degree Programme

High-achieving students will be provided opportunities to complete a Bachelor of Science in Physics with a Secondary Major in Artificial Intelligence & Data Analytics / Innovation and Entrepreneurship, offered by the Department of Applied Physics, and a Master of Science in Medical Physics, offered by the Department of Health Technology and Informatics, in a shortened duration and with reduced tuition fee.

Programme Highlights

An Application-oriented approach

The learning experience is supported by well-equipped laboratories and research opportunities. Collaborations with renowned universities, research institutions and industry partners provide excellent internship and exchange opportunities for students.

Multidisciplinary Nature

The combination of physics and AIDA/IE provides students with both solid scientific knowledge and practical skillsets, opening them to a wide range of career paths such as innovation, health care and industry.

All-rounded Development

The learning pedagogies are designed to develop students' "soft skills", such as lateral thinking, communication skills, creativity, critical thinking and problem-solving skills, which are critical assets for our future leaders.

Enquiry apdept@polyu.edu.hk https://www.polyu.edu.hk/ap
PolyU Applied Physics | Department of Applied Physics, PolyU | polyuap | PolyU_AP
The Hong Kong Polytechnic University 香港理工大學 | Department of Applied Physics 應用物理學系

Subject List

Highlight of subjects in our 4-year curriculum. Only the core subjects of this programme are listed below. The total number of credits required for graduation is 134.

General University Requirement (GUR) (27 credits)

- Cluster Areas Requirements (CAR)
- Language and Communication Requirements (LCR)
- Tomorrow's Leaders
- Healthy Lifestyle
- Introduction to Artificial Intelligence and Data Analytics
- Introduction to Innovation and Entrepreneurship

Major – Physics (71 credits for AIDA; 74 credits for IE)

- Mechanics and Robotic Motion
- Quantum Mechanics for Scientists and Engineers
- From Semiconductor to Intelligent Devices
- Scientific Instrumentation and Automation
- Designing Sensing Systems for Internet of Things in Smart Cities
- Energy Conversion and Storage with Machine Learning

Secondary Major

AIDA (36 credits)

- Programming Fundamentals and Applications
- Artificial Intelligence
- Data Structures and Algorithms
- Machine Learning
- Integrated Capstone Project
- Quantitative Skills and Experimental Design for Scientists

Awarded Bachelor' s Degree

Bachelor of Science (Honours) in Physics with a Secondary Major in Artificial Intelligence and Data Analytics

Either one

IE (33 credits)

- Management and Organisation
- Business Innovation Project
- Company Attachment
- Creativity, Innovation and Entrepreneurship
- Innovation and Entrepreneurship Colloquium
- GBA Immersion / Field Study for Innovation Ecosystems

Bachelor of Science (Honours) in Physics with a Secondary Major in Innovation and Entrepreneurship

Career Prospects

Equipped with interdisciplinary scientific knowledge, skills, and innovative mindset, our graduates are well-prepared to work in various industries or pursue further studies.

Tech-related	Industry-related	Medical Services-related	Research & Development-related	Financial Services-related	Education-related
Data Scientist	Technology Consultant	Medical Physicist	Researcher	Quantitative Researcher	Teacher
AI Software Engineer	Engineer	Lab Manager	Materials Engineer	Data Scientist	Instructor
System Architect	System Developer	Quantitative Researcher	R&D Engineer	Quant Developer	Teaching Assistant
System Analyst			Scientific/Technology Officer		
Analyst Programmer					
IT Consultant					

物理根基，创智未来

关于AP

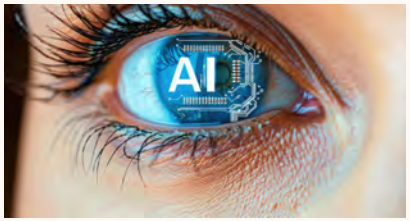
应用物理学系 (AP) 创立于1987年，一直以成为国际一流物理学系为目标，汇聚顶尖学者，紧贴尖端科技发展和社会需求，聚焦新材料、人工智能、大数据、光电子等高端领域。多年来，AP培养具备基础知识、应用技能、商业思维、国际视野和创新精神的创科人才，服务于大专院校、科研机构、工商业和创新产业等。 AP亦在多个世界学科及研究排名中取得优秀成绩。

39th
纳米科学与技术
全球最佳大学排名
2025 U.S. News & World Report

72nd
材料科学
2025 年 QS 世界大学学科排名

97th
物理科学
2025 Times Higher Education
世界大学科目排名

科研成果



致力于追求科研及应用技术的卓越突破，AP秉持创新精神，积极推动技术转移，推动科学知识的发展。本系拥有四位全球最广获征引的研究人员及十一位跻身全球前2%顶尖科学家，展现出卓越研究实力。研究范畴涵盖多项领域，包括绿色能源与碳中和、机器学习与计算物理、纳米材料、光子学、等离激元学以及量子物理学。近期重要研究成果包括：柴扬教授所领导的团队成功开发融合脉冲神经网路的事件驱动视觉传感器，相关论文已于2023年发表于《自然 - 电子》；郝建华教授发现新型二维材料CuCrP2S6的独特电极化特性，突破性成果刊登于《自然 - 通讯》。

科研学习

拥有超过30个实验室作为教学及科研用途，当中包括与科技龙头 – 华为共同建立人工智能联合实验室、材料与器件中心实验室及无尘室。成绩优秀的学生有机会参与学系教授的科研项目，如：太阳能电池、快速检测病毒生物传感器、新能源材料等。

物理学(荣誉)理学士
副主修人工智能及数据分析(AIDA)
或创新及创业(IE)

#JS3030 | **25** 取录人数 | **4年** 全日制 | **UGC funded**

4年时间 同步完成主修及副主修课程

物理为主修课程，学生于第一年修读基础课程，第二年起则按个人发展意向选择副主修 AIDA 或 IE。副主修比一般的课程内容更深入。毕业时，学生将颁获以下其中一个学士学位：

- 物理学（荣誉）理学士 - 副主修人工智能及数据分析
- 物理学（荣誉）理学士 - 副主修创新及创业

快速衔接学士与硕士学位课程

成绩优异的学生可在较短时间内和用较便宜的学费，完成由应用物理学系所提供的物理学理学士学位，副主修人工智慧与数据分析／创新与创业，以及取得由医疗科技及资讯学系所提供的医学物理硕士学位。

课程特色

着重实际应用

除了设备完善的实验室及参与学系科研机会，我们与世界各地的大学、科研机构及公司有紧密联系，为学生提供实习交流机会，实践所学，扩阔视野。

跨学科课程

将主修的物理学，融合AIDA / IE，为学生提供基础及新兴知识，助其轻松踏上各种职业道路，例如创科、医疗保健和工业应用。

着重全面发展

课堂设计积极培养学生多元思维、沟通技巧、领导才能、创意、批判思考及解难等「软技能」，培育新一代创科专才。

科目一览

以下为4年课程内修读的科目摘要(只节录本课程的核心科目)，毕业所需总学分为134。

大学核心课程 (GUR) (27学分)

- Cluster Areas Requirements (CAR)
- Language and Communication Requirements (LCR)
- Tomorrow's Leaders
- Healthy Lifestyle
- Introduction to Artificial Intelligence and Data Analytics
- Introduction to Innovation and Entrepreneurship

主修-物理 (AIDA学生需修毕71学分；IE学生需修毕74学分)

副主修

人工智能及数据分析 (AIDA) (36学分)

- Programming Fundamentals and Applications
- Artificial Intelligence
- Data Structures and Algorithms
- Machine Learning
- Integrated Capstone Project
- Quantitative Skills and Experimental Design for Scientists

获颁学士学位

物理学(荣誉)理学士
副主修人工智能及数据分析
Bachelor of Science (Honours) in Physics with a Secondary Major in Artificial Intelligence and Data Analytics

二选一

- Mechanics and Robotic Motion
- Quantum Mechanics for Scientists and Engineers
- From Semiconductor to Intelligent Devices
- Scientific Instrumentation and Automation
- Designing Sensing Systems for Internet of Things in Smart Cities
- Energy Conversion and Storage with Machine Learning

创新及创业(IE) (33学分)

- Management and Organisation
- Business Innovation Project
- Company Attachment
- Creativity, Innovation and Entrepreneurship Innovation and Entrepreneurship Colloquium
- GBA Immersion / Field Study for Innovation Ecosystems

获颁学士学位

物理学(荣誉)理学士
副主修创新及创业
Bachelor of Science (Honours) in Physics with a Secondary Major in Innovation and Entrepreneurship

就业方向

拥有跨学科知识及技能的毕业生，可向不同行业发展或进修深造。

资讯科技相关

数据科学家 Data Scientist
AI软件工程师 AI Software Engineer
系统架构师 System Architect
系统分析师 System Analyst
程式分析员 Analyst Programmer
资讯科技顾问 IT Consultant

工业相关

科技顾问 Technology Consultant
工程师 Engineer
系统开发人员 System Developer

医疗服务相关

医学物理师 Medical Physicist
实验室经理 Lab Manager
定量研究员 Quantitative Researcher

研究与开发相关

研究助理 Researcher
材料工程师 Materials Engineer
研发工程师 R&D Engineer
技术官 Scientific/Technology Officer

金融服务相关

定量研究员 Quantitative Researcher
数据科学家 Data Scientist
金融工程师 Quant Developer

教育相关

教师 Teacher
讲师 Instructor
教学助理 Teaching Assistant