



# ABOUT THE DEPARTMENT



*Department of Applied Physics has experienced a rapid growth to be a world-class centre for education and research in applied physics. Our graduates have been serving the society in key positions and have made significant contribution to the development of Hong Kong in its evolution from an industrial-based to knowledge-based economy. We have over 30 laboratories with advanced equipment and facilities for supporting our teaching and research. We strive for excellence in teaching, research and professional services.*

## Programmes

Our programmes cover specialist areas of applied or engineering physics crucial to the industries in Hong Kong. Our BSc(Hons) in Engineering Physics programme is the first of its kind in Hong Kong. It includes both physics and engineering, combining scientific knowledge and technical training that are relevant to future employers.

An Articulation Programme in Optoelectronics has been offered since 2008/09. It incorporates the following specialist subjects: Display Technology, Detectors and Imaging Devices, Optical Design, Laser Principles and Applications, Fibre Optics, as well as Semiconductor Optoelectronic Devices.



Our Higher Diploma in Applied Physics programme has a long-standing record of excellence and graduates are widely accepted by the industrial and commercial sectors. Many of our graduates are now in important executive positions. Last year, over 85% of our graduates proceed for further studies, such as our Optoelectronics Articulation Programme.

Postgraduate programmes, including Master of Philosophy (MPhil) and Doctor of Philosophy (PhD) research programmes, are offered by our department.

- ❖ HD in Applied Physics  
應用物理學高級文憑
- ❖ BSc(Hons) in Engineering Physics  
工程物理學(榮譽)理學士學位
- ❖ BSc(Hons) in Engineering Physics (Optoelectronics)  
工程物理學(榮譽)理學士學位(光電子學)
- ❖ MPhil in Applied Physics  
應用物理學哲學碩士學位
- ❖ PhD in Applied Physics  
應用物理學哲學博士學位



# RESEARCH

One of the missions of our department is to direct the research efforts primarily towards applied and strategic research relevant to the needs of Hong Kong. According to the latest Research Assessment Exercise conducted by the Hong Kong Research Grants Council, AP has been classified as the second best among all physics departments in Hong Kong and the best in Materials Science. In addition to achieving excellence in research publications, our research teams have received more than HK\$60 million in external research grants since 2011.



## Major Research Areas

- ❖ Nanomaterials  
納米材料
- ❖ Energy Materials and Devices  
能源材料與器件
- ❖ Photonics, Plasmonics and Optoelectronics  
光子學、等離激元光子學與光電子學
- ❖ Smart Materials and Devices  
智能材料與器件
- ❖ Theoretical and Computational Physics  
理論與計算物理

## Research Opportunities

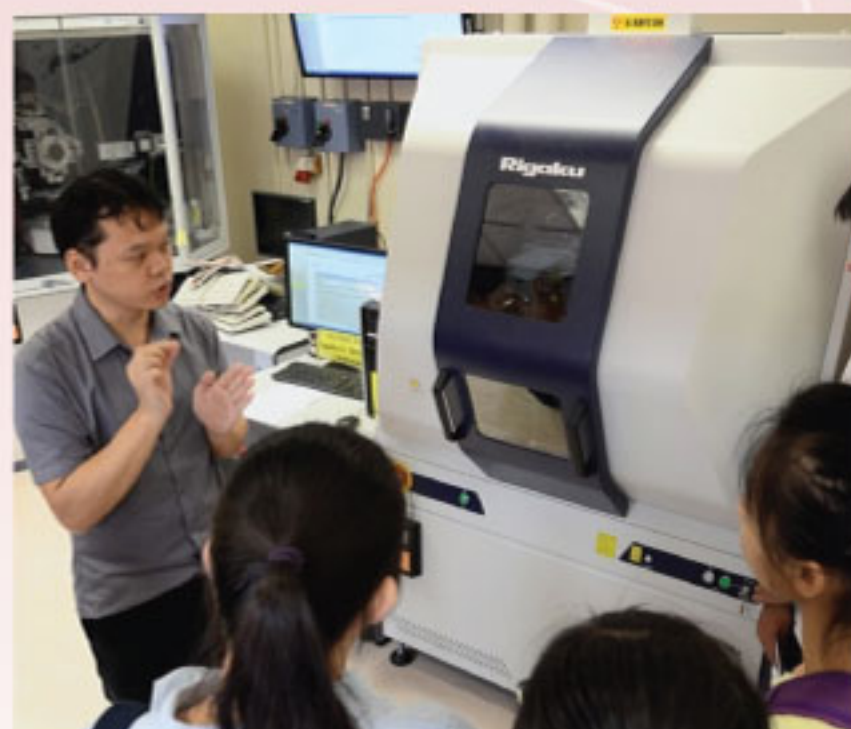
The department provides research opportunities for undergraduate students who have strong interest in postgraduate study. Financial supports will be provided to selected student assistants who are involved in research activities during summer. Research quality of our staff members and postgraduate students have been recognized through receiving research awards, grants, and fellowships/ scholarships.

## Some Research Statistics

No. of research students :	13 (MPhil)
	52 (PhD)
No. of research personnel :	62
No. of on-going projects :	67
No. of papers in refereed journals (per year):	197



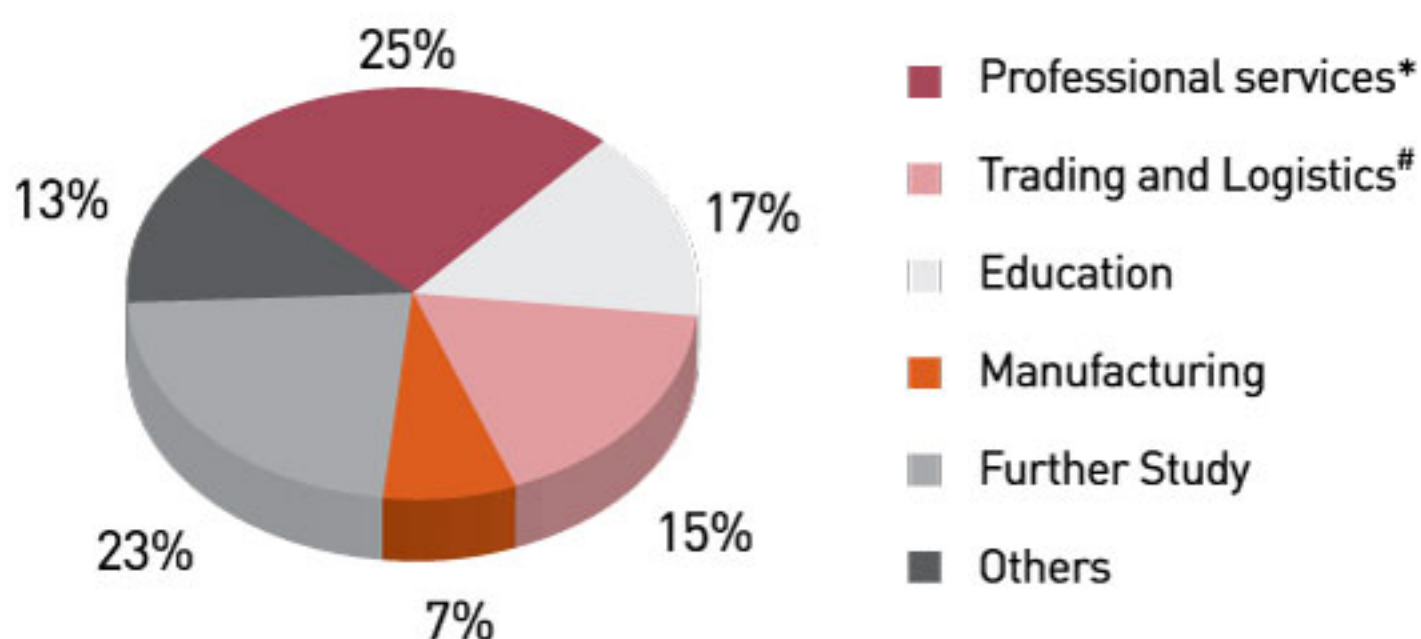




### University Research Facility

University Research Facility in Materials Characterization and Device Fabrication (UMF) was established on 1 December 2014. According to the University's strategic plan, UMF is one of the University Research Facilities to provide a gateway to world-class research at PolyU. PolyU is uniquely positioned to apply its materials research to critical challenges of the future, with UMF aiming to provide leadership in the materials community and be a catalyst for multidisciplinary education and innovations, through coordination of materials-related activities, maintaining core and shared facilities, training students and fostering collegial exchanges of expertise.

### Graduate's Career Path (BSc (Hons) in Engineering Physics)



Our alumni are currently engaged in careers related to engineering and technology, medical imaging and healthcare, research and development, testing and certification, manufacturing, computing and IT, education, and public sectors. Some of our graduates pursue further studies either locally or overseas for higher degrees.

Remarks:

Result from 2019 Graduate Employment Survey, Student Affairs Office, The Hong Kong Polytechnic University.

\*Professional Services cover medical imaging, engineering, architecture and technical testing.

#Trading & Logistics cover wholesale & retail, transport, storage and telecommunication.



# ACADEMIC & STUDENT ACTIVITIES



## Academic Advising

To assist students with the start of university life, they will each be assigned an academic staff for advising them on study matters. Various discipline-related seminars and activities are also organized, providing them a glimpse of the importance of applied physics and the diversified career prospects of graduates.

## Innovative Learning Activities

Our staff have created many innovative educational activities to help improving the learning experience of students. The Remote Lab is one of our inventions which has been recognised by receiving international educational awards.



## Career Talks

To provide our students with the latest job market situation and career opportunities, we co-organize talks every year with the Alumni Association of our Department. Graduates working in various industries and ranks are invited to share their experiences in job hunting, interview skills and career development.



## Student Exchange Programmes

Our students have been involved in short exchange programmes in universities and institutions worldwide including China, Germany, USA and the UK. Students from overseas institutions have also been staying with us. In addition, some of our students participate in exchange programmes to study for a whole semester in major universities abroad (e.g. USA, Germany), with transferable credits.



## Learning Experience in Mainland China

Many of our students visited the University of Science and Technology of China, and Tsinghua University. Both were supported by the Ministry of Education of the People's Republic of China. We believe that the development of students' global outlook as well as the learning experience in the Mainland China are important elements towards the all-round development of students.





# MESSAGES FROM ALUMNI

## "I hope that you can also start your bright future in AP!"

NG Chi Chung, Eddy

*Graduate of HD in Applied Physics*

### MAK Chun Hin

*Graduate of BSc(Hons) in Engineering Physics*

The Engineering Physics programme covers a wide range of physics theory and the working principles of many engineering applications, providing me with a quality education that allowed me to choose whether to start a career in the fields of applied science/ engineering or pursue further studies.

### 仲任

*Graduate of BSc(Hons) in Engineering Physics*

時光荏苒，在理大的四年已經在不知不覺中過去。在這四年，我不僅獲得了跟隨教授參與科學研究的機會，還獲學校推薦到美國最頂尖大學交換學習。同時，理大給了我們豐富的課外活動機會。從四年前的青澀懵懂到如今的自信沉著，我感謝理大及應用物理學系教導了我們知識，塑造了我們的人格，並給予我們發現自我的機會。

(Mr. ZHONG Ren received the "Outstanding Student Award" of the Faculty of Applied Science and Textiles in 2016)

### WAN Li

*Graduate of BSc(Hons) in Engineering Physics*

I dreamed to become a scientist when I was young. It is lucky for me to study in the Department of Applied Physics in PolyU. All the professors and tutors are very helpful. I have the opportunity to explore the world of physics and learn more about research study. I have consulted quite a few professors about their research and read their publications. These broadened my horizon and helped me greatly in planning my future.

(Mr. WAN Li received the "Outstanding Student Award" of the Faculty of Applied Science and Textiles in 2013)

### 祁冀

*Graduate of BSc(Hons) in Engineering Physics*

暑假期間，我有機會到密西根州立大學做暑期科研，並加入了化學工程及材料科學系的一個以電腦模擬為主要的研究小組，在那裡的經歷讓我愛上科研並排解了我對職業的困惑。在密西根為期十一個星期的工作中，我的任務是做基於密度泛函理論的計算，對比氧化鋰和硫化鋰作為固體電解質層的各方面不同；在教授和博士生們的悉心幫助下，我的項目取得了一定的成果，並進行了一個三十分鐘的組內展示。這次寶貴的經歷讓我體會到從事科研時的快樂，現在的我不再迷茫，決定把自己的時間及精力投入到電池領域科研工作中，為社會創造價值。

### QUAN Yuhui

*Graduate of BSc(Hons) in Engineering Physics*

In the blink of an eye, I have finished my four years study at the Department of Applied Physics. I am grateful that the professors in the Department are caring and helpful. I enjoyed the study and discussion with my classmates. I also participated in the research project under supervision of our professors. Last summer, I received financial support from the University to study in the University of Cambridge, which allowed me to travel around and watch an exciting home match of Manchester United. In the past four years, I have acquired a lot of knowledge, developed more rigorous thinking and gained precious friendship. It was a wonderful experience in my life to study at the Department of Applied Physics of PolyU.

(Mr. QUAN Yuhui received the "Outstanding Student Award" of the Faculty of Applied Science and Textiles in 2017)

### LAU Kwun Tak

*Graduate of HD in Applied Physics*

Among all government-funded higher diploma programmes available in Hong Kong, the Higher Diploma in Applied Physics offered by PolyU is the most attractive one. I was impressed by its diversified and challenging curriculum. In addition to the interesting applied physics courses, I could also learn advanced mathematics such as linear algebra, calculus and statistics, which helped me build a strong foundation. My scope of knowledge was widened after taking the courses related to programming and material science. In the laboratory sessions, I got hands-on experiment skills and the know-how about compiling comprehensive laboratory report. With ample support from the patient and competent lecturers, I had a fruitful learning experience. The lecturers were very responsive and gave prompt feedback to students after each assessment, which enabled us to successfully achieve the learning outcomes. I strongly believe that my rewarding campus life was attributed to the superb learning environment provided by PolyU and the Department. On top of that, most students can successfully be admitted to bachelor degree programmes after graduation. So, I do recommend you to choose this programme and enjoy your campus life here!



Head & Chair Professor	Professor Lau Shu-ping, Daniel 劉樹平教授 <i>Chair Professor of Nanomaterials</i> <i>BSc, PhD</i>
Emeritus Professor	Professor Choy Chung-loong 蔡忠龍榮休教授 <i>BSc, PhD</i>
Associate Heads	Professor Hao Jianhua 郝建華教授 <i>BSc, MSc, PhD</i>  Dr Leung Chi-wah Dennis 梁志華博士 <i>BEng, PhD</i>
Associate Dean of Faculty	Professor Kwok Kin-wing 郭建榮教授 <i>BSc, MPhil, PhD</i>



DEPARTMENT OF  
APPLIED PHYSICS

PROGRAMME CODE

**11439**

JUPAS CODE

**JS3985**

PROGRAMME LEADER

**Dr Y.H. Tsang**  
BSc, PhD

NORMAL DURATION

4 years

CREDIT REQUIREMENTS

At least 125 credits  
(depending on student's  
HKDSE attainment)

TYPE OF FUNDING

Government-funded

MODE OF STUDY

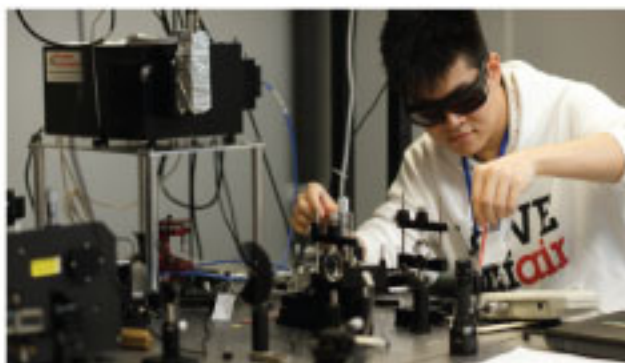
Full-time

INTAKE NUMBER

25

# BSc (Hons) in Engineering Physics

工程物理學(榮譽)理學士學位



Undergraduate student performing laser experiment

## Introduction

BSc in Engineering Physics is a unique program in Hong Kong. It equips our students with strong Physics background and engineering skills which enables them to apply Physics knowledge into a wide range of important technologies globally including medical imaging, material science, laser, ultrasound, nanotechnology, optoelectronic devices, computer interface, AI and programming etc. This programme aims at training undergraduates to pursue career in medical, science, technology and business or pursue postgraduate study in specialized areas in science and engineering.

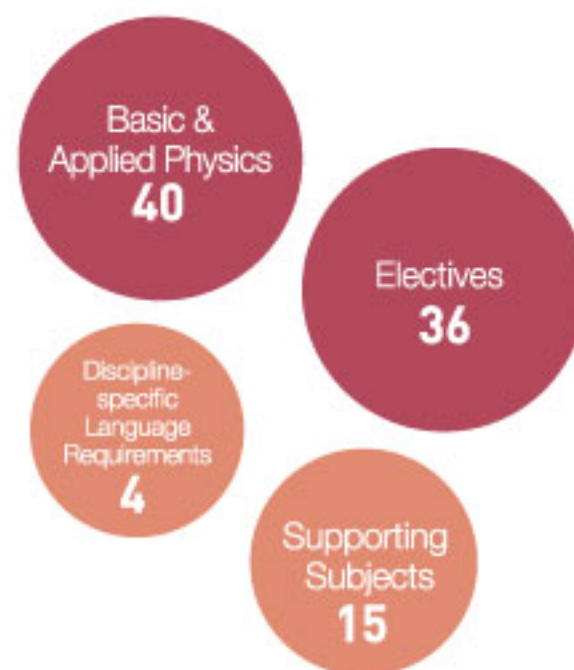
## Programme Structure

Basically, a student who is eligible to graduate in this programme should have completed at least 125 credits (depending on student's HKDSE attainment). These credits are divided into two categories :

- ❖ General University Requirements (GUR): 30 credits
- ❖ Discipline-specific Requirements (DSR): 95 credits

## Discipline-specific Requirements

The Discipline-specific Requirements and the number of credits required for EP are shown in the following diagram :

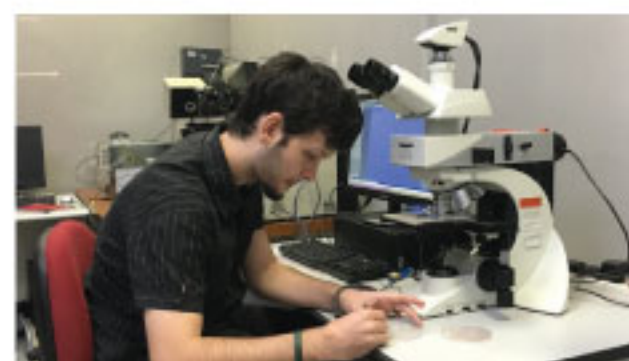


## Basic and Applied Physics :

Mechanics, electromagnetism, materials science, waves and optics, quantum mechanics, condensed matter physics, etc.

## Electives :

Medical imaging, machine learning, lasers, optoelectronics, semiconductors, acoustics, computer simulations, nanotechnology, devices, radiation physics, etc.





## GUR Subjects

GUR include the Language Requirement on both Chinese and English, Freshman Seminar, Leadership and Intra-personal Development, Community Service Learning, Healthy Lifestyle as well as 4 Broadening Subjects (CAR) in 4 cluster areas.

For details, please visit the following website : <http://www.polyu.edu.hk/ous/4-year-undergraduate-degree-curriculum/curriculum-framework>

## General Entrance Requirements :

Students applying for this programme should meet the minimum PolyU General Entrance Requirements and Programme Specific Entrance Requirements described as follows :

HKDSE Subjects	Core Subjects			
	Chinese Language	English Language	Mathematics	Liberal Studies
Minimum Level Requirement	3	3	2	2

HKDSE Subjects	Elective Subjects	
	1 <sup>st</sup> Elective	2 <sup>nd</sup> Elective or M1/M2
Minimum Level Requirement	3	3

The preferred subjects with the highest weighting for this programme are English Language, Mathematics, extended modules of Mathematics (M1/M2), Physics, Combined Science: Biology + Physics, Combined Science: Physics + Chemistry.

Note : Applicants with an Associate Degree in Applied Science or Engineering, a Higher Diploma in Applied Physics, Applied Optics, Optical Technology, or Engineering in relevant areas may also be admitted to our articulation programme BSc(Hons) in Engineering Physics (Optoelectronics).

## Enquiry 查詢詳情

AP GENERAL OFFICE

Fax 傳真 2333 7629

Email 電郵 [apdept@polyu.edu.hk](mailto:apdept@polyu.edu.hk)



Website



Facebook



Instagram

## Research Opportunities

The department provides research opportunities for undergraduate students who have strong interest in postgraduate study. Financial supports will be provided to selected student assistants who are involved in research activities during summer. According to the Research Assessment Exercise (RAE) 2014 implemented by the University Grants Council of Hong Kong, the Department of Applied Physics (AP) attains the highest proportion of world leading (4\*) research work in PolyU. AP ranks 1<sup>st</sup> in the cost centre of Materials Science and comes in 2<sup>nd</sup> place among all Physics Departments in Hong Kong.

## Scholarships

Thanks to generous donations by our industrial partners, the Department of Applied Physics has set up a number of scholarships for outstanding students in our BSc(Hons) in Engineering Physics programme. First-year students with outstanding academic performance in HKDSE could receive scholarships of value up to HK\$40,000 per student. In particular, students having obtained 5\*\* in Physics will be awarded scholarships each valued at HK\$25,000 or more. Additional scholarships are stipulated to our students in HD in Applied Physics. Each year, our students also receive scholarships open for competition to all students in PolyU or in Hong Kong. Besides academic performance, leadership potential, contribution to the community, outstanding achievements in sports, arts or other student activities, and other relevant qualities are often considered in the recipient selection process for individual scholarships. The lists of scholarships are as follows :

### Scholarships for BSc in Engineering Physics students :

- ❖ D.S. Chang Scholarship for Engineering Physics Students
- ❖ Hong Kong X'tals Scholarship
- ❖ ChinaLink Networks Scholarship
- ❖ Department of Applied Physics Scholarship
- ❖ Sam Cheong Stove Parts Scholarship
- ❖ Tung Po Ultrasonic Technology Scholarship
- ❖ Professor Chau Wai-yin Memorial Scholarship

Important : The leaflet was compiled in August 2020. Applicants are advised to visit Academic Registry website [www.polyu.edu.hk/study](http://www.polyu.edu.hk/study) for the latest information including admission score calculation mechanism.







DEPARTMENT OF  
APPLIED PHYSICS

# HD in Applied Physics

應用物理學高級文憑

PROGRAMME CODE

11341

JUPAS CODE

JS3014

PROGRAMME LEADER

Dr C.H. Lam  
BSc, PhD

NORMAL DURATION

2 years

CREDIT REQUIREMENTS

At least 62 credits  
(depending on student's  
HKDSE attainment)

TYPE OF FUNDING

Government-funded

MODE OF STUDY

Full-time

INTAKE QUOTA

51



## 課程特色

- ❖ 歷史悠久，累積超過四十年的辦學經驗
- ❖ 全港唯一的物理學高級文憑課程
- ❖ 政府資助課程
- ❖ 有多種途徑升讀本港及海外學士學位課程
- ❖ 與本系之工程物理學(榮譽)理學士學位課程緊密銜接
- ❖ 本地學士學位課程升讀率高達80%
- ❖ 畢業生從事工商界、政府部門、科研及教育等多方面工作

## Programme Structure

- ❖ Students study three major areas: applied physics, materials science/technology and scientific instrumentation
- ❖ Year one subjects include Core Subjects, in addition to Mathematics, Chinese and general education subjects
- ❖ Year two focuses on more advanced Core Subjects and includes an Innovation Project

## Entrance Requirements

For those applying on the basis of HKDSE, the subject requirements are :

- ❖ Level 2 in 5 HKDSE subjects including English Language and Chinese Language
- ❖ The preferred subjects with the highest weighting for this programme are English Language, Mathematics, extended modules of Mathematics (M1/M2), Physics, Combined Science: Biology + Physics, Combined Science: Physics + Chemistry

For those applying on the basis of other qualifications, the specified qualifications are :

Diploma in Computer & Communications Engineering, Computer & Information Engineering, Electrical Engineering, Electronic & Communications Engineering, Industrial Engineering & Information Management, Manufacturing Engineering, Manufacturing Engineering Management, Mechanical Engineering, Product Engineering Design & Technology Management, Production & Industrial Engineering, Telecommunications Engineering or equivalent






$$E=mc^2$$

## Career & Further Study Opportunities

Our graduates work in a variety of areas from education to manufacturing and service in industrial sectors and government organizations. They occupied a wide variety of positions, such as engineers in testing laboratory, electronic engineers, materials engineers, sales engineers, quality assurance engineers, reliability engineers, customer service engineers, product engineers, project engineers, instructors, computer engineers, programmers, IT officers, technical officers and technicians. Their choices of career are diverse and flexible and many of them pursued further studies in universities.

### 學士學位銜接課程

本課程畢業生可在本地或海外升讀學士學位課程。畢業生亦可升讀並於兩年內完成本系之工程物理學(榮譽)理學士學位課程[BSc(Hons) in Engineering Physics]；或修讀該學位課程附設的“光電子學”專業 [Specialism in Optoelectronics]。該專業為兩年制的政府資助學士學位銜接課程，收生對象除本系的高級文憑 (HD in Applied Physics) 畢業生外，亦包括指其他相關高級文憑或副學士 (Associate Degree) 的畢業生。

## Research Opportunities

The department provides research opportunities for undergraduate students who have strong interest in postgraduate study. Financial supports will be provided to selected student assistants who are involved in research activities during summer. According to the Research Assessment Exercise (RAE) 2014 implemented by the University Grants Council of Hong Kong, the Department of Applied Physics (AP) attains the highest proportion of world leading (4\*) research work in PolyU. AP ranks 1st in the cost centre of Materials Science and comes in 2nd place among all Physics Departments in Hong Kong.

## Enquiry 查詢詳情

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### Scholarships for HD in Applied Physics students :

- ❖ D.S. Chang Scholarship
- ❖ D.A. Ryder Scholarship

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DEPARTMENT OF  
APPLIED PHYSICS

PROGRAMME CODE

11341

JUPAS CODE

JS3014

PROGRAMME LEADER

Dr C.H. Lam  
BSc, PhD

NORMAL DURATION

2 years

CREDIT REQUIREMENTS

At least 62 credits  
(depending on student's  
HKDSE attainment)

TYPE OF FUNDING

Government-funded

MODE OF STUDY

Full-time

INTAKE QUOTA

51

# HD in Applied Physics

應用物理學高級文憑



## 課程特色

- ❖ 歷史悠久，累積超過四十年的辦學經驗
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DEPARTMENT OF  
APPLIED PHYSICS

PROGRAMME CODE

**11439**

JUPAS CODE

**JS3985**

PROGRAMME LEADER

**Dr Y.H. Tsang**  
BSc, PhD

NORMAL DURATION

4 years

CREDIT REQUIREMENTS

At least 125 credits  
(depending on student's  
HKDSE attainment)

TYPE OF FUNDING

Government-funded

MODE OF STUDY

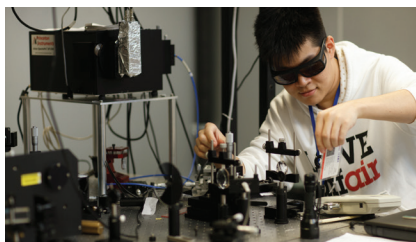
Full-time

INTAKE NUMBER

25

# BSc (Hons) in Engineering Physics

工程物理學(榮譽)理學士學位



Undergraduate student performing laser experiment

## Introduction

BSc in Engineering Physics is a unique program in Hong Kong. It equips our students with strong Physics background and engineering skills which enables them to apply Physics knowledge into a wide range of important technologies globally including medical imaging, material science, laser, ultrasound, nanotechnology, optoelectronic devices, computer interface, AI and programming etc. This programme aims at training undergraduates to pursue career in medical, science, technology and business or pursue postgraduate study in specialized areas in science and engineering.

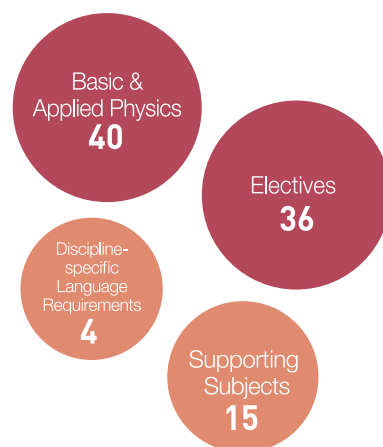
## Programme Structure

Basically, a student who is eligible to graduate in this programme should have completed at least 125 credits (depending on student's HKDSE attainment). These credits are divided into two categories :

- ❖ General University Requirements (GUR): 30 credits
- ❖ Discipline-specific Requirements (DSR): 95 credits

## Discipline-specific Requirements

The Discipline-specific Requirements and the number of credits required for EP are shown in the following diagram :

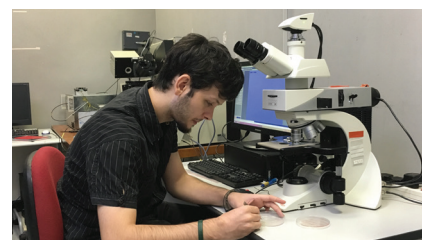


## Basic and Applied Physics :

Mechanics, electromagnetism, materials science, waves and optics, quantum mechanics, condensed matter physics, etc.

## Electives :

Medical imaging, machine learning, lasers, optoelectronics, semiconductors, acoustics, computer simulations, nanotechnology, devices, radiation physics, etc.





## GUR Subjects

GUR include the Language Requirement on both Chinese and English, Freshman Seminar, Leadership and Intra-personal Development, Community Service Learning, Healthy Lifestyle as well as 4 Broadening Subjects (CAR) in 4 cluster areas.

For details, please visit the following website : <http://www.polyu.edu.hk/ous/4-year-undergraduate-degree-curriculum/curriculum-framework>

## General Entrance Requirements :

Students applying for this programme should meet the minimum PolyU General Entrance Requirements and Programme Specific Entrance Requirements described as follows :

HKDSE Subjects	Core Subjects			
	Chinese Language	English Language	Mathematics	Liberal Studies
Minimum Level Requirement	3	3	2	2

HKDSE Subjects	Elective Subjects	
	1 <sup>st</sup> Elective	2 <sup>nd</sup> Elective or M1/M2
Minimum Level Requirement	3	3

The preferred subjects with the highest weighting for this programme are English Language, Mathematics, extended modules of Mathematics (M1/M2), Physics, Combined Science: Biology + Physics, Combined Science: Physics + Chemistry.

Note : Applicants with an Associate Degree in Applied Science or Engineering, a Higher Diploma in Applied Physics, Applied Optics, Optical Technology, or Engineering in relevant areas may also be admitted to our articulation programme BSc(Hons) in Engineering Physics (Optoelectronics).

## Enquiry 查詢詳情

AP GENERAL OFFICE

Fax 傳真 2333 7629

Email 電郵 [apdept@polyu.edu.hk](mailto:apdept@polyu.edu.hk)



Website



Facebook



Instagram

## Research Opportunities

The department provides research opportunities for undergraduate students who have strong interest in postgraduate study. Financial supports will be provided to selected student assistants who are involved in research activities during summer. According to the Research Assessment Exercise (RAE) 2014 implemented by the University Grants Council of Hong Kong, the Department of Applied Physics (AP) attains the highest proportion of world leading (4\*) research work in PolyU. AP ranks 1<sup>st</sup> in the cost centre of Materials Science and comes in 2<sup>nd</sup> place among all Physics Departments in Hong Kong.

## Scholarships

Thanks to generous donations by our industrial partners, the Department of Applied Physics has set up a number of scholarships for outstanding students in our BSc(Hons) in Engineering Physics programme. First-year students with outstanding academic performance in HKDSE could receive scholarships of value up to HK\$40,000 per student. In particular, students having obtained 5\*\* in Physics will be awarded scholarships each valued at HK\$25,000 or more. Additional scholarships are stipulated to our students in HD in Applied Physics. Each year, our students also receive scholarships open for competition to all students in PolyU or in Hong Kong. Besides academic performance, leadership potential, contribution to the community, outstanding achievements in sports, arts or other student activities, and other relevant qualities are often considered in the recipient selection process for individual scholarships. The lists of scholarships are as follows :

### Scholarships for BSc in Engineering Physics students :

- ❖ D.S. Chang Scholarship for Engineering Physics Students
- ❖ Hong Kong X'tals Scholarship
- ❖ ChinaLink Networks Scholarship
- ❖ Department of Applied Physics Scholarship
- ❖ Sam Cheong Stove Parts Scholarship
- ❖ Tung Po Ultrasonic Technology Scholarship
- ❖ Professor Chau Wai-yin Memorial Scholarship

Important : The leaflet was compiled in August 2020. Applicants are advised to visit Academic Registry website [www.polyu.edu.hk/study](http://www.polyu.edu.hk/study) for the latest information including admission score calculation mechanism.

