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.

47th
Best Universities for Nanoscience and Nanotechnology
2024 U.S. News & World Report

97th
Materials Science
QS World University Rankings 2024 by Subject

101-125th
Physical Sciences
Times Higher Education (THE) World University Rankings 2024 by subject

5 Major Research Areas

- Energy Materials & Devices
- Nanomaterials & Microelectronic Devices
- Smart Materials & Devices
- Photonics, Plasmonics & Optoelectronics - Materials & Devices
- Theoretical & Computational Physics

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.

Subject List

Highlight of subjects in our 4-year curriculum. Only the core subjects of this programme are listed below.

General University Requirement (GUR) (30 credits)

- Cluster Areas Requirements (CAR)
- Language and Communication Requirements (LCR)
- Leadership Education and Development
- Healthy Lifestyle
- Service Learning

Major – Physics (67 credits)

- Electromagnetism and Waves
- Experiment X
- From Semiconductor to Intelligent Devices
- Materials Science
- Mechanics and Robotic Motion
- Quantum Mechanics for Scientists and Engineers
- Scientific Instrumentation and Automation
- Sensors and Transducers for Internet of Things

Secondary Major (36 credits)

AIDA

- Artificial Intelligence
- Data Structures and Algorithms
- Data Analysis Techniques for Scientists
- Energy Conversion and Storage with Machine Learning
- Integrated Capstone Project
- Machine Learning in Physics

Either one

IE

- Business Innovation Project
- Company attachment
- Creativity, Innovation and Entrepreneurship
- Study for Innovation Ecosystems
- Innovation and Entrepreneurship Colloquium
- Managing Innovation and Technology
- Strategic Brand Management

Awarded Bachelor's Degree

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

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					