Taught Postgraduate Scheme in Computing

MSc in E-Commerce
MSc in Information Systems
MSc in Software Technology
MSc in Information Technology

Contents of this publication are subject to review and change.

PolyU COMP
FinTech
Big Data
Human Computer Interaction
Internet of Things
Information Security
Cloud Computing

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ABOUT THE DEPARTMENT OF COMPUTING

The Department of Computing (COMP) has a proud history of over 40 years. It was established in 1974 as the first department offering computing education in the territory, nurturing professional talents to support the society’s advancement. Today, COMP has gained international recognition in world-class research and high quality education. It is ranked 49th in the QS World University Rankings by Subject 2016 – Computer Science & Information Systems and ranked 31st in Computer Science in the “2017 Best Global Universities Rankings” released by the U.S. News and World report. Looking into the future, COMP is determined to assert its position as the leader in interdisciplinary research and education in computing, generating worldwide impact and benefiting to mankind. COMP envisions that it will become the indispensable and influential icon in SMART computing internationally.

COMP is devoted to creating a nurturing environment and creating excellent learning experiences for students, inspiring them to unleash their potentials into becoming future innovators. It delivers high quality research postgraduate programmes, taught master programmes and undergraduate programmes in computer science and multidisciplinary areas of IT and enterprise computing. Its programmes integrate theories, systems and applications, meeting the needs of students who wish to pursue their career in computing related fields.

TAUGHT POSTGRADUATE SCHEME

OBJECTIVE

COMP has over 25 years of experience for MSc programmes’ operation, development and advancement. Our Postgraduate Scheme in Computing is one of the oldest and largest settings offering taught postgraduate computing education in Hong Kong and providing education in computing and information technology that is tailored to suit the professional needs of students from diverse backgrounds. Students benefit not only from detailed knowledge of fundamental theories, core and applied technologies, and industry best practices, but also from interaction with their peers in exchanging ideas and discussing experiences. They acquire both advanced expertise and professional networks that help them to scale new heights in their careers.
Promising career advancement

According to our 2016 Graduate Employment Survey, 42% of our graduates get promoted to a higher position compared with the time when they applied for our MSc programmes. For over 20 years of providing postgraduate education in computing, COMP has nurtured about 4,000 students who became leaders and professionals with a global outlook in various sectors, and our alumni have established a very good reputation in different industries. Most of our alumni are now managers and top management in prominent companies in the IT industry such as Alibaba, IBM, Tectura, as well as organizations in other industries like Accenture, China Telecom, CLP, Hospital Authority, HSBC, Hutchison, Hong Kong Productivity Council, Hong Kong Stock Exchange, MTRC, PCCW, etc.

Wide variety of subjects that cover hot IT topics

Students enjoy flexible options in studying with over 40 core and elective subjects. COMP frequently review the programme curriculum, offering subjects to align with the fast-changing digital market needs as well as students’ demand from time to time. Currently we are planning to offer new content covering hot IT topics such as FinTech, Internet of Things (IoT), Big Data and Information Security, through classroom teachings and workshops, to enhance students’ ability in critical thinking, leadership and problem solving.

Practical industry workshops and training sessions

To enrich students’ learning experience, our scheme regularly offer additional industry workshops, training sessions, and programming labs on different IT topics to enhance students’ technical skills, professional knowledge, and hands-on experiences. In the past summer, we cooperated with our partner, Microsoft Hong Kong, to offer workshops on “Machine Learning on Cloud”, which received very positive feedback from the participants. Certificates were issued to them after completing the workshops. Besides, we regularly invite renowned speakers from the IT industries to deliver talks and forums about the latest trend of IT technologies to assist students to understand the updated IT technologies and industry development.

Advanced learning facilities and joint labs

COMP conducts advanced research contributing to the world’s fast technological growth. We have established joint laboratories and been working closely with industry-leading companies such as IBM, Microsoft, Yonyou. These joint laboratories are not only supporting research activities, but also teaching and learning as well as knowledge transfer purposes. They also open space for producing world-renowned output applicable to commercial and industrial uses and creating high values in both education and research aspects. In addition, COMP provides other resources for students to undertake project and dissertation on different topics. Students will have the opportunity to access the Virtual Reality and Augmented Reality System in the Computing Outreach Lab as well as the Big Data and Cloud Computing Platform to perform their research studies.
Flexible mode of study and choices of specialty

The scheme has four programmes that offer both full-time and part-time mode of study. In addition, different study patterns including the combination of a dissertation, a project and subjects of equivalent credits are available for students to pursue according to their schedule and preference. Also, students can apply for changing their specialty and ultimate award upon fulfilling the Department’s requirement.

MSc in E-Commerce
This programme aims to educate a new generation of knowledge and technical personnel as well as top managers and business executives in E-Commerce both in the technology and management aspects. In the technology aspect, it offers students the opportunity to examine various issues of conducting business as related to networked and online commerce, with a focus on the enabling technologies and techniques. In the management aspect, it allows students to understand the opportunities offered by E-Commerce and the issues involved in employing and managing E-Commerce systems.

MSc in Information Systems
This programme aims to produce management and business professionals with the knowledge, skills and confidence in the application of information systems within an organization, and to enable them to identify appropriate IT driven opportunities and incorporate these into the strategic thinking process so that they can develop a framework appropriate to the organizational culture which facilitates the alignment and interplay of organizational strategies.

MSc in Software Technology
This programme aims to provide students with Computer Science or Information Technology academic background to pursue in-depth studies in software technologies. It emphasizes in the application of software technologies to solve business/industrial problems and the technical know-how of software engineering and management. Students will have the opportunities to specialize in major areas in software technology and develop the ability to assimilate and to apply the acquired knowledge.

MSc in Information Technology
This programme serves as a bridging graduate programme for professionals from Science and Engineering background that may not be necessarily from the Computing. It is designed and structured to incrementally help students to build a strong foundation in core concepts underpinning IT. The knowledge acquired is further reinforced by allowing students to put into practise the concepts learned in class through solving IT problems in the form of projects.

Diversified future prospects
The scheme offers a comprehensive curriculum with cutting-edge advance subjects to cater for the demand of students of various backgrounds with different academic and career developmental needs. With such an environment of broad student mix, students benefit not only from learning the core theories, applied technologies, and industry best practices, but also from doing projects, and potential interactions with an MSc population of hundreds of students coming from diverse backgrounds and industries. The career opportunities for our students who complete the programme are multi-folded. Fundamentally, our graduates are equipped with comprehensive and professional IT knowledge, as well as practical skills such as critical thinking, effective communication, problem-solving and lifelong learning skills which are beneficial to career development in many sectors.
PROGRAMME STRUCTURE

Students can select from a wide range of subjects offered under the Postgraduate Scheme in Computing. In general, each subject takes place once a week in the evening over a 13-week semester. Full-time students normally take 4 subjects in a semester and complete the study in 1.5 years, whereas part-time students usually take 2 subjects in a semester and complete the study in 2.5 years.

The programme requires the completion of 30 credits.

- Regular subject – 3 credits each
- Dissertation – 9 credits
- Project – 6 credits
- Independent Study – 3 credits

* Non-local students subject to visa requirements are required to take a full-time study load (i.e. at least 9 credits for each semester).

While every specialty programme has its own group of core subjects, a wide range of elective subjects is offered. Students are allowed to choose from a common pool of electives within the Department of Computing as well as from other departments, subject to vacancies available.

To fulfil the graduation requirement, students can choose from the following study patterns:

**MSc in E-Commerce and MSc in Software Technology**
(A) Complete 7 subjects (at least 5 must be core with 3 from core-1 and 2 from core-2) + a dissertation
(B) Complete 8 subjects (at least 6 must be core with 4 from core-1 and 2 from core-2) + a project
(C) Complete 10 subjects (at least 6 must be core with 4 from core-1 and 2 from core-2)

**MSc in Information Systems**
(A) Complete 7 subjects (at least 5 must be core subjects) + a dissertation
(B) Complete 8 subjects (at least 6 must be core subjects) + a project
(C) Complete 10 subjects (at least 6 core subjects)

**MSc in Information Technology**
(A) Complete 7 subjects (at least 3 core subjects and 2 fundamental subjects) + a dissertation
(B) Complete 8 subjects (at least 4 core subjects and 2 fundamental subjects) + a project
(C) Complete 10 subjects (at least 4 core subjects and 2 fundamental subjects)


Credit transfer

Students can transfer up to 15 credits of subjects at postgraduate level in general to our MSc Programmes. The consideration for credit transfer is subject to the maximum validity period of 8 years and the grade performance at B or above. Students should submit application of credit transfer within the first term after admission and it is subject to approval by the Scheme Leader.
## OUR STRONG TEAM

<table>
<thead>
<tr>
<th>Faculty Members</th>
<th>Research Interests</th>
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<tbody>
<tr>
<td><strong>Dr AU Man Ho Allen</strong>&lt;br&gt;MPH(CUHK); PhD(Wollongong); MIEEE</td>
<td>Information Security and Privacy, Applied Cryptography, Accountable Anonymity, Cloud Computing</td>
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<tr>
<td><strong>Prof. BACIU George</strong>&lt;br&gt;PhD(Waterloo); MACM; MIEEE</td>
<td>Computer Graphics, Virtual Reality, Data Visualization, Collision Detection, Motion Synthesis and Dynamics of Large-Scale Deformable Surfaces, Virtual Clothing, Geometric Modeling, Texture Analysis and Image Processing</td>
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<tr>
<td><strong>Prof. CAO Jiannong</strong>&lt;br&gt;PhD(Washington State); FIEEE; MACM; SMCCF</td>
<td>Parallel and Distributed Computing, Wireless Networks and Mobile Computing, Big Data and Cloud Computing, Pervasive Computing</td>
</tr>
<tr>
<td><strong>Dr CAO Yixin</strong>&lt;br&gt;PhD(TAMU); MACM; MSAM</td>
<td>Algorithmic Graph Theory, Combinatorial Optimization, Social Networks, Bioinformatics</td>
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<tr>
<td><strong>Dr CHAN Chun Chun Bun</strong>&lt;br&gt;PhD(British Columbia); MIEEE</td>
<td>Networking and Communications, Cloud Computing, Internet Technologies, Electronic Commerce</td>
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<tr>
<td><strong>Prof. CHAN Chun Chung Keith</strong>&lt;br&gt;PhD(Waterloo)</td>
<td>Machine Learning, Artificial Intelligence, Data Analytics, Bioinformatics and Computational Biology, Evolutionary Computation, Fuzzy Systems, Software Engineering</td>
</tr>
<tr>
<td><strong>Dr CHANG Kow Chuen Rocky</strong>&lt;br&gt;PhD(Rensselaer); MIEEE; MACM</td>
<td>Network Measurement Systems and Analytics, Cyber Security and Privacy, User QoE Measurement, Network Operations and Management</td>
</tr>
<tr>
<td><strong>Dr CHUNG Fu Lai Korris</strong>&lt;br&gt;MPhil(CUHK); MIEEE</td>
<td>Data Mining, Machine Learning, Big Data Analytics, Computational Intelligence, Pattern Recognition, Multimedia</td>
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<tr>
<td><strong>Dr GUAN Nan</strong>&lt;br&gt;PhD(Uppsala); MIEEE</td>
<td>Real-Time Embedded Systems, Cyber-Physical Systems</td>
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<tr>
<td><strong>Prof. GUO Song</strong>&lt;br&gt;PhD(Ohio State); MIEEE; MACM</td>
<td>Cloud Computing and Big Data, Green Communications and Networking, Crowd Intelligence and Social Network, Modeling, Optimization and Evaluation for Distributed Systems, Security and Privacy</td>
</tr>
<tr>
<td><strong>Dr LEONG Hong-yi</strong>&lt;br&gt;MPhil(CUHK); PhD(University of California); MACM; MIEEE</td>
<td>Parallel and Distributed Computing, Distributed Databases, Mobile Computing, Internet Computing</td>
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<tr>
<td><strong>Dr LI Shuai</strong>&lt;br&gt;PhD(Stevens)</td>
<td>Robotics, Dynamic Systems and Control, Recurrent Neural Networks, Distributed Control and Optimization</td>
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<tr>
<td><strong>Dr LI Wenjie Maggie</strong>&lt;br&gt;MPhil(CUHK); MACM; MIEEE</td>
<td>Natural Language Processing, Social Media Mining, Text Mining, Information Retrieval, Extraction and Summarization</td>
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<tr>
<td><strong>Dr LIU Yan Fiona</strong>&lt;br&gt;PhD(Columbia)</td>
<td>Deep Learning, Manifold Learning, Distance Learning, Feature Extraction, Classification, Regression, Image Annotation, Video Summarization, Incomplete Data Analysis, Emotion Modeling, Brain Wave Data Analysis, Music Therapy</td>
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<tr>
<td><strong>Dr LOU Xiapo Daniel</strong>&lt;br&gt;PhD(University of California); FIEEE; MACM; MIEEE</td>
<td>Natural Language Process and Computational Linguistics, Lexical Semantics, Information Extraction and Knowledge Discovery, Open Systems and Standardization</td>
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<tr>
<td><strong>Dr NG To Yee Vincent</strong>&lt;br&gt;PhD(Simon Fraser)</td>
<td>Information Retrieval, Pattern Recognition, Natural Language Processing, Data Structures and Algorithms</td>
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<tr>
<td><strong>Dr NGAI Grace</strong>&lt;br&gt;PhD(Johns Hopkins)</td>
<td>Network and System Security, Information Privacy, Internet Measurement, Cloud Computing</td>
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<tr>
<td><strong>Dr PATNAIK Ajay Kumar</strong>&lt;br&gt;PhD(HKU); MIEEE; FIAPR</td>
<td>Databases, Data Mining and XML, Medical Informatics</td>
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<tr>
<td><strong>Dr PEI Yu Max</strong>&lt;br&gt;PhD(Nanjing); PhD(ETH Zurich)</td>
<td>Human Computer Interaction, Human Centered Computing, Pervasive Computing, Natural Language Processing</td>
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<tr>
<td><strong>Dr SHAO Zili</strong>&lt;br&gt;PhD(Texas at Dallas)</td>
<td>Biometrics, Computer Vision-Based Industrial Inspection</td>
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<tr>
<td><strong>Dr SHIU Chi Keung Simon</strong>&lt;br&gt;PhD(Chinese University of Hong Kong); ABCS; MIEEE; MHKCS; MIEEE</td>
<td>Automated Program Repair, Automated Software Testing, Mining Software Repositories</td>
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<tr>
<td><strong>Dr WANG Dan</strong>&lt;br&gt;PhD(Simon Fraser)</td>
<td>Embedded Systems, Real-time Systems</td>
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<tr>
<td><strong>Dr WANG Qixin</strong>&lt;br&gt;PhD(UUJC)</td>
<td>Artificial Intelligence, Coloured Petri Nets, Computer Games, Machine Learning, Pattern Recognition, Services Science and Management</td>
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<tr>
<td><strong>Dr WANG Qixin</strong>&lt;br&gt;PhD(UUJC)</td>
<td>Internet Architecture and Protocols, Computer Networking, Smart City, Big Data</td>
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<tr>
<td><strong>Dr WU Xiaoming</strong>&lt;br&gt;MPH(CUHK); PhD(Columbia)</td>
<td>Real-time/Embedded Systems, Cyber-physical Systems</td>
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<tr>
<td><strong>Dr XIAO Bin</strong>&lt;br&gt;PhD(UT Dallas)</td>
<td>Machine learning, pattern recognition, data mining</td>
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<tr>
<td><strong>Dr YANG Lei</strong>&lt;br&gt;PhD(University of Arizona)</td>
<td>Mobile Cloud Computing, Smartphone Technology, Data Management, Network Security, RFID Systems, Wireless Networks</td>
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<tr>
<td><strong>Dr YU Man Lung Ken</strong>&lt;br&gt;PhD(KU)</td>
<td>RFID system, Pervasive and Wireless Computing, Internet of Things, Smart Home</td>
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<tr>
<td><strong>Prof. YOU Jia Jane</strong>&lt;br&gt;PhD(Taiwan); MIEEE</td>
<td>Data Engineering, Query Processing, Spatial Database Systems</td>
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<tr>
<td><strong>Prof. ZHANG Dapeng David</strong>&lt;br&gt;PhD(University of Illinois); PhD(Waterloo); FIEEE; FIAPR</td>
<td>Image Processing, Pattern Recognition, Computer-aided Diagnosis and Monitoring</td>
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<tr>
<td><strong>Prof. ZHANG Lei</strong>&lt;br&gt;PhD(Northern Polytechnical)</td>
<td>Biometrics, Pattern Recognition, Image Processing, Information Security, Neural Networks</td>
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<tr>
<td><strong>Prof. ZHANG Lei</strong>&lt;br&gt;PhD(Northern Polytechnical)</td>
<td>Image and Video Processing, Computer Vision, Pattern Recognition, Biometrics</td>
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<tr>
<td><strong>Dr ZHAO Miao</strong>&lt;br&gt;PhD(SUNY)</td>
<td>Big Data Analytics, Artificial Intelligence, Recommender Systems, Social Networks, Multimedia Analytics and Networking, IoT, Wireless Communication and Networking</td>
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<tr>
<td><strong>Dr ZHENG Yuanqing</strong>&lt;br&gt;PhD(MTU); MIEEE; MACM</td>
<td>Human Centered Computing, Mobile and Network Computing, Wireless Networks, RFID Systems</td>
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"COMP’s MSc programmes are attractive to a lot of practitioners because of the wide spectrum of courses offered covering fundamental theories, core technologies, applied technologies, and industry best practices. Not only can students pick up the basics that they lack but also gain exposure to forthcoming technologies that they may face in their work places in the near future. The programme also provide a forum for practitioners to discuss and exchange ideas on IT applications and experiences – an invaluable knowledge pool that is not easy to come by!"

Dr Daniel Chan, Client Solutions Manager, Consulting Services, APJC, Cisco Systems

"I have pursued my master degree in the Department of Computing and the study time was one of the most unforgettable experiences in my life. It gave me the change to acquire in-depth understanding of IT-related subjects such as data mining and software engineering, and enlightened me with a global vision in IT development."

Mr Jianguang Xia, Director, Public Customers Department, China Telecom

"The time of pursuing the master degree in the Department of Computing would be the best time of my whole student life. I am so fortunate to have this precious and unforgettable time period here. I have the chance to dive into the latest computer science theory and technologies and choose the research direction that I have the most interest in, with the help of professors and tutors. Besides, I also enjoy the cooperation with my course mates to launch some exciting projects with the knowledge acquired from the course, which helps me do better in the real working environment."

Mr Steven Zhao, Block Chain Development, ANX International

"The dissertation strengthened my knowledge and problem solving skill. I developed a machine learning application prototype based on other scholars’ state-of-the-art researches and technologies. My mentor guided me to design and develop the system, it was a really inspiring learning experience. Currently, I setup my own IT company to develop solutions for E-Commerce by what I have learnt in this master programme."

Mr Andy Lam, Founder, Swang Technology
GRADUATE PROFILE

The scheme has four awards to suit students with different background and objectives. Our students’ bachelor degrees are not only in Computer Science but also from many other disciplines such as Business, Social Science, and Engineering.

Supported by learning different technological advancements, our graduates have good development in various sectors including Information Technology, Finance and Banking, Telecommunication, Healthcare, Civil Services, Education, etc.

Our MSc graduates are employed by:

- Accenture Ltd
- AIA International Ltd
- Airports Authority Hong Kong
- Bank of China (Hong Kong) Ltd
- Bank of Communications Co Ltd
- China Telecom Global Ltd
- HKSAR Government, Department of Health
- HKSAR Government, Electrical and Mechanical Services Department
- Hongkong International Theme Parks Ltd
- Hospital Authority
- Huawei Technologies Co Ltd
- IBM China/Hong Kong Ltd
- ICBC (Asia) Ltd
- Kodak (China) Ltd
- Link Asset Management Ltd
- NEC Hong Kong Ltd
- NTT Com Asia Ltd
- Octopus Cards Ltd
- PCCW-HKT DataCom Services Ltd
- Ping An of China Securities (Hong Kong) Co Ltd
- Securities & Futures Commission
- SmarTone Telecommunications Ltd
- Swiss Reinsurance
- Tectura Hong Kong Ltd
- The Bank of Tokyo-Mitsubishi UFJ Ltd
- Yonyou (Hong Kong) Co Ltd

and more...
ADMISSION
REQUIREMENTS

MSc in E-Commerce
Hold a honours degree of various disciplines

MSc in Software Technology
Hold a honours degree of Computer Science or Software Engineering disciplines

MSc in Information Systems
Hold a honours degree of Arts or Business disciplines

MSc in Information Technology
Hold a honours degree of Engineering or Science disciplines

If you are not a native speaker of English, and your Bachelor’s degree or equivalent qualification is awarded by institutions where the medium of instruction is not English, you are expected to fulfil the following minimum English language requirement for admission purpose:

A Test of English as a Foreign Language (TOEFL) score of 80 for the Internet-based test or 550 for the paper-based test;
OR
An overall Band Score of at least 6 in the International English Language Testing System (IELTS).

More information can be found at www.polyu.edu.hk/study.

Application procedures
To apply for the Postgraduate Scheme in Computing, applicants can submit their application via an online admission system at www.polyu.edu.hk/admission. Concurrent application of different programmes in the Scheme is possible.

1st round deadline: 1 February 2017
2nd round deadline: 2 March 2017
Final round deadline: 30 April 2017

Tuition fee and financial assistance
Local students: HK$3,300 per credit
Non-local students: HK$4,000 per credit

Some subjects are included in the reimbursable course list of the Continuing Education Fund (CEF). Eligible applicants will be reimbursed 80% of their fees, subject to a maximum sum of HK$10,000 (whichever is the less), on successful completion of a reimbursable course. For detail information, please visit www.wfsfaa.gov.hk/cef/en/index.htm.

Scholarship

Alan Turing Entrance Scholarship for Postgraduate Computing Students
This scholarship is offered to all first-year MSc Students (excluding visiting/subject-based students) with high standing in their undergraduate study. The awardee will receive the scholarship in four equal installments at the end of each semester. If the awardee is no longer registered in the programme, he or she will no longer be eligible for the subsequent installments.

COMP Alumni Scholarship for Postgraduate Computing Students
The scholarship is offered to PolyU alumni and will be 15% of the tuition fee of the subjects taken in the first year of study (including summer term). To qualify, the awardee will be required to maintain a cumulative GPA of 3.0 or above. Applicants are required to pay the full tuition fee to register for the first-year courses. Successful applicants will be reimbursed an amount equivalent to the scholarship at the end of the first year.