

REGULATIONS FOR THE DEGREE OF MASTER OF SCIENCE IN ELECTRONIC COMMERCE AND INTERNET COMPUTING (MSc[ECom&IComp])

(See also General Regulations)

Any publication based on work approved for a higher degree should contain a reference to the effect that the work was submitted to the University of Hong Kong for the award of the degree.

The degree of Master of Science (MSc) in Electronic Commerce and Internet Computing is a postgraduate degree awarded for the satisfactory completion of a course of study in the Faculty of Engineering and the Faculty of Business and Economics. The major part of the curriculum must be formed from modules in either the Electronic Commerce stream or the Internet Computing stream. The program nominally takes two years part-time study to complete. In exceptional circumstances, a full-time candidate may be able to complete the study in one year.

EC1 Admission requirements

To be eligible for admission to the courses leading to the degree of Master of Science in Electronic Commerce and Internet Computing, a candidate shall

- (a) comply with the General Regulations;
- (b) hold (1) a Bachelor's degree of a recognized University in a relevant subject; or
(2) another relevant qualification of equivalent standard from this University or from another university or comparable institution accepted for this purpose; and
- (c) satisfy the examiners in a qualifying examination if required.

EC2 Qualifying examination

- (a) A qualifying examination may be set to test the candidate's formal academic ability or his ability to follow the courses of study prescribed. It shall consist of one or more written papers or their equivalent and may include a project report.
- (b) A candidate who is required to satisfy the examiners in a qualifying examination shall not be permitted to register until he has satisfied the examiners in the examination.

EC3 Award of degree

- (a) To be eligible for the award of the degree of Master of Science in Electronic Commerce and Internet Computing, a candidate shall
 - (i) comply with the General Regulations; and
 - (ii) complete the curriculum and satisfy the examiners in accordance with the regulations set out below.
- (b) A candidate who has completed 8 modules but has not satisfied the examiners for the award of the degree of Master of Science in Electronic Commerce and Internet Computing may be awarded a Postgraduate Diploma in Science (Electronic Commerce and Internet Computing) [PDipSc(ECom&IComp)] subject to approval of the Faculty Board.

EC4 Length of curriculum

For the part-time mode of study, the curriculum shall normally extend over not less than two and not more than three academic years of study. For the full-time mode, the curriculum shall extend over not less than one and not more than two academic years of study. In both cases, a minimum of 300 hours of prescribed work are required.

EC5 Completion of curriculum

- (a) To complete the curriculum a candidate shall, within the prescribed maximum period of study stipulated in Regulation EC4 above:
 - (i) follow courses of instruction and complete satisfactorily all prescribed practical / laboratory work; and
 - (ii) shall either satisfy the examiners in either
 - (1) twelve modules at the prescribed written examinations; or
 - (2) eight modules and a project report or dissertation on a subject within the approved field of study.

The examiners may also prescribe an oral examination.
 - (b) A candidate who fails to fulfill the requirements within the specified (i) three years for the part-time mode of study (ii) two years for the full-time mode shall be recommended for discontinuation under the provisions of General Regulation G12, except that a candidate, who is unable because of illness or circumstances beyond his control to complete the requirements within the prescribed maximum period of study, may apply for permission to extend his period of studies. Any such application shall be made within two weeks of the first day of the examination paper in question.
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EC6 Course selection

- (a) Selection of study patterns shall be made in consultation with and be subject to the approval of the Program Director.
 - (b) A candidate who is permitted to select the study pattern under section (a)(ii)(1) of Regulation EC5 shall select 12 modules which include a minimum of eight modules from the syllabuses of the candidate's approved stream of study.
 - (c) A candidate who is permitted to select the study pattern under section (a)(ii)(2) of Regulation EC5 shall select eight modules which include a minimum of five modules from the syllabuses of the candidate's approved stream of study. Full-time mode candidates must select this study pattern.
 - (d) Subject to the approval of the Faculty Higher Degrees Committee on the recommendation of the Program Director, a candidate may in exceptional circumstances be permitted to select an additional module.
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EC7 Project report or dissertation

- (a) For part-time mode of study, a candidate shall submit the title of his project report or dissertation by a date specified by the Board of Examiners. A candidate may submit his completed project report or dissertation after the successful completion of four modules but shall not submit it later than the end of April of the third academic year of his studies unless special permission is granted for this period to be extended.
- (b) For the full-time mode of study, a candidate shall submit the title of his project or dissertation by a date specified by the Board of Examiners. A candidate must submit the completed project report or dissertation not later than the end of April of the second academic year of his studies unless special permission is granted for this period to be extended.
- (c) All candidates enrolled in any mode of study shall submit a statement that the project report or dissertation represents his own work (or in the case of conjoint work, a statement countersigned by his co-worker, which shows his share of the work) undertaken after the registration as a candidate for the degree.

EC8 Examinations

- (a) The written examination for each module shall be held after the completion of the prescribed course of study for that module, and not later than the January, May or August immediately following the completion of the course of study for that module.
- (b) A candidate who has failed to satisfy the examiners in a module or modules may be permitted to present himself either for re-examination in the module or modules of failure or for examination in the same number of new modules when the examination is next held. To proceed to the following year of the curriculum, a candidate must satisfy the examiners in a minimum of two modules of study in each academic year. A candidate who passes in less than two modules of study in an academic year may be recommended for discontinuation of studies under the provisions of General Regulation G12.
- (c) A candidate who has presented an unsatisfactory project report or dissertation may be required to submit a revised project report or dissertation on the same subject within a specified period.
- (d) A candidate who has presented an unsatisfactory project report or dissertation for a second time shall be recommended for discontinuation of studies under the provisions of General Regulation G12.
- (e) A candidate who has failed to submit a satisfactory project report or dissertation within the prescribed maximum period of study, including any extension, shall be recommended for discontinuation of studies under the provisions of General Regulation G12.

EC9 Examination results

At the conclusion of the examination, and after presentation of the project reports or dissertations, a pass list shall be published. A candidate who has shown exceptional merit at the whole examination may be awarded a mark of distinction, and this mark shall be recorded on the candidate's degree diploma.

MASTER OF SCIENCE IN ELECTRONIC COMMERCE AND INTERNET COMPUTING (Electronic Commerce Stream)

PROGRAMME STRUCTURE

The *ECom* stream aims at offering participants with a business background a good understanding of the revolution and the convergence of new technologies on global business, and, as current or future managers, a good grasp of the impact and the exciting opportunities for electronic commerce.

Modules for the Electronic Commerce (*ECom*) stream

Candidates must either (a) select 8 modules (of one module each) and a project; or (b) 12 modules. All selection will be subject to approval by Programme Director.

For (a) they can either select all 8 modules from the *ECom* list below; or they can select some, and add not more than 3 modules from the *IComp* list.

(b) If they select 12 modules without the Project, then 8 must be from the list below, the remaining 4 may be from the *IComp* list.

It is the goal of the programme to have a comprehensive and dynamic curriculum in order to meet the challenges and opportunities of the fast developing Internet world. Therefore the modules, both in terms of range and syllabus, are updated and revised continuously and are subject to the approval of the University's Senate.

ECom Modules Available:

- Core Modules: E-commerce and the network economy
 E-commerce technology
 E-marketing
 Internet and the WWW
- Electives: Legal aspects of I.T. and e-commerce
 Business transformation and process re-engineering
 Supply chain management
 Strategic management of technology and innovation
 Digital asset management
 Electronic payment systems*
 Human computer interaction*
 Convergence and the development of digital content—strategic issues
 Smart card technology and applications*

**cross-listed in both IComp and ECom curriculum*

SYLLABUSES**ECOM6001. Internet and the WWW (core)**

This module covers the fundamentals of the essential components and technologies that are part of today's Internet, and the basic concepts that underlie the operation and the proliferation of the World Wide Web. Internet topics include TCP/IP, DNS, network infrastructures, and emerging technologies. World Wide Web topics include Web architecture, client/server operations, HTML and other ML's, and Web security.

ECOM6004. Legal aspects of I.T. and e-commerce (elective)

This module provides an introduction to some of the main legal problems generated by recent developments in information technology and e-commerce, and their possible solutions. Topics to be covered include copyright, patent protection for software and business methods, domain name disputes and other intellectual property issues on the Internet, contractual issues of on-line trading, public key infrastructure and electronic transactions, privacy and data protection, and computer crimes. If time permits, the situation in the People's Republic of China will also be covered.

ECOM6006. Business transformation and process re-engineering (elective)

This module aims to provide a broad perspective about the key issues facing the effective planning, implementation, and management of information technologies for the transformation of business and operation to create value and competitive advantages. Special focus will be on the analysis of how electronic commerce can play an important role in process reengineering and business transformation.

ECOM6008. Supply chain management (elective)

The objectives of this course are to provide participants with: (a) an understanding of the impact of supply chain management and related issues on the success and profitability of the modern organization;

(b) the major challenges faced in implementing an integrated supply chain management strategy, as well as approaches for meeting these challenges; (c) the analytical and problem-solving skills necessary to develop solutions for a variety of logistics and supply chain problems; (d) the basic understanding about the application and the development of logistics and supply chain technology in Hong Kong industries.

ECOM6010. Strategic management of technology and innovation (elective)

This course is designed to provide students with a broad perspective about the key issues facing the effective management of technology in today's fast-changing, competitive, global environment. Drawing upon research over the last several decades, we will try to separate some of the facts from myths about what we do and do not know about the effective management of technology and innovation. We will also explore how fast changing information technologies such as the Internet might be transforming some of the social/economic dynamics of product/service developments and innovations. The course aims to help students develop an understanding about the nature of technological work and the knowledge system in technology. From this basic understanding we will examine the role of technology in business strategy, and gain insight about the key factors affecting product development success or failure through various case discussions and review of empirical research findings.

ECOM6012. E-commerce and the network economy (core)

The objective of this module is to provide insight in how e-commerce plays a pivotal role in the emergence of the new network economy through business cases. It covers cases in the new business paradigm, the Internet market space, e-commerce in Hong Kong and China, e-payment and security solutions, supply chain management, customer relationship management, intra-organizational e-commerce, B-to-B and B-to-C e-commerce, establishing trust and managing regulatory harmonization.

ECOM6013. E-commerce technology (core)

This module provides an overview of the technologies used in electronic commerce. These include (but not limited to) networking, object-oriented technology, computer and network security, databases, multimedia computing, search engine, data mining, intelligent agents.

ECOM6014. E-marketing (core)

With the rise of the Internet and other new media, it has transformed the landscape of marketing. Recent surveys confirm that many people are now spending more time in front of a web browser than the television and this observation is spreading across different age groups. Marketing and advertising on the Internet and through other digital media is still more an art than a science although increasingly we know some solutions don't work well (e.g., spamming). Questions such as what is an effective way to advertise on the Web, how to lock in customers, how to build brand loyalty and what is the right mix of cross-media marketing are still not fully understood.

ECOM6015. Digital asset management (elective)

This module covers a range of technologies dealing with the decomposing, tagging, classifying, archiving, retrieving, filtering, structuring, and distributing of digital assets utilizing integrated digital asset management systems. The construction, use, reuse, retargeting, manipulation and transformation of alternative logical collections of digital assets and repositories are presented, as are tools to analyze assets in various types of repositories. In particular intellectual property, digital rights management and case studies are stressed.

ECOM6016. Electronic payment systems* (elective)

This module deals with technology and computer systems for managing and handling payments across electronic networks. It covers topics on payment gateways, clearance, credit card transactions, digital cash, micro-payments, authenticity, integrity, intermediaries and risk management.

ECOM6017. Human computer interaction* (elective)

This course is concerned with the design of the interaction between people and computers with particular emphasis on World Wide Web interaction. It is intended to give a comprehensive overview of the key issues of human-computer interaction (HCI) design, how the discipline evolved prior to the introduction of the Web, how HCI research is applicable to Web design, and key issues expected in the future. Students will come away from the course with the ability to identify issues and tradeoffs in interaction design, and to invent and evaluate alternative solutions to design problems. These abilities will be directly applicable to the design of Web sites that require a high level of user interactivity such as e-commerce sites.

ECOM6019. Convergence and the Development of digital content – strategic issues (elective)

In a world of multiple digital channels where one of the few common denominators is IP-based communication, technological and market convergence is making itself felt by those working with digital content, whether they be Web portals, broadband and digital television operators or mobile telephony companies.

In the past, when a new distribution channel emerged, the response was to develop a dedicated production and distribution infrastructure for that channel. The traditional response is no longer adequate. Delivering new media and services to a plethora of information and communication devices requires new ways of creating, manipulating, delivering and presenting content.

Based on examples of best practice around the world, this module addresses selected issues facing the digital content industry with the objective of providing IT professionals with a methodological grounding to better understand those working on the development and marketing of new digital services.

ICOM6005. Smart card technology and applications* (elective)

This module provides an introduction to smart card technology and how to use the technology for applications. An overview of different types of smart card will be followed by a discussion of smart card applications in e-commerce, healthcare, transportation, and national identification. The module provides the detailed information on card architecture, standards, and development tools. The system level information, card programming, and Java card technology are also covered. Security, privacy, card management and application design are discussed. In addition, case studies on smart cards are also provided, particularly with a couple of examples from Hong Kong. Finally, future trends in smart card research, development, and deployment are discussed.

ECOM6009. Project (4 modules)

*cross-listed in the both ECom and IComp curriculum

MASTER OF SCIENCE IN ELECTRONIC COMMERCE AND INTERNET COMPUTING (INTERNET COMPUTING STREAM)

PROGRAMME STRUCTURE

The IComp program offers participants with a technical background an opportunity to acquire expert skills and knowledge of the most important Internet technologies to enhance their professional development in order that they will play a vital role in the Internet world.

Modules for the Internet Computing (IComp) stream

Candidates must either (a) select 8 modules (of one module each) and a project; or (b) 12 modules. All selection will be subject to approval by Programme Director.

For (a) they can either select all 8 modules from the *IComp* list below; or they can select some, and add not more than 3 modules from the *ECom* list.

(b) If they select 12 modules without the Project, then 8 must be from the list below, the remaining 4 may be from the *ECom* list.

It is the goal of the programme to have a comprehensive and dynamic curriculum in order to meet the challenges and opportunities of the fast developing Internet world. Therefore the modules, both in terms of range and syllabus, are updated and revised continuously and are subject to the approval of the University's Senate.

IComp Modules Available:

Cores:	Internet infrastructure technologies Internet security and applied cryptography Internet systems programming Website design, development and management
Electives:	Smart card technology and applications* Multimedia computing Advances in wireless communications Internet metadata Data warehousing, decision support and data mining Java security Qos in IP networks Wireless networking Electronic payment systems* Human computer interaction*

**cross-listed in both IComp and ECom curriculum*

SYLLABUSES

ICOM6005. Smart card technology and applications* (elective)

This module provides an introduction to smart card technology and how to use the technology for applications. An overview of different types of smart card will be followed by a discussion of smart card applications in e-commerce, healthcare, transportation, and national identification. The module provides the detailed information on card architecture, standards, and development tools. The system

level information, card programming, and Java card technology are also covered. Security, privacy, card management and application design are discussed. In addition, case studies on smart cards are also provided, particularly with a couple of examples from Hong Kong. Finally, future trends in smart card research, development, and deployment are discussed.

ICOM6006. Internet security and applied cryptography (core)

This module provides a foundation on the technical issues concerning Internet security and applied cryptography. It covers areas such as: protecting information using symmetric and public key cryptography; key management; trust models and public key infrastructure; system security; mobile code security; authentication and handshake protocols; digital cash and payment mechanisms.

ICOM6012. Internet infrastructure technologies (core)

This module provides a quantitative, technical coverage on the components which form the infrastructure of the Internet. Topics include: IP addressing and routing architectures; standard transport and application protocols; common LAN and multi-access control schemes; operating principles and internals of network entities; web-caching and load-balancing for webserver farms; Access and Backbone network technologies. We will discuss not only how the Internet works but also its design rationale and engineering tradeoffs.

ICOM6013. Internet systems programming (core)

This module helps the participants to develop solid background on systems and network programming in the Internet environment. It focuses on how to develop distributed applications based on services supported by the operating systems and networks. Topics include: conventional distributed programming such as sockets and RPC; modern distributed programming models such as CORBA and DCOM; network directory services and database interfacing; Web programming and scripting.

ICOM6014. Website design, development and management (core)

This course provides comprehensive webmaster training for the participants to develop a balanced mix of skills -- conceptual problem solving, technical systems development, application design, communications and organizational interface, project management and implementation issues related to the web. The module covers web content design, development, web programming and scripting, organizational and management strategy, website maintenance support, legal and privacy issues.

ICOM6018. Multimedia computing (elective)

This module introduces various technologies and their applications to multimedia computing. Topics include: medium types; color basics; coding and data compression techniques; audio and video technologies; high-performance storage systems such as RAID; optical storage media such as CD, CD-R, DVD; copyright protection issues and techniques; digital watermarking; multimedia databases and information retrieval; multimedia authoring tools and industrial standards such as JPEG, MPEG, RealMedia, ML, SVG.

ICOM6020. Advances in wireless communications (elective)

This is a new course for ICOM students. As you may be aware, wireless communication is definitely a very hot topic in the coming few years and there are many different magic words today in the context of wireless communication. (e.g. GSM, GRPS, EDGE, W-CDMA, UMTS, bluetooth, WAP, circuit

switched data, packet switched data, bearer services, ..etc). The course is targeted to give students a comprehensive overview of various technologies with appropriate depth. The concepts are explained in mostly qualitative manner without mathematical equations. The target audience will be the IT professionals with background in networking and protocols (strong background in communication engineering and mathematics are not required).

ICOM6021. Internet metadata (elective)

This module aims to cover specific Internet technologies dealing with the description of digital resources with Metadata. Metadata is an effective mechanism for the management of resources by enabling operations such as resource discovery, identification, declaration, usage control, workflow, and trading of content.

ICOM6022. Data warehousing, decision support and data mining (elective)

In this module, we examine the problems, principles, techniques, and mechanisms to support advanced information management and analysis using data warehousing techniques. In particular, we explore the current state-of-the-art in both data warehousing and decision support including data mining by studying the relevant literature and surveying selected products from industry.

ICOM6023. Java security (elective)

Java is designed so that programs can be dynamically loaded over the network and run locally. It is unlikely that Java user, such as Java-enabled browsers, will consider the security implications before running the Java programs. If the mobile code paradigm is going to work, security concerns should be addressed. As a result, Java was developed with key security issues in mind. The “Java Security Module” will provide an in-depth discussion on Java security technologies.

ICOM6024. QoS in IP networks (elective)

Today’s Internet is best-effort. It guarantees neither transmission timeliness nor preservation of temporal ordering. With increased Internet traffic, multimedia applications have become more vulnerable to costly delivery delays and packet losses. Quality of Service (QoS) is a standards effort to provide consistent levels of service despite these delivery problems. This module will examine recent advances aimed at developing a next-generation network architecture that provides explicit support for the service requirements of networked multimedia applications. It helps the participants to develop a framework for evaluating each new QoS technology that promises to create a better Internet.

ICOM6025. Wireless networking (elective)

This course presents the state of art in wireless and mobile networking with a special emphasis on packet-oriented solutions. Wherever possible and appropriate, a contrast is made between these solutions and other solutions, such as cellular systems and ATM based systems (GSM, PCS, UMTS, HiperLAM/2, etc.)

ICOM6011. Project (4 modules)

ECOM6016. Electronic payment systems* (elective)

This module deals with technology and computer systems for managing and handling payments across electronic networks. It covers topics on payment gateways, clearance, credit card transactions, digital cash, micro-payments, authenticity, integrity, intermediaries and risk management.

ECOM6017. Human computer interaction* (elective)

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