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. The major part of the curriculum must be formed from modules in either the Electronic Commerce stream or the Internet Computing stream. The programme 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 eight 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) 12 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.

EC6 Course selection

(a) Selection of study patterns shall be made in consultation with and be subject to the approval of the Programme 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 MSc(ECom&IComp) Programme Director and the Head or Course Co-ordinator of the departments concerned, a student may in exceptional circumstances be permitted to select at most two modules from the syllabuses for the degree of MSc(Eng) and/or that for the degree of MSc(CS)

(e) Subject to the approval of the Faculty Higher Degrees Committee on the recommendation of the Programme Director, a candidate may in exceptional circumstances be permitted to select an additional module.

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 August 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 August 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 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 or merit at the whole examination may be awarded a mark of distinction or credit, as appropriate, 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 and a project; or (b) 12 modules. All selection will be subject to approval by the Programme Director.

For (a) they can either select all 8 modules from the *ECom* list below; or a maximum of 3 modules from the *IComp* list.

(b) If they select 12 modules without the Project, then at least 7 modules must be from the list below, the remaining 5 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. The list of modules below is therefore subject to change.

ECom Modules Available:

Core Modules (select at least 4 modules):

E-business transformation
E-commerce technologies
Internet and e-commerce security
Internet and the WWW
Legal aspects of I.T. and e-commerce

Electives:
Customer relationship management: business strategies and techniques
Digital asset management
Electronic payment systems
E-marketing
Geo-spatial information for e-business applications
Strategic management of technology and innovation
Supply chain management
Topics in electronic commerce

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, Web services and Web security.

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

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. If time permits, the situation in the People’s Republic of China will also be covered.

ECOM6008. Supply chain management (elective)

The objectives of this module 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 module 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 module 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.

ECOM6013. E-commerce technologies (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 (elective)

This module considers how to create customer centric strategies for e-businesses. Marketing focuses on the interaction between the producer and the consumer. Although this focus remains unchanged in e-marketing, our ability to foster this interaction with technology has been dramatically increased. The Internet provides new forms of communications like web sites, e-mail, and mobile communications. However, these technologies do not necessarily replace traditional marketing vehicles like mass media, direct mail, and telephone marketing, but instead augment them to improve the customer experience.

The primary focus of this module is how to more effectively implement marketing strategies using electronic technology. During this module we develop the notion of an interactive marketing strategy. This allows companies to interact with consumers on an individual basis and create customized products and services using personalized knowledge about a consumer. As part of this module we develop a compatible set of quantitative techniques to implement interactive marketing strategies. Throughout the module we explore examples and cases to understand how e-marketing is evolving in practice.

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.

ECOM6022. Topics in electronic commerce (elective)

This module covers advanced topics in areas in electronic commerce that are relevant at the time. Leaders in the field, expert practitioners and distinguished scholars in the field around the world will be invited to participate in this module.

ECOM6020. Customer relationship management: business strategies and techniques (elective)

The objectives of this module are to understand CRM concepts and business strategies; CRM technologies and systems, typical business applications for CRM; and the process to implement CRM projects. CRM development in the People's Republic of China will be covered.

ECOM6027. Internet and e-commerce security (core)

This module provides an introduction on the technical issues concerning Internet and e-commerce security. It covers areas such as: protecting information using symmetric and public key cryptography; key management; trusted model and PKI; system and database security; mobile code security; wireless security; authentication and handshake protocols.

ECOM6028. Geo-spatial information for e-business applications (elective)

In this module, students learn the value of a spatial perspective in the business world. Students will be introduced to the characteristics of geo-spatial information, how to access it over the web and to the technology (GIS) which is used to store, manipulate and analyse this information. They will also learn how spatial analysis can use this information to produce new information critical to informed business decision making. A brief introduction to visualizing spatial information and implementing GIS in business is also included. Finally, the range of possibilities for distributing GIS-enabled services over the web is explored.

ECOM6009. Project (4 modules)

ECOM6029. E-business transformation (core)

The first stage of e-commerce evolution -- the dotcom era -- is well over. As companies are cautiously entering the second stage of the "new economy" -- what can be called the e-business transformation era, they are facing a whole host of strategic, organizational, technical and increasingly global issues. Almost every company today is trying to find out how best to deploy the Internet throughout its value chain not only to improve operational efficiency but more importantly to create economic value. Such business transformation entails tight realignment of business strategy with IT strategy, setting up the necessary infrastructure, streamlining front-end and back-end business processes, managing new relationships and partnerships, and taking into consideration the emerging global issues.

This module provides a roadmap for managers planning to transform their companies into an internetworked enterprise where proprietary and shared infrastructures are used to link customers, suppliers, partners and employees to create superior economic value.

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

PROGRAMME STRUCTURE

The *IComp* programme 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 and a project; or (b) 12 modules. All selection will be subject to approval by the Programme Director.

For (a) they can either select all 8 modules from the *IComp* list below; or a maximum of 3 modules from the *ECom* list.

(b) If they select 12 modules without the Project, then at least 7 modules must be from the list below, the remaining 5 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. The list of modules below is therefore subject to change.

IComp Modules Available:

Cores (select at least 4 modules):
- Internet infrastructure technologies
- Internet systems programming
- Security programming and applied cryptography
- Website design and management
- XML and Internet Metadata

Electives:
- Advances in wireless communications
- Data warehousing, decision support and data mining
- E-crimes: prevention, detection, and legal sanctions
- Multimedia computing
- Smart card technology and applications
- Topics in Internet computing
- Wireless networking

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.

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 aims to provide students with solid background on the systems programming aspects and technologies in the construction of the Internet so that students will get the detailed “under-the-hood” view of the Internet services. We will first look at the operating systems support on network services and the traditional techniques/API of network programming, which are the foundations of many classical network services such as FTP, Email, etc. Web server implementations will also be studied in detail. We will then examine the contemporary technologies in an object-oriented framework such as Java and CORBA. Moving up the software hierarchy, the module will also cover modern usage of scripting approaches for implementing important network applications. Finally, we will also study the recently introduced Web Services programming paradigm and protocols, as well as peer-to-peer programming methods.

ICOM6014. Website design and management (core)

This module will help you look at web design and management from the perspective of a CIO, IT manager or IT architect. You will learn how to architect an enterprise web application from concept, design, testing and up to deployment.

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.

ICOM6029. Topics in Internet computing (elective)

This module covers advanced topics in areas in Internet computing that are relevant at the time. Leaders in the field, expert practitioners and distinguished scholars in the field around the world will be invited to participate in this module.

ICOM6020. Advances in wireless communications (elective)

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 module is targeted to give students a comprehensive overview of various technologies with appropriate depth covering from the most fundamental concepts of information and bandwidth, to high level wireless applications. The focus is on cellular systems and the concepts are explained in mostly qualitative manner without complex mathematical equations.

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.

ICOM6025. Wireless networking (elective)

This module presents the state of art in wireless and mobile networking with a special emphasis on packet-oriented solutions. It provides a comprehensive coverage of the IEEE 802.11 standard, and of progress made in Internet protocols to deal with mobile users. 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, HiperLAN/2, etc.).

ICOM6026. XML and Internet Metadata (core)

This module covers the XML family of technologies and Metadata standards for describing and managing digital content. XML provides leading-edge solutions for the markup and interoperability of data across Internet systems. Metadata provides mechanisms and facilities that supports resource discovery, content management, workflow, and ecommerce content across many sectors and industries. This module will develop skills to understand and apply XML technologies in the development of Metadata semantics and standards for Internet-based applications, and Web services.

ICOM6027. E-crimes: prevention, detection and legal sanctions (elective)

This module helps participants to grapple with crimes in the electronic age from both technical and legal points of view. It addresses three important aspects of the subject, namely, prevention, detection and legal sanctions. Topics covered include: trends in e-crimes; tools for committing e-crimes; technologies for detecting e-crimes; computer forensics; laws relating to e-crimes; and criminal sanctions.

ICOM6028. Security programming and applied cryptography (core)

This module provides an in-depth study on how to implement a secure system. It covers areas such as: secure coding, security models used by Java and .NET, basic principles of cryptography, implementation of cryptography algorithms and how to implement secure application using cryptography.

ICOM6011. Project (4 modules)