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 programme is offered in part-time and full-time mode.

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 a Bachelor's degree in business, computer science, engineering, information systems (or in other fields which the Admission Committee consider having the necessary background needed for this degree programme) or an equivalent qualification from an institution recognized by this University; 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) satisfy the examiners in all forms of assessment as may be required in either
    (1) twelve modules which may include a project report or dissertation of four modules; or
    (2) at least nine modules successfully completed at this University (which may include a project report or dissertation of four modules) and not more than three modules successfully completed at this or another university before admission to the Master of Science in Electronic Commerce and Internet Computing and approved by the Faculty Board.

(b) A candidate who fails to fulfill the requirements within the specified (i) three years for the part-time mode of study or (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) Subject to the approval of the MSc(ECom&IComp) Programme Director, 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(CompSc).
(c) 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.

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

PROGRAMME STRUCTURE

The *ECom* modules are designed to offer 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. The *IComp* modules offer 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. Students with the necessary pre-requisites are encouraged to take a mixture of *ECom* and *IComp* modules in order to acquire an integration of technology and business components of the Programme.

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

Candidates may also in exceptional circumstances select at most 2 modules from the syllabuses for the degree of MSc(Eng) and that for the degree of MSc(CompSc), subject to approval of the Head of the Department or Course Co-ordinator concerned in accordance with the provisions of Regulation EC6(b).

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.

Core Modules (select at least 4 modules):

E-business transformation
E-commerce technologies
Fundamentals of e-commerce security
Internet information engineering
Internet infrastructure technologies
Legal aspects of I.T. and e-commerce
Supply chain and e-logistics management
Website engineering

Electives:
A practical introduction to business intelligence
An introduction to cloud computing
Customer relationship management: business strategies and techniques
Data mining with applications in business and electronic commerce
Designing apps for smart mobile phones
Developing business models for digital media and online games
E-business architecture
E-crimes: digital crime scenes and legal sanctions
E-discovery and digital forensics
E-financial services
E-marketing
eHealth information technologies
Electronic payment systems
Entrepreneurship development

Geospatial information and technology for location-based services
Mobile and pervasive commerce
The new telecommunications landscape: convergence to Internet protocols, seamless mobile communications, and new services
Topics in electronic commerce
Topics in Internet computing
Web 2.0 strategy and innovation

SYLLABUSES

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.

ECOM6008 Supply chain and e-logistics management (core)

The module is designed to prepare you to apply business strategies, analytical methodologies and information technology in supply chain management. Traditionally industries have focussed on operation evaluation and performance improvement of mainly the manufacturing process; however, the deficiency of supply chain coordination results in severe downgrade of business competitiveness. With advent of information technology, computers not only improve manufacturing operation and management and also strategic decision-making as well. This module focuses on the systems approach to the planning, analysis, design, development, and evaluation of supply chain and e-logistics management.

ECOM6009 Project (4 modules)

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, smartcard and RFID, data mining and digital media technologies.

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. This focus remains unchanged in e-marketing, but our ability to foster this interaction with technology has been dramatically increased. The Internet provides new forms of communications like web sites, e-mail, social media, 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 basic premise of this module is that these technologies can be used to fulfill the goal of a customer-centered marketing strategy.

The goal for this module is to develop a set of principles so that managers can effectively develop and implement e-marketing strategies. A core framework that we will use in this module is an interactive marketing strategy. Interactive marketing goes by many names, including customer relationship management (CRM). E-marketing 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.

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.

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

The objectives of this module are to understand CRM concepts; CRM business strategies; typical business applications for CRM; and the process to implement CRM projects.

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.

ECOM6023 E-financial services (elective)

This module provides students with the fundamentals in the operations as well as the management of electronic commerce in the financial service industry. It presents an overall picture of e-commerce applications in the financial sector and also the future development trends in e-finance. Specific topics include managerial financial knowledge before e-finance, creative destruction & framework of e-finance; the recent development of e-banking, e-brokerage, e-warrant, e-insurance, e-wealth management, valuation of technology, Value based management as well as current issues in e-finance. Various cases will be studied.

ECOM6024 Mobile and pervasive commerce (elective)

With over 6 billion mobile phone users worldwide, including over a billion smart phone users, new wireless and pervasive computing applications and services are changing the way enterprises interact with their customers and their employees. The explosion in smart phone ownership along with the deployment of 4G networks is leading to a slew of new mobile applications and services. They range from mobile commerce services to enterprise apps and mobile social networking apps, all the way to more futuristic pervasive computing scenarios and intelligent assistant technologies.

ECOM6029 E-business transformation (core)

The Internet has shortened business transaction cycles, expanded market reach, and allowed companies to build and manage customer relationship more effectively. Today almost every company

is trying to find out how best to deploy the Internet throughout its value chain to improve operational effectiveness, entrench strategic position, and ultimately create sustainable competitive advantage. Transformational initiatives, however, are difficult to implement and prone to failure as companies must grapple with a whole host of strategic, organizational, technical and increasingly global issues.

This module builds on the basic principles of business and economic to examine the role of the Internet as a strategic necessity. It provides a roadmap for transforming companies into inter-networked enterprises where proprietary and shared infrastructures are used to link customers, suppliers, partners and employees to create superior economic value. You will learn how the Internet can provide firms with the necessary infrastructure needed to align their business strategy with IT strategy, streamline front-end and back-end processes, manage relationships and partnerships, and adapt to emerging global issues such as outsourcing and offshoring.

ECOM6030 Web 2.0 strategy and innovation (elective)

This module covers the fundamental principles of Web 2.0 Strategy and Innovation, providing a systematic framework, business cases and hands-on experience with the online internet and social media business models that have transformed society, business, nonprofit and government worldwide.

First, we answer the question of What's Next by looking first at the successful strategy and innovation practices of well-known Silicon Valley internet companies and global industry innovation leaders. Second, we analyze—How to compete in this Web 2.0 world. We examine how quickly followers in other countries and industries are re-shaping, re-mixing and leapfrogging these business models by moving into mobile, leveraging and monetizing their social network, collective user value and collaborative innovation. Third, we have two innovation labs to practice and hone our individual and group skills in applying Web 2.0 strategy best practices to improve ROI Return on Investment and increase RPU Revenue Per User.

ECOM6031 Fundamentals of e-commerce security (core)

This module provides an in-depth understanding of basic security problems and relevant e-commerce solutions, while helping students implement today's most advanced security technologies, such as designing secure Web, e-commerce, and mobile commerce applications, securing corporate internal network, and providing secure employee/user authentication.

ECOM6032 E-discovery and digital forensics (elective)

This module will give the students an in-depth understanding of the current IT management and e-business litigation practices involving e-discovery and digital forensics, and will help them to take a leading role in the management team to work with the legal counsel, auditor and department managers to prepare and implement an effective Incident Response Strategy to address various IT-business and legal problems in today's global competition and innovation driven economy.

ECOM6033 Geospatial information and technology for location-based services (elective)

Location-based services (LBS) are the collection of data and technology that drive popular applications such as in-car navigation, mapping of nearby points of interest on cell phones, automatic notification of weather hazards as they impact travel along a highway route, location-based advertising, geosocial networking, and tracking of inventory in warehouses. These applications leverage the user's or object's physical location to locate and access additional relevant information.

LBS is enabled by the nexus of the Internet, wireless and geospatial technology realms. While geospatial technology is perhaps the least understood of these, geospatial content and services comprise the majority of the value component in LBS. To help students explore the full value of LBS, this course examines how to identify, obtain and manage the location-based information that users need and the geospatial technology and content behind LBS called Geographic Information Systems (GIS).

ECOM6035 Developing business models for digital media and online games (elective)

The module introduces digital media cases and platforms that are used as a foundation for student work to design business models for media concepts. The module specifically explores business models focused on social media and content apps for handheld devices. This means not only smart phones, but also notebooks and tablets such as the i-Pad as well as devices and controllers used for electronic games. Special attention will be paid to developments in Hong Kong and Mainland China.

Agile methods like effectuation and the business model development canvas are applied to identify, develop, and argue the case for launching an innovative digital media product. The aim of the module is therefore to ensure that students have the necessary competencies to select and further develop an appropriate business model for a digital media innovation of their choice should they want to join the media industry.

ECOM6036 Entrepreneurship development (elective)

The scope of this module would be mostly on Venture Design: the stages from idea creation to the formation of a start-up company, with successful venture capital funding and management team in place. The perspective should be that of a potential entrepreneur wanting to start up a company, or start up entrepreneurial activities within a large company. Special attention will be put into topics on people who make decisions, handle deals, analyze problems, allocate and mobilize scarce resources and succeed in a local and international context. Some Asian and China cases are carefully chosen to reflect the special situation of starting businesses in Asia/China.

ICOM6011 Project (4 modules)

ICOM6012 Internet infrastructure technologies (core)

This module takes a systematic approach to study the various components which form the infrastructure of the Internet. It provides a comprehensive coverage of existing and emerging Internet technologies and applications. Topics include: access and backbone network technologies; IP addressing and routing architectures; standard transport and application protocols; operating principles and internals of network entities. We will focus not only on how the Internet works but also its design rationale and engineering tradeoffs.

ICOM6027 E-crimes: digital crime scenes 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, technologies adopted in e-crimes, legal sanctions and management of e-crimes scenes. Topics covered include: trends in e-crimes; different types of e-crimes, tools and technologies for committing e-crimes; laws relating to e-crimes and criminal sanctions; digital forensics, post-incident crime scene management, and covert

operation/live-forensic crime scene management, chain of evidence, collecting and collating digital evidence.

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.

ICOM6031 Internet information engineering (core)

This module covers the architectural approaches of Information Engineering to analyse, model, design, and implement information-driven applications and services across Web and other platforms. Effective Information Engineering is the key to interoperability across these systems and plays a leading role in the standardisation of information semantics within communities and across domains. This module will develop the critical skills to understand and use applied techniques in the development of information standards with a focus on modeling and semantics with advanced and emerging technologies.

ICOM6032 Data mining with applications in business and electronic commerce (elective)

Data mining focuses on identifying patterns using past transactions to discover relationships. By its very nature electronic commerce is able to generate large amounts of information and data mining methods are quite helpful for managers in turning this information into knowledge which in turns can be used to make better decisions. These quantitative methods have the potential to dramatically change decision making in many areas of business. For example ideas like interactive marketing, customer relationship management, and database marketing are pushing companies to utilize the information they collect about their customers in order to make better marketing decisions.

This module focuses on how data mining techniques can be applied to solve managerial problems in marketing and electronic commerce. The emphasis is on understanding and applying existing techniques using computer software tools. The set of data mining techniques and marketing problems that can be studied is immense; therefore our strategy will be to focus on popular techniques like decision trees, logistic regression, linear regression, and text processing methods. Each of these techniques is applied to a specific case study in which students will be asked to solve a business problem using the specified approach. The objective is for students to be able to generalize their experience in these settings to other problems using the same technique.

ICOM6034 Website engineering (core)

This module will introduce the standards, the software technologies, and some good practices for implementing websites and web-based applications.

The topics covered will be organized into four parts: (1) Website development basics (system architecture, server- and client-side technologies); (2) Design and implementation of web applications (rich Internet applications, client-side frameworks, MVC design patterns and libraries, content management systems); (3) Interoperability of web applications and services (data formats, web APIs, mashups, cloud services); and (4) Optimizations (data replication and caching, server clustering, traffic analysis, search engine optimizations).

ICOM6036 A practical introduction to business intelligence (elective)

Business Intelligence (BI) is rapidly becoming a standard practice by which enterprises attempt to improve business performance through better decision making. According to Forrester Research, Business Intelligence refers to the "design and implementation of infrastructure, processes, and best practices for data warehousing, integrating, reporting, and analyzing business information."

BI works by controlling and raising the quality of data gathered from a variety of sources allowing enterprises to gain deeper insights into the available information. Better insight into the data also means better alignment of important business decisions with corporate goals.

ICOM6037 The new telecommunications landscape: convergence to Internet protocol, seamless mobile communications, and new services (elective)

The Telecommunications landscape is undergoing important changes.

The first factor contributing to this change is the convergence to Internet protocols. The adoption of a common protocol architecture on which to build infrastructure and services has the merit of decreasing equipment and management costs, and of providing ease of inter-working among networks. Most telecom standards organizations are developing IP-based standards, and many network operators plan on supporting only IP-based infrastructures.

The second factor is the development of communications solutions aimed at providing seamless communications to mobile users. Examples are wireless networking technologies such as WiFi, Wimax and mesh networks, as well as the IEEE 802.21.

The third important factor is the provisioning of new IP-based telecommunications services, such as Voice over IP, IPTV, intervehicular communications, and cloud Computing.

The goal of this module is to expose the students to advances in telecommunications, encompassing new technical solutions as well as new services.

ICOM6039 E-business architecture (elective)

Every proper e-business system has an architecture. The objectives of this module are to help students understand the components of e-business architecture and to design an architecture for efficient and effective e-business applications.

To do that, students will first need to learn how to identify the business needs/requirements, and how to design e-business applications using such leading edge methodologies as the Model Driven Architecture (MDA) from the Object Management Group (OMG); the Architecture Standard from IEEE (IEEE 1471); and Service oriented architecture (SOA) from various industry leaders. Secondly, they must also learn about the enterprise architecture (EA) and the Component Business Modeling (CBM) to address business requirements and design business architectures. In addition, they will learn how to use architecture patterns such as e-business patterns in the technology architecture design. To help students to understand the e-business architecture practice, we will also cover the selected architecture designs case studies for various e-business applications.

Given newly emerging technologies such as cloud computing and the Internet of Things (IoT) are becoming increasingly prevalent and important, we will lastly and briefly discuss how to make architecture design by using these technologies for e-business applications.

ICOM6040 eHealth information technologies (elective)

The objective of the module is to understand the current set of eHealth information technology standards and the future directions for clinical decision support. The module will cover core clinical modeling, terminology, and information concepts that drive the development of eHealth standards.

ICOM6041 An introduction to cloud computing (elective)

This module offers an overview of current cloud technologies, and discusses some issues in the design and implementation of cloud systems, and the impact cloud computing on business.

Topics include some basic understanding of cluster hardware architecture (e.g., multicore, GPU, high-speed network), cluster middleware for realizing the concept of single system image (e.g., software distributed shared memory) and virtualization techniques (e.g., Xen, KVM, VMWare) used in current data centers. We will discuss three types of Cloud computing platforms, including SaaS, PaaS, and IaaS, by providing motivating examples from major cloud computing players such as Google, Amazon, and Microsoft. We will also introduce Map/Reduce programming paradigm for large-scale data analysis.

ICOM6042 Designing apps for smart mobile phones (elective)

Smart phones have dominated the technology market in recent years, led by the major brands of iPhones, Android, Symbian and Windows phones. These increasingly powerful phones are supported by a whole range of applications (abbreviated to "Apps") developed and uploaded for commercial or free distribution by professional as well as aspiring programmers that a whole new worldwide market has sprung up. More and more of these apps have been specially designed and developed for corporations that they are now beginning to play an important role in e-business operations.

This module introduces the design principles of these apps, their development, testing, and marketing as well as the technology platforms and programming languages for use on small screens. Hands-on practice is provided for students to gain confidence and some expertise, so that they can be on their way to exploit this new emerging career opportunity.
