

# MSc Internet Technology and Web Development – E561

## 1. Introduction

Available in both full and part-time mode, the MSc Internet Technology and Web Development programme will provide graduates from IT and related fields with the necessary skills to master current and emerging Internet technologies and services, as well as to design and implement solutions. The course has been designed to meet the requirements of the state-of-the-art technologies and application development.

## 2. Aims and Objectives

The programme aims to prepare students, who will already have a technical background, with the requisite specialist knowledge and skills to develop and manage current systems and to adapt to the changing face of communications and Internet technology and subsequently consolidating this with a creative approach to the design, development and management of web based systems and applications.

## 3. General Entry Requirements

Successful completion of an undergraduate degree with at least a Second Class or 50%, whichever is applicable, or a GPA not less than 2.5 out of 4 or equivalent, from a recognised Higher Education Institution, or alternative qualifications acceptable to the University of Mauritius.

## 4. Programme Requirements

Any undergraduate degree in Computer Science or other related areas.

## 5. Programme Duration

The normal duration of the programme will be as detailed below.

	Full time (yrs)	Part Time (yrs)
Minimum	1	2
Maximum	2	4

However students wishing to exit earlier, with a Postgraduate Diploma, can do so subject to their meeting the requirements specified in item 6.

The programme will be run on a semester system, where an academic year consists of two semesters. A semester is of 15 weeks duration (excluding Exam Period).

## 6. Minimum Credits Required for Award of:

Master's Degree : 36  
Postgraduate Diploma : 24

Breakdown as follows:

	Minimum Core Taught Modules	Dissertation	Electives Optional Modules
Master's Award	18 credits	12 credits	6 credits

Postgraduate Diploma

18 credits

6 credits

## 7. Assessment

All modules are of 45 hours duration and carry equal weightage [i.e of 3 credits].

All modules will carry 100 marks and will be assessed as follows (unless otherwise specified).

- A written examination of 3 hours and
- Continuous assessment carrying a range of 30% to 40% of total marks. Continuous assessment may be based on laboratory works, and/or assignments and tests but should include at least 2 assignments/tests per semester per module.
- An overall total of 40% for combined continuous assessment and written examination components would be required to pass the module, without minimum thresholds within the individual continuous assessment and written examination.

Students are required to register for modules which they intend to follow in a given semester on date(s) specified by the Faculty.

Submission Deadlines for Project - as per university regulation:

	Full time	Part Time
Start	January – Level I	January – Level 2
Submission	Last working day of August –Post Level 1	Last working day of August – Post Level 2

## 8. List of Modules

Students will take six core modules and two electives

### ***CORE MODULES***

CSE 6086 - Web Systems Development  
CSE 6082 - Computer and Network Security  
CSE 6083 - E-Business Technology  
CSE 6087 - Web Database Applications  
CSE 6088 - Web Server Technology  
CSE 6089 - Wireless Internet Technologies  
CSE 6000 - Project

### **ELECTIVE MODULES**

CSE 6090 - Network Programming (2L + 2P)  
CSE 6091 - Semantic Web(2L + 2P)  
CSE 6084 - Enterprise Networking (3L)  
CSE 6093 - Scripting Language Programming(2L + 2P)  
CSE 6094 - Internet Forensics(2L + 2P)

9. **Programme Plan – MSc Internet Technology and Web Development**

**(Full time)**

	<b>Module Code</b>	<b>Module</b>	<b>Hrs/WK L + P</b>
Semester I	CSE 6086	Web Systems Development	2+2
	CSE 6089	Wireless Internet Technologies	2+2
	CSE 6083	E-Business Technology	2+2
	CSE 6088	Web Server Technology	3+0
		Elective 1	2+2
Semester II	CSE 6082	Computer and Network Security	3+0
	CSE 6087	Web Database Applications	3+0
		Elective 2	2+2
	CSE 6000	Project	

**(Part time)**

	<b>Module Code</b>	<b>Module</b>	<b>Hrs/WK L + P</b>
Semester I	CSE 6086	Web systems development	2+2
	CSE 6089	Wireless Internet Technologies	2+2
	CSE 6083	E-Business Technology	2+2
Semester II	CSE 6082	Computer and Network Security	3+0
	CSE 6087	Web Database Applications	3+0
		Elective 1	2+2
Semester III	CSE 6088	Web Server Technology	3+0
		Elective 2	2+2
Semester IV	CSE 6000	Project	

**Note 1:** An elective will be provided only if sufficient number of students have opted for it and depending on availability of resources.

**Note 2:** Some courses may be run during/after office hours depending on availability of resources.

## 10. Outline Syllabus

### **CSE 6082 - COMPUTER AND NETWORK SECURITY**

Secure system design, access control, and protection - Buffer overflows and other common bugs - Malware - Fuzzing and tools for writing robust application code - sandboxing and isolation - User authentication - Security problems in network protocols - Denial of service attacks and spam email - Network defense tools – Network worms and bot-nets - Web security - Secure web site design - Wireless network security - Privacy issues

### **CSE 6083 - E-BUSINESS TECHNOLOGY**

Architecture; consumer oriented applications; business-to-business applications; electronic payment technology and systems; electronic data interchange (EDI) standards, protocols, and applications; intra- and inter-organizational structure; advertisement technologies and results tracking; search and resource discovery; customer experience design and measurement; web services and e-business.- Legal Issues

### **CSE 6084 - ENTERPRISE NETWORKING**

Enterprise networking concepts; understanding enterprise network architecture; plan, design, implement, administer, maintain, and troubleshoot enterprise networks; enterprise network management; issues related to enterprise networks; applications using enterprise networks; security in enterprise networks.

### **CSE 6090 - NETWORK PROGRAMMING**

Overview of network programming; distributed computing with RMI; enterprise computing with EJB; mobile computing with J2ME; socket programming (TCP, UDP, Multicast, SSL); protocol and content handlers; multi-threaded applications development; web services.

### **CSE 6086 - WEB SYSTEMS DEVELOPMENT**

Concepts of web system design and development; AGILE development and adaptive programming techniques; UML for web development; mark-up languages and programming; Internet & web architecture; authentication and security; client-side applications; collaborative development technologies; data validation and integrity.; Testing and validation.

### **CSE 6088 - WEB SERVER TECHNOLOGY**

Internal structure of the Web server - Scripts and forms - Architecture, configuration, and performance of Web servers - *Web services*, Web robots, indices, and search engines - Document distribution and caching - Databases and management mechanisms – security issues - Digital commerce: risks, requirements, and technologies.

### **CSE 6089 - WIRELESS INTERNET TECHNOLOGIES**

Wireless Internet Applications and Content, Wireless Networks and Devices, Wireless LAN Technologies, Wireless Internet Architecture (4G/3G/HSDPA/EDGE/GPRS), Wireless Application Protocols (WAP), Interactive Applications, Wireless E-Commerce, Internet Protocols, TCP over Wireless, Mobile IPv4 and IPv6, Internet Security Issues, Wireless Network Security.

### **CSE 6091 – SEMANTIC WEB**

Syntax, Structure and Semantics; Understanding content: Metadata, metadata standards, XML and metadata specification, RDF and metadata processing; Semantic underpinning: Ontology, Domain Modeling, Logic, Inferencing, Context; Classification and semantic metadata extraction techniques: statistical, statistical learning/AI, lexical and natural language, knowledge based; semantic Applications - demonstrating power of semantic technology for search, personalization, contextual directory and custom/enterprise applications; next generation semantic content management; research landscape; commercial landscape.

### **CSE 6087 - WEB DATABASE APPLICATIONS**

Data warehousing/ data mining concepts; Design and creation of databases for use on the Web; Web database architecture, Query optimization, Data protection & recovery; Advanced SQL, Scalable Web database solutions, Server-side scripting, XML concepts for Web database development, Session management, Authentication, Security and Performance.

**CSE 6093 - SCRIPTING LANGUAGE PROGRAMMING**

Script programming paradigm; history and survey of scripting languages; W3C standards; scripting language frameworks for the web; dynamic control of layout with scripting; Web client side/server side scripting (DOM, PHP,...); Multimedia and game scripting (ActionScript, Lingo); performance issues; develop web applications with various frameworks.

**CSE 6094 - INTERNET FORENSICS**

Principles of forensic computing; common forensic computing techniques; concepts of Internet forensics; cyber crime investigation; national and international legal issues; information logging; log processing methods; intrusion detection; hacker techniques, exploits and incident handling; auditing networks; information security officer training.

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