Faculty of Computer Science and Information Technology Universiti Putra Malaysia

POSTGRADUATE PROGRAMME BY COURSEWORK

MASTER OF COMPUTER NETWORK

PROGRAMME BY COURSEWORK

Programme : **Master of Computer Network**

Introduction

The Master of Computer Science programme is a 40 credits postgraduate programme by coursework. It offers an opportunity for advanced studies and career development in the field of computer science. The objective of this programme is to produce graduates with new technology in the field of computer science.

Entrance Requirements

An applicant should have a Bachelor's degree or equivalent, in computing, science and technology or related to computing, with a minimum CGPA 2.75; or

Bachelor's degree or equivalent, in computing, science and technology or related to computing with a CGPA of 2.500 – 2.749 may be considered based on a minimum of 1 year of work experience in the related field; or

Bachelor's degree or equivalent, in computing, science and technology or related to computing with a CGPA of 2.00 – 2.49 may be considered based on a minimum of 5 year of work experience in the related field;

For a candidate who do not have a Computing Degree, the candidate must take a prerequisite course in computing.

English Language Requirement

International applicants must have obtained a minimum score of 550 for the TOEFL Paper-based Test (Academic Version) or Band 6.0 for IELTS (Academic Training), or 79-80 for TOEFL Internet-based Test (Academic Version) or Level 109 for CIEP at ELS Language Centre.

Programme Offered by Semester

First and Second Semester of every year.

Programme Requirements

Credits Requirement for Graduation

In order to graduate, students must have achieved at least 40 credits. The minimum cumulative average is 3.00. The minimum credits distribution for this programme is as follows:

Compulsory courses   21 credits
Dissertation   10 credits
Elective courses   9 credits

Total   40 credits

a) **COMPULSORY COURSES**

Listed below are the compulsory courses:

Course Code	Course Name	Credit
SKR5090	Research Methods in Computer Network	3 (3+0)
SKR5201	Networks and Communication Security	3 (3+0)
SKR5302	Advanced Distributed Computing	3 (3+0)
SKR5307	Communication Technology and Network	3 (3+0)
SKR5401	Wireless Pervasive Computing	3 (3+0)
SKR5406	Cloud Computing Architecture	3 (3+0)
SKR5501	Performance Modeling of Communication Networks	3 (3+0)

b) **DISSERTATION**

Course Code	Course Name	Credit
SSK5988	Dissertation	10 (0+10)

c) **ELECTIVE COURSES**

Choose three (3) courses only:

Course Code	Course Name	Credit
SKR5308	Real-Time Systems	3 (3+0)
SKR5400	Distributed High-Performance Computing	3 (3+0)
SKR5403	Quantum Computing	3 (3+0)
SKR5407	Software Defined Computing	3 (3+0)

SKR5408	Big Data Distributed System Architecture	3 (3+0)
SSK5223	Pervasive Computing for Cyber-Physical System	3 (3+0)

Tuition Fees

The fee structure for this programme consists of basic fee and credit-based fee:

a) Basic Fee

Semester	Local	International
First Semester	RM 1,350.00	RM2,400.00
Second and Subsequent Semesters	RM 1,100.00	RM2,150.00

b) Credit-based Fee

Student	Amount	Credit	Total Amount
Local	RM300.00 per credit	40	RM12,000.00
International	RM450.00 per credit		RM18,000.00

NOTE: The fee amount is subject to change from time to time WITHOUT prior notice by the University. Prospective and current students are advised to check the SGS website for any fee changes not earlier than one (1) month before the start of each semester/new students' registration. All fees must be paid upon registration.

OTHER COST: Please refer to School of Graduate Studies website at **http://www.sgs.upm.edu.my**

Course Synopsis

SKR5090   Research Methods in Computer Network   3 (3+0)
This course comprises research methods that are used in computer networks. It also contains steps on plan, organize and use the available resources efficiently in conducting research

SKR5201   Network and Communication Security   3 (3+0)
This course comprises the advanced topics of cryptography, network security application and communication system security that emphasizes the practice of network and communication security. It also covers the explanation about practical applications that have been and are being practiced for ensuring network and communication security. The evaluation of network and communication security is through the use of security protocol and technology using cryptography techniques

SKR5302   Advanced Distributed Computing   3 (3+0)
This course covers concept and technical requirements in developing distributed systems based on open system standards. Performance aspects in processing and management of distributed computing are discussed

SKR5307   Communication Technology and Network   3 (3+0)
This course covers the latest and advanced concepts on wired and wireless networks that comprises explanations on communication technology and computer networks. Network performance evaluation through quantitative model such as queue theory and flow-control mechanism are also been emphasized

SKR5401   Wireless Pervasive Computing   3 (3+0)
This course covers various topics on wireless pervasive networks and mobile networks. It also includes topics on issues in designing pervasive and mobile networks, and technical requirements and performance that are required for such networks.

SKR5406   Cloud Computing Architecture   3 (3+0)
This course covers network architecture for virtualization and managing Cloud computing. It compromises description on relation between distributed models, Cloud computing services, and concept Cloud programming on service-based computing

SKR5501   Performance Modeling of Communication Networks   3 (3+0)
This course covers the various aspects of modeling and simulation of wired and wireless communication networks highlighted for the purpose of performance comparison. Probability and queuing theories are used to evaluate the simulation of network performance. The concept and element for developing a simulation system is emphasized.

SKR5308   Real Time Systems   3 (3+0)
This course covers the advanced topics of real-time systems in latest computing systems. It comprises explanation on the concepts and design for reliability, and fault-tolerance techniques that will be evaluated for its respective effectiveness.

SKR5400   Distributed High-Performance Computing   3 (3+0)

This course covers the concepts of parallel and distributed computing for high performance computer systems for shared and distributed memory. This course also explains and implements programming models and applications that are usable to high performance computer systems.

SKR5403   Quantum Computing   3 (3+0)

This course comprises the main concepts on quantum algorithms that can be applied in quantum computing processes to complement the emerging quantum computer devices and technology. Emphasized is given on the applications of quantum computing.

SKR5407   Software Defined Network   3 (3+0)

This course will cover software defined networking (SDN). It starts from the principle of designing SDN with several planes, SDN extensions and its applications.

SKR5408   Big Data Distributed System Architecture   3 (3+0)

This course explains the architecture of big data distributed systems and implementation of programming models. Applications that are usable to big data are emphasized.

SKR5988   Dissertation   10 (0+10)

This course involves research or study by students on a specific topic that is related to computer network scope. The topic of research or study will be determined by the student in consultation with the supervisor. It is carried out in two semesters. In the first semester, a proposal needs to be submitted that contains literature review, problem statement and research objectives. In the following semester, the student needs to submit a complete project report. Student is also required to present the research project to panel of assessors

Suggested Study Scheme

A) Three Semesters of Study:

YEAR 1

First Semester			Second Semester		
Code	**Course Name**	**Credit/ Status**	**Code**	**Course Name**	**Credit/ Status**
SKR5090	Research Methods in Computer Network	3 YW	SKR5401	Wireless Pervasive Computing	3 YW
SKR5210	Network and Communication Security	3 YW	SKR5406	Cloud Computing Architecture	3 YW
SKR5302	Advanced Distributed Computing	3 YW		Elective (x2)	6 ELF
SKR5307	Communication Technology and Network	3 YW			
SKR5501	Performance Modeling of Communication Networks	3 YW			
	Total Credits	**15**		**Total Credits**	**12**

YEAR 2

First Semester		
Code	**Course Name**	**Credit/Status**
	Elective	3 ELF
SKR5988	Dissertation	10(0+10) YW
	Total Credits	**13**

B) Four Semesters of Study:

YEAR 1

First Semester			Second Semester		
Code	**Course Name**	**Credit/ Status**	**Code**	**Course Name**	**Credit/ Status**
SKR 5090	Research Methods in Computer Network	3 YW	SKR5307	Communication Technology and Network	3 YW
SKR5210	Network and Communication Security	3 YW	SKR5501	Performance Modeling of Communication Networks	3 YW
SKR5302	Advanced Distributed Computing	3 YW	SKR5401	Wireless Pervasive Computing	3 YW
	Elective	3 ELF			
	Total Credits	**12**		**Total Credits**	**9**

YEAR 2

First Semester			Second Semester		
Code	**Course Name**	**Credit/ Status**	**Code**	**Course Name**	**Credit/ Status**
SKR5406	Cloud Computing Architecture	3 YW	SSK5989	Dissertation	10(0+10) YW
	Elective (x2)	6 ELF			
	Total Credits	**9**		**Total Credits**	**10**

International students may be required to register for the following courses in their first semester:
LPM2100 MALAY LANGUAGE COMMUNICATION (2 credits) and English course/**PIE** (12 credits)

Course registration: Maximum of 15 credits per semester and Minimum 6 credits
Course registration status: YW= Compulsory, ELF= Elective
Fees:
- Must be paid within TWO (2 weeks) of registration
- Late payment fees will prevent the student's access to course lecture notes and academic records. Also, the student's study status will change to DROPPED status.

CONTACT LIST

Application for Admission:

School of Graduate Studies
Zone 4, Off Jalan Stadium
Universiti Putra Malaysia
43400 UPM Serdang
Selangor Darul Ehsan
MALAYSIA
Tel: (603) 9769 4218 / 4223 / 4165 / 4169 / 4225
Website: http://www.sgs.upm.edu.my

For further information on academic programmes, please contact:

Faculty of Computer Science and Information Technology
Universiti Putra Malaysia
43400 UPM Serdang
Selangor Darul Ehsan
MALAYSIA
Tel: (603) 9769 1742/ 1744/ 3091/3071
Website: http://www.fsktm.upm.edu.my

Master Programme Coordinator
(by coursework)
Faculty of Computer Science and Information Technology
Universiti Putra Malaysia
43400 UPM Serdang
Selangor Darul Ehsan
MALAYSIA.
Tel: (603) 9769 1433/ 3091
Email: masnida@upm.edu.my