1. Master of Science in Software Engineering (MSSE)

Software Engineering is about systematic production and maintenance of software products that involves not only the technical aspects of building software systems but also the collaboration required of programming teams and the alignment of software solutions with organizational strategies.

The objective of the Master of Science in Software Engineering programme is to produce graduates who have a broad and detailed knowledge in software engineering techniques, methodologies and tools. The programme focuses on specialised and advanced topics in software engineering and related fields. This programme combines the disciplines of design, quality, programming, usability and management so that students can ensure the delivery of reliable software to increasingly large, complex and international end markets.

Graduates of this programme would ideally be capable of participating in medium to large scale industrial software development projects as system engineers, System Analysts, software architects, designers, senior programmers and team leaders. They would also be able to undertake a career in tertiary level education or conduct research in software engineering should they wish.

This programme is aimed at students who have already had first degree in computing or first degree in any discipline and a postgraduate diploma in computing or students with a significant level of knowledge and experience in computing.

1.1 Course Requirements

The programme features 24 credit hours of compulsory courses, and 16 credit hours of elective courses. Therefore the minimum number of credit hours for graduation is 40. Lists of compulsory and elective courses are given below.

Compulsory Courses (24 Cr Hrs):

Students must take and pass all of the following courses to graduate from the programme:

Code	Course Title	Pre-Requisites	Credit Hrs
CS601	Research Methodology	-	4
CS651	Requirements Engineering	-	4
CS687	Information Systems Security	CS623, CS651	4
CS752	Software Design & Management	CS623, CS651	4
CS754	Software Architecture & Construction	CS651, CS752	4
CS774	Software Testing and Usability	CS651, CS752	4
TOTAL CREDIT HOURS			**24**

Elective Courses (16 Cr Hrs):

Students must take and pass a minimum of 16 credit hours of courses from the following list to graduate from the programme:

Code	Course Title	Pre- Requisites	Credit Hrs
CS624	Advanced Data Structures and Algorithm Analysis	-	4
CS653	Industrial project	CS651	3
CS662	Advanced Computer Networks	-	4
CS705	Selected Topics in Software Engineering	-	2
CS744	Database Technology	-	4
CS753	IT Project Management	CS651, CS752	4
CS758	Formal Software Specification	-	4
CS759	Advanced Applications Development	-	5
CS764	Distributed Computing	CS624	4
CS775	Human-Computer Interaction /HCI	CS687, CS752	4
CS776	Software Engineering of web applications	-	4
CS784	Multimedia Systems	-	4
CS787	Systems Thinking	CS651	4
CS799	Research Project	All	9
CS800	Thesis	All	9

1.1.1 Curriculum Schedule (MSSE)

	Term I	Term II	Term III
Year I	• *Research Methodology* • *Requirements Engineering*	• *Software Design & Management* • *Elective 1*	• *Software Architecture & Construction* • *Information Systems Security*
	Term IV	**Term V**	
Year II	• *Software Testing & Usability* • *Elective 2*	• *Elective 3 &* *Elective 4 - (OR)-* • *Research Project / Thesis*	

Note that FOUR CREDIT HOURS course in a Term system (12 weeks that makes it 4*12 = 48) is equivalent to 3 CREDIT HOURS in a Semester system (16 weeks that makes it 3*16 = 48). Therefore, the total credit hours for completion of the studies should be 40 in a Term system that is 30 in a semester system.

2 Master of Science in Computer Science (MSCS)

The Master of Science in Computer Science Programme provides intensive preparation in the concepts and techniques related to the programming, design, and application of computing systems. The programme requires students to take a broad spectrum of courses, while simultaneously allowing for emphasis in desired areas of specialization.

The MSCS offers students a solid ground in the essential aspects of computer science and prepares the students for advancement in technical careers of IT related positions and responsibilities or for further study at the doctoral level.

Graduates of the programme should have a professional and ethical attitude towards their work, possess good leadership qualities, and be diligent and responsible in completing assigned tasks. They should also possess a high level of understanding

in a wide range of subjects in the field of computer science and have a good knowledge of the latest developments in the field.

The programme is aimed at students who have already graduated with a first degree in any discipline on top of upgrading the existing computer science and related fields graduates to computer science Masters. Non-computing degree holders should possess a high level of aptitude for computing.

2.1 Course Requirements

The programme features compulsory courses of 24 credit hours and 16 credit hours of elective courses are required. Therefore the minimum number of credit hours for graduation is 40. Lists of compulsory (core) and elective courses are given below.

Compulsory Courses:

Students must take and pass all of the following courses to graduate from the programme:

Compulsory Courses

Core courses (24 Cr Hrs)			
Code	**Course Title**	**Prerequisite**	**Credit Hrs**
CS601	Research Methodology	-	4
CS652	Requirements Specification and Design	CS631, CS622	4
CS662	Advanced Computer Networks	CS660	4
CS687	Information Systems Security	CS622, CS662	4
CS744	Database Technology	CS631, CS622	4
CS753	IT Project Management	CS744, CS652	4
TOTAL CREDIT HOURS			**24**

Elective Courses

Students must take and pass a minimum of 16 credit hours of courses from the following list to graduate from the programme:

Code	Course Title	Pre- Requisites	Credit Hrs
CS625	Web Technology	CS620	4
CS704	Focusing Areas in Computer Science	CS662, CS744	2
CS706	Embedded Systems	CS652, CS744	4
CS724	Natural Language Processing	CS620	4
CS725	Parallel Processing	CS662	4
CS759	Advanced Applications Development	-	5
CS765	Pervasive Computing	CS662	4
CS784	Multimedia Systems	CS620	4
CS785	Advanced Information Retrieval	CS620, CS744	4
CS787	Systems Thinking	CS622, CS652	4
CS789	Business Intelligence & Data Mining	CS652	4
CS788	Artificial Intelligence	CS621, CS744	4
CS799	Research Project	ALL	9
CS800	Thesis	ALL	9

2.1.1 Curriculum Schedule (MSCS)

	Term I	Term II	Term III
Year I	• *Research methodology* • *Requirements Specification and Design*	• *Database Technology* • *Advanced Computer Networks*	• *Information Systems Security* • *Elective 1*
	Term IV	**Term V**	
Year II	• *IT Project Management* • *Elective 2*	• *Elective 3 &* *Elective 4 - (OR)-* • *Research Project/Thesis*	

3 Bridging courses

Applicants with a high level of aptitude in computing but have different academic background and/or industry experience are welcome for admission. The bridging scheme is, therefore, designed in order to qualify applicants to join any of the masters programmes.

Bridging courses (25 Cr Hrs)				
Code	**Course Title**	**Prerequisite**	**Credit Hrs**	**Contact Hrs**
CS510	Information Systems	-	3	4
CS530	Problem solving with programming I	-	3	6
CS531	Problem solving with programming II	-	3	6
CS532	Object Oriented Programming and Design	CS530	3	6
CS551	Data Structures and Algorithm Analysis	CS531	3	6
CS552	Database Management Systems	CS531	3	4
CS563	Fundamentals of Operating systems and Networking	CS531	3	
CS599	Senior Project	All	4	4
TOTAL CREDIT HOURS			**25**	

Bridging Course breakdown

	Term I	**Term II**	**Term III**
Year I	• *Problem solving with programming I* • *Information Systems*	• *Problem solving with programming II* • *DBMS*	• *OOPD* • *Data Structure & Algorithm Analysis*
	Term IV		
Year II	• *Fundamentals of OS and Networking* • *Senior Project*		