

Scheme of Study for Master of Computer Science
MCS
2-year programme (4 semesters)

#	Category	# of Courses	Credit Hours
1	Computing Core Courses (Comp-Core)	12	43
2	Computer Science Courses	9	27
	CS Core Courses (CS-Core)	6	18
	CS Elective Courses (CS-Elec)	3	9
3	University Electives (Univ-Elec)	2	6
	Total	23	76

Semester-I: (20 Credit Hours)

#	Course Code	Category	Course Title	Credit Hours	Prerequisites
1	CS 301	Comp-Core	Introduction to Computing	4 (3,1)	
2	CS 303	Comp-Core	Programming Fundamentals	4 (3,1)	
3	CS 305	Comp-Core	Discrete Structures	3 (3,0)	
4	CS 307	Comp-Core	Digital Logic Design	3 (3,0)	
5	* 309	Univ-Elec	Univ Elective-1	3 (3,0)	
6	* 311	Univ-Elec	Univ Elective-2	3 (3,0)	

* Two alphabetic characters (EG or MG or SS) to be used for the respective course from the university elective course list.

Semester-II: (19 Credit Hours)

#	Course Code	Category	Course Title	Credit Hours	Prerequisites
1	CS 302	CS-Core	Computer Organization and Assembly Language	3 (2,1)	Digital Logic Design
2	CS 304	CS-Core	Theory of Automata and Formal Languages	3 (3,0)	Discrete Structures
3	CS 306	Comp-Core	Object Oriented Programming	4 (3,1)	Programming Fundamentals
4	CS 308	Comp-Core	Intro. to Database Systems	3 (2,1)	
5	CS 310	Comp-Core	Computer Communications and Networks	3 (3,0)	
6	CS 312	Comp-Core	Intro. to Software Engineering	3 (3,0)	

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Semester-III: (19 Credit Hours)

#	Course Code	Category	Course Title	Credit Hours	Prerequisites
1	CS 401	CS-Core	Computer Architecture	3 (3,0)	Computer Org. and Assembly Language
2	CS 403	CS-Core	Artificial Intelligence	3 (2,1)	Discrete Structures
3	CS 405	Comp-Core	Operating Systems	3 (3,0)	
4	CS 407	Comp-Core	Data Structures and Algorithms	4 (3,1)	Programming Fundamentals
5	CS 409	CS-Elec	CS Elective-1	3	
6	CS 411	CS-Elec	CS Elective-2	3	

Semester-IV: (18 Credit Hours)

#	Course Code	Category	Course Title	Credit Hours	Prerequisites
1	CS 402	CS-Core	Design & Analysis of Algorithms	3 (3,0)	Data Structures & Algorithms
2	CS 404	CS-Core	Compiler Construction	3 (2,1)	Theory of Automata & Formal Languages
3	CS 406	CS-Elec	CS Elective-3	3	
4	CS 408	Comp-Core	Human Computer Interaction	3 (2,1)	
5	CS 410	Comp-Core	Software Project/Thesis	6 (0,6)	

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Electives for MCS

CS Elective Courses:

#	Course Code	Category	Course Title	Credit Hours	Prerequisites
1	CS	CS-Elec	Software Engineering II	3 (3,0)	Intro to Software Engg
2	CS	CS-Elec	Data Communications	3 (3,0)	
3	CS	CS-Elec	Principles of Programming Languages	3 (3,0)	
4	CS	CS-Elec	Computer Graphics	3 (2,1)	
5	CS	CS-Elec	Digital Image Processing	3 (2,1)	
6	CS	CS-Elec	Visual Programming	3 (2,1)	
7	CS	CS-Elec	Distributed Computing	3 (2,1)	
8	CS	CS-Elec	Network Security	3 (3,0)	Computer Comm. and Networks
9	CS	CS-Elec	Computer Vision	3 (3,0)	Data Struc. & Algo.
10	CS	CS-Elec	Systems Programming	3 (2,1)	Operating Systems
11	CS	CS-Elec	Distributed Database Systems	3 (2,1)	Intro. to Database Sys.
12	CS	CS-Elec	Data Warehousing	3 (3,0)	Intro. to Database Sys.
13	CS	CS-Elec	Web Engineering	3 (2,1)	
14	CS	CS-Elec	Artificial Neural Networks	3 (2,1)	Artificial Intelligence
15	CS	CS-Elec	Expert Systems	3 (2,1)	
16	CS	CS-Elec	Operations Research	3 (3,0)	
17	CS	CS-Elec	Network Programming	3 (2,1)	Computer Comm. and Networks
18	CS	CS-Elec	Wireless Networks	3 (3,0)	
19	CS	CS-Elec	Telecommunication Systems	3 (2,1)	
20	CS	CS-Elec	Mobile Computing	3 (2,1)	
21	CS	CS-Elec	Java Programming	3(2,1)	
22	CS	CS-Elec	Android Programming	3(2,1)	Java Programming
23	CS	CS-Elec	Cloud Computing	3(2,1)	Distributed Computing
24	CS	CS-Elec	Cyber Security	3 (3,0)	
25	CS	CS-Elec	Object-Oriented Analysis & Design	3(3,0)	Intro to Software Engg
26	CS	CS-Elec	Ethical Hacking	3(2,1)	

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University Electives Courses:

#	Course Code	Category	Course Title	Credit Hours
1	EG	Univ-Elec	Business Communications and Technical Writing	3 (3,0)
2	MG	Univ-Elec	Financial Accounting	3 (3,0)
3	MG	Univ-Elec	Financial Management	3 (3,0)
4	MG	Univ-Elec	Human Resource Management	3 (3,0)
5	MG	Univ-Elec	Marketing	3 (3,0)
6	SS	Univ-Elec	Psychology	3 (3,0)
7	SS	Univ-Elec	Foreign/Regional Languages (French, German, Chinese, Japanese, Russian, Sindhi, Punjabi, Balochi, Pashto etc.)	3 (3,0)