

### 13. COURSES OF STUDY AND SCHEME OF ASSESSMENT

#### M Sc SOFTWARE SYSTEMS

(2018 REGULATIONS)  
(TOTAL CREDITS TO BE EARNED: 210\*)

Course Code	Course Title	Hours/Week			Credits	Maximum marks			CAT
		Lecture	Tutorial	Practical		CA	FE	Total	
<b>IX SEMESTER</b>									
18XW91	PRINCIPLES OF MANAGEMENT AND BEHAVIOURAL SCIENCE	3	0	0	3	50	50	100	HS
18XW92	SOFTWARE TESTING	3	0	0	3	50	50	100	PC
18XW93	PRINCIPLES OF COMPILER DESIGN	3	0	0	3	50	50	100	PC
18XW94	PROFESSIONAL ELECTIVE IV	3	2	0	4	50	50	100	PE
18XW95	OPEN ELECTIVE II	3	2	0	4	50	50	100	OE
18XW96	PRINCIPLES OF COMPILER DESIGN LAB	0	0	4	2	100	-	100	PC
18XW97	SOFTWARE TESTING LAB	0	0	4	2	100	-	100	PC
18XW98	CAPSTONE PROJECT LAB	0	0	4	2	100	-	100	EEC
<b>Total 31 hrs</b>		<b>15</b>	<b>4</b>	<b>12</b>	<b>23</b>	<b>550</b>	<b>250</b>	<b>800</b>	
<b>X SEMESTER</b>									
18XWP2	PROJECT WORK II	0	0	-	12	50	50	100	EEC

**CA – Continuous Assessment; FE - Final Examination; CAT – Category;  
BS – Basic Sciences; HS – Humanities & Social Sciences; ES – Engineering Sciences; PC – Professional Core; PE – Professional Elective; OE – Open Elective; EEC – Employability Enhancement Course.**

Course Code	Course Title	Hours/Week			Credits	Maximum marks			CAT
		Lecture	Tutorial	Practical		CA	FE	Total	
<b>PROFESSIONAL ELECTIVE THEORY COURSES (Four to be opted)</b>									
18XWA1	MODELLING AND SIMULATION	3	2	0	4	50	50	100	PE
18XWA2	MODERN DATABASES	3	2	0	4	50	50	100	PE
18XWA3	SOFTWARE METRICS	3	2	0	4	50	50	100	PE
18XWA4	PARALLEL AND DISTRIBUTED COMPUTING	3	2	0	4	50	50	100	PE
18XWA5	DATA COMPRESSION	3	2	0	4	50	50	100	PE
18XWA6	COMPUTER GRAPHICS AND VISUALIZATION	3	2	0	4	50	50	100	PE
18XWA7	PRINCIPLES OF PROGRAMMING LANGUAGES	3	2	0	4	50	50	100	PE
18XWA8	AGILE SOFTWARE DEVELOPMENT	3	2	0	4	50	50	100	PE
18XWA9	PERVASIVE COMPUTING	3	2	0	4	50	50	100	PE
18XWAA	SEMANTIC WEB	3	2	0	4	50	50	100	PE
18XWAB	CLOUD COMPUTING	3	2	0	4	50	50	100	PE
18XWAC	HUMAN COMPUTER INTERACTION	3	2	0	4	50	50	100	PE
18XWAD	SOCIAL NETWORK ANALYSIS	3	2	0	4	50	50	100	PE
18XWAE	ADVANCED COMPUTER GRAPHICS	3	2	0	4	50	50	100	PE
18XWAF	DEEP LEARNING	3	2	0	4	50	50	100	PE
18XWAG	BIG DATA ANALYTICS	3	2	0	4	50	50	100	PE
18XWAH	DATA MINING	3	2	0	4	50	50	100	PE
18XWAI	NATURAL LANGUAGE PROCESSING	3	2	0	4	50	50	100	PE
18XWAJ	DATA SCIENCE	3	2	0	4	50	50	100	PE
18XWAK	INTERNET OF THINGS	3	2	0	4	50	50	100	PE
18XWAL	ADVANCED SYSTEMS PROGRAMMING	3	2	0	4	50	50	100	PE
18XWAM	STATISTICAL LEARNING	3	2	0	4	50	50	100	PE
18XWAN	VIRTUAL & AUGMENTED REALITY	3	2	0	4	50	50	100	PE

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Course Code	Course Title	Hours/Week			Credits	Maximum marks			CAT
		Lecture	Tutorial	Practical		CA	FE	Total	
<b>OPEN ELECTIVE THEORY COURSES (Two to be opted)</b>									
18XWO1	ENTREPRENEURSHIP	3	2	0	4	50	50	100	OE
18XWO2	COMPUTER FORENSICS	3	2	0	4	50	50	100	OE
18XWO3	WIRELESS NETWORKS	3	2	0	4	50	50	100	OE
18XWO4	RANDOMIZED ALGORITHMS	3	2	0	4	50	50	100	OE
18XWO5	APPLIED GRAPH THEORY	3	2	0	4	50	50	100	OE
18XWO6	NETWORK FORENSICS	3	2	0	4	50	50	100	OE
18XWO7	APPLIED NUMERICAL ANALYSIS	3	2	0	4	50	50	100	OE
18XWO8	ENVIRONMENTAL SCIENCE AND GREEN COMPUTING	3	2	0	4	50	50	100	OE
18XWO9	QUANTUM MECHANICS AND FUNDAMENTALS OF QUANTUM COMPUTATION	3	2	0	4	50	50	100	OE
18XWOA	COMPUTATIONAL FOUNDATIONS FOR ROBOTICS	3	2	0	4	50	50	100	OE
18XWOB	MATHEMATICAL MODELLING	3	2	0	4	50	50	100	OE

## Labeling and Grouping of Courses

HUMANITIES AND SOCIAL SCIENCES (HS)				
S.No.	Course Code	Course Title	L:T:P:C	Preferred Semester
1	18XW12	ENGLISH FOR PROFESSIONAL SKILLS	3:0:0:3	I
2	18XW91	PRINCIPLES OF MANAGEMENT AND BEHAVIOURAL SCIENCE	3:0:0:3	IX

BASIC SCIENCES (BS)				
S.No.	Course Code	Course Title	L:T:P:C	Preferred Semester
1	18XW11	CALCULUS AND ITS APPLICATIONS	3:2:0:4	I
2	18XW13	APPLIED PHYSICS	4:0:0:4	I
3	18XW14	ANALOG AND DIGITAL ELECTRONICS	4:0:0:4	I
4	18XW18	APPLIED PHYSICS AND DIGITAL ELECTRONICS LAB	0:0:4:2	I
5	18XW21	APPLIED LINEAR ALGEBRA	3:2:0:4	II
6	18XW22	PROBABILITY AND STATISTICS	3:2:0:4	II
7	18XW31	MATHEMATICAL FOUNDATIONS OF COMPUTING	3:2:0:4	III
8	18XW33	TRANSFORM TECHNIQUES	3:2:0:4	III
9	18XW41	ACCOUNTING AND FINANCIAL MANAGEMENT	4:0:0:4	IV
10	18XW43	OPERATIONS RESEARCH	4:0:0:4	IV
11	18XW47	MATHEMATICAL COMPUTING LAB (WITH R)	0:0:4:2	IV

ENGINEERING SCIENCES (ES)				
S.No.	Course Code	Course Title	L:T:P:C	Preferred Semester
1	18XW16	ENGINEERING GRAPHICS AND GEOMETRIC MODELING	0:0:4:2	I

PROFESSIONAL CORE (PC)				
S.No.	Course Code	Course Title	L:T:P:C	Preferred Semester
1	18XW15	C PROGRAMMING	3:0:0:3	I
2	18XW17	C PROGRAMMING LAB	0:0:4:2	I
3	18XW23	DATA STRUCTURES	3:0:0:3	II
4	18XW24	OBJECT ORIENTED PROGRAMMING	3:0:0:3	II
5	18XW25	COMPUTER ORGANIZATION	3:0:0:3	II
6	18XW26	DATA STRUCTURES LAB	0:0:4:2	II
7	18XW27	OBJECT COMPUTING LAB	0:0:4:2	II
8	18XW28	WEB DESIGNING LAB	0:0:4:2	II
9	18XW32	DATA BASE MANAGEMENT SYSTEM	3:0:0:3	III
10	18XW34	DESIGN AND ANALYSIS OF ALGORITHMS	3:0:0:3	III
11	18XW35	MICROPROCESSOR AND EMBEDDED SYSTEMS	3:0:0:3	III
12	18XW36	DESIGN AND ANALYSIS OF ALGORITHMS LAB	0:0:4:2	III
13	18XW37	EMBEDDED SYSTEMS LAB	0:0:4:2	III
14	18XW38	RDBMS LAB	0:0:4:2	III
15	18XW42	COMPUTER NETWORKS AND TCP/IP	3:0:0:3	IV
16	18XW44	OPERATING SYSTEMS	3:2:0:4	IV
17	18XW45	SOFTWARE ENGINEERING TECHNIQUES	3:0:0:3	IV
18	18XW46	COMPUTER NETWORKS AND TCP/IP LAB	0:0:4:2	IV
19	18XW48	PYTHON PROGRAMMING LAB	0:0:4:2	IV
20	18XW51	UNIX ARCHITECTURE AND PROGRAMMING	3:0:0:3	V
21	18XW52	JAVA PROGRAMMING	3:0:0:3	V
22	18XW53	MACHINE LEARNING	3:0:0:3	V
23	18XW54	OBJECT ORIENTED ANALYSIS AND DESIGN	3:2:0:4	V
24	18XW56	UNIX SHELL AND SYSTEM PROGRAMMING LAB	0:0:4:2	V
25	18XW57	JAVA PROGRAMMING LAB	0:0:4:2	V
26	18XW58	MACHINE LEARNING LAB	0:0:4:2	V
27	18XW61	MOBILE COMPUTING	3:0:0:3	VI
28	18XW62	ARTIFICIAL INTELLIGENCE	3:0:0:3	VI
29	18XW63	SOFTWARE PATTERNS	3:2:0:4	VI
30	18XW64	SECURITY IN COMPUTING	3:2:0:4	VI
31	18XW66	MOBILE COMPUTING LAB	0:0:4:2	VI
32	18XW67	ARTIFICIAL INTELLIGENCE LAB	0:0:2:1	VI
33	18XW68	DISTRIBUTED ENTERPRISE COMPUTING LAB	0:0:4:2	VI
34	18XW81	INFORMATION RETRIEVAL	3:0:0:3	VIII
35	18XW82	COMPUTER VISION AND IMAGE ANALYSIS	3:0:0:3	VIII
36	18XW83	SOFTWARE PROJECT MANAGEMENT	3:0:0:3	VIII
37	18XW86	INFORMATION RETRIEVAL LAB	0:0:4:2	VIII
38	18XW87	COMPUTER VISION LAB	0:0:4:2	VIII
39	18XW88	FUNCTIONAL PROGRAMMING LAB	0:0:4:2	VIII
40	18XW92	SOFTWARE TESTING	3:0:0:3	IX
41	18XW93	PRINCIPLES OF COMPILER DESIGN	3:0:0:3	IX
42	18XW96	PRINCIPLES OF COMPILER DESIGN LAB	0:0:4:2	IX
43	18XW97	SOFTWARE TESTING LAB	0:0:4:2	IX

PROFESSIONAL ELECTIVES (PE)				
S.No.	Course Code	Course Title	L:T:P:C	Preferred Semester
1	18XWA1	MODELLING AND SIMULATION	3:2:0:4	FROM V
2	18XWA2	MODERN DATABASES	3:2:0:4	FROM V
3	18XWA3	SOFTWARE METRICS	3:2:0:4	FROM V
4	18XWA4	PARALLEL AND DISTRIBUTED COMPUTING	3:2:0:4	FROM V
5	18XWA5	DATA COMPRESSION	3:2:0:4	FROM V
6	18XWA6	COMPUTER GRAPHICS AND VISUALIZATION	3:2:0:4	FROM V
7	18XWA7	PRINCIPLES OF PROGRAMMING LANGUAGES	3:2:0:4	FROM V
8	18XWA8	AGILE SOFTWARE DEVELOPMENT	3:2:0:4	FROM V
9	18XWA9	PERVASIVE COMPUTING	3:2:0:4	FROM V
10	18XWAA	SEMANTIC WEB	3:2:0:4	FROM V
11	18XWAB	CLOUD COMPUTING	3:2:0:4	FROM V
12	18XWAC	HUMAN COMPUTER INTERACTION	3:2:0:4	FROM V
13	18XWAD	SOCIAL NETWORK ANALYSIS	3:2:0:4	FROM V
14	18XWAE	ADVANCED COMPUTER GRAPHICS	3:2:0:4	FROM VI
15	18XWAF	DEEP LEARNING	3:2:0:4	FROM VI
16	18XWAG	BIG DATA ANALYTICS	3:2:0:4	FROM VI
17	18XWAH	DATA MINING	3:2:0:4	FROM VI
18	18XWAI	NATURAL LANGUAGE PROCESSING	3:2:0:4	FROM VI
19	18XWAJ	DATA SCIENCE	3:2:0:4	FROM VI

20	18XWAK	INTERNET OF THINGS	3:2:0:4	FROM VI
21	18XWAL	ADVANCED SYSTEMS PROGRAMMING	3:2:0:4	FROM VI
22	18XWAM	STATISTICAL LEARNING	3:2:0:4	FROM VI
23	18XWAN	VIRTUAL & AUGMENTED REALITY	3:2:0:4	FROM VI

<b>OPEN ELECTIVES (OE)</b>				
<b>S.No.</b>	<b>Course Code</b>	<b>Course Title</b>	<b>L:T:P:C</b>	<b>Preferred Semester</b>
1	18XWO1	ENTREPRENEURSHIP	3:2:0:4	FROM VIII
2	18XWO2	COMPUTER FORENSICS	3:2:0:4	FROM VIII
3	18XWO3	WIRELESS NETWORKS	3:2:0:4	FROM VIII
4	18XWO4	RANDOMIZED ALGORITHMS	3:2:0:4	FROM VIII
5	18XWO5	APPLIED GRAPH THEORY	3:2:0:4	FROM VIII
6	18XWO6	NETWORK FORENSICS	3:2:0:4	FROM VIII
7	18XWO7	APPLIED NUMERICAL ANALYSIS	3:2:0:4	FROM VIII
8	18XWO8	ENVIRONMENTAL SCIENCE AND GREEN COMPUTING	3:2:0:4	FROM VIII
9	18XWO9	QUANTUM MECHANICS AND FUNDAMENTALS OF QUANTUM COMPUTATION	3:2:0:4	FROM VIII
10	18XWOA	COMPUTATIONAL FOUNDATIONS FOR ROBOTICS	3:2:0:4	FROM VIII
11	18XWOB	MATHEMATICAL MODELLING	3 2 0 4	FROM VIII

<b>EMPLOYABILITY ENHANCEMENT COURSES (EEC)</b>				
<b>S.No.</b>	<b>Course Code</b>	<b>Course Title</b>	<b>L:T:P:C</b>	<b>Preferred Semester</b>
1	18XWP1	PROJECT WORK I	0:0:0:12	VII
2	18XW98	CAPSTONE PROJECT LAB	0:0:4:2	IX
3	18XWP2	PROJECT WORK II	0:0:0:12	X