

**M. Tech. (Computer Science) 5 Years
Dual Degree Integrated Programme**

Tentative Course Scheme

Subject to Approval from Board of Studies

B. Tech. (CS) 4 Years		M. Tech. (CS) 1 Year	
Category	Credits	Category	Credits
Basic Sciences	28	Basic Sciences	--
Humanities & Management	6	Humanities & Management	4
Engineering Sciences	12	Engineering Sciences	--
Core Computer Science	48	Core Computer Science	8
Advanced Computer Science	32	Advanced Computer Science	8
Professional Electives	-	Professional Electives	8
Interdisciplinary	-	Interdisciplinary	4
Practical	44	Practical	--
Virtual	32	Virtual	8
Total	202	Total	40

Course Scheme

Semester I

Sub. Code	Subject Name	Category	L	T	P	C
CS-101	Mathematics – I (Calculus & Linear Algebra)	Basic Sciences	3	1	0	4
CS-102	Physics –I (Semi-conductor Physics)	Basic Sciences	3	1	0	4
CS-103	Communications Skills	Humanities & Management	3	1	0	4
CS-104	Digital Electronics	Engineering Sciences	3	1	0	4
CS-105	Problem Solving using C	Core Computer Science	3	1	0	4
CS-106	Digital Electronics Lab	Practical	0	0	4	2
CS-107	C Programming Lab	Practical	0	0	4	2
CS-108	Comprehensive Viva	Virtual	0	0	0	4
			Total			28

Semester II

Sub. Code	Subject Name	Category	L	T	P	C
CS-201	Mathematics – II (Differential Calculus)	Basic Sciences	3	1	0	4
CS-202	Chemistry and Environmental Sciences	Basic Sciences	3	1	0	4
CS-203	Engineering Drawing	Engineering Sciences	3	1	0	4
CS-204	Digital Computer Organization	Engineering Sciences	3	1	0	4
CS-205	Object Oriented Programming using C++	Core Computer Science	3	1	0	4
CS-206	Engineering Drawing Lab	Practical	0	0	4	2
CS-207	C++ Programming Lab	Practical	0	0	4	2
CS-208	Comprehensive Viva	Virtual	0	0	0	4
			Total			28

Semester III

Sub. Code	Subject Name	Category	L	T	P	C
CS-301	Mathematics-III (Probability & Statistics)	Basic Sciences	3	1	0	4
CS-302	Data Structures and Algorithms	Core Computer Science	3	1	0	4
CS-303	Discrete Structures	Basic Sciences	3	1	0	4
CS-304	Computer Architecture	Core Computer Science	3	1	0	4
CS-305	Human Computer Interaction	Core Computer Science	3	1	0	4
CS-306	Data Structures and Algorithms Lab	Practical	0	0	2	2
CS-308	Comprehensive Viva	Virtual	0	0	0	4
			Total			26

Semester IV

Sub. Code	Subject Name	Category	L	T	P	C
CS-401	Data Science using Python	Advanced Computer Science	3	1	0	4
CS-402	Computer Graphics	Core Computer Science	3	1	0	4
CS-403	Database Management System	Core Computer Science	3	1	0	4
CS-404	Software Engineering	Core Computer Science	3	1	0	4
CS-405	Green Computing & Sustainability	Humanities and Management	2	0	0	2
CS-406	Python Lab	Practical	0	0	4	2
CS-407	Database Management System Lab	Practical	0	0	4	2
CS-408	Comprehensive Viva	Virtual	0	0	0	4
			Total			26

Semester V

Sub. Code	Subject Name	Category	L	T	P	C
CS-501	Computer Networks	Core Computer Science	3	1	0	4
CS-502	Programming with Java	Core Computer Science	3	1	0	4
CS-503	Systems Programming	Core Computer Science	3	1	0	4
CS-504	Open System Operating Systems	Core Computer Science	3	1	0	4
CS-505	Numerical Analysis & Design	Basic Sciences	3	1	0	4
CS-506	Programming with Java Lab	Practical	0	0	4	2
CS-507	Comprehensive Viva	Virtual	0	0	0	4
			Total			26

Semester VI

Sub. Code	Subject Name	Category	L	T	P	C
CS-601	Theory of Computation	Core Computer Science	3	1	0	4
CS-602	Design & Analysis of Algorithms	Core Computer Science	3	1	0	4
CS-603	Cloud Computing	Advanced Computer Science	3	1	0	4
CS-604	Artificial Intelligence & Machine Learning	Advanced Computer Science	3	1	0	4
CS-605	Project	Practical	0	0	4	4
CS-607	Comprehensive Viva	Virtual	0	0	0	4
			Total			28

Semester VII

Sub. Code	Subject Name	Category	L	T	P	C
CS-701	Apprenticeship Training / Industry Internship (Major Project Phase –I)	Practical	0	0	10	10
CS-702	*MOOC/Swayam/NPTEL Course-I Web Programming	Advanced Computer Science	3	1	0	4
CS-703	*MOOC/Swayam/NPTEL Course-II Cyber Security	Advanced Computer Science	3	1	0	4
CS-704	Comprehensive Viva	Virtual	0	0	0	4
					Total	24

Semester VIII

Sub. Code	Subject Name	Category	L	T	P	C
CS-801	Apprenticeship Training/ Industry Internship (Major Project Phase-II)	Practical	0	0	10	10
CS-802	*MOOC/Swayam/NPTEL Course-III Data Engineering	Advanced Computer Science	3	1	0	4
CS-803	*MOOC/Swayam/NPTEL Course-IV Software Testing	Advanced Computer Science	3	1	0	4
CS-804	Comprehensive Viva	Virtual	0	0	0	4
					Total	24

***MOOC/ Swayam / NPTEL /:** Any Course with 4 credits equivalent to University or (12 weeks minimum).

Reference: Final Course List Offered by Swayam/NPTEL for respective subject in July-Dec for Odd Semester and Jan-May for Even Semester.

Assessment of 4 credit course: Credits earned in MOOC will be accepted after normalizing according to University Grading System.

Assessment of Apprenticeship/Industry Training:

1. Submission of three project reports and one presentation (online/offline) for internal assessment (40 marks).
2. Presentation of Project (Offline) before panel for end-semester assessment (60 marks).

Semester IX

Sub. Code	Subject Name	Category	L	T	P	C
CS-901	Compiler Design	Core Computer Science	3	1	0	4
CS-902	Object Oriented Analysis & Design	Core Computer Science	3	1	0	4
CS-904	Research in Computing	Interdisciplinary	3	1	0	4
CS-905	Elective – I	Professional Electives	3	1	0	4
CS-906	Comprehensive Viva	Virtual	0	0	0	4
			Total			20

Professional Electives - I

Sub. Code	Subject Name	L	T	P	C
CS-905A	Principles of Programming Languages	3	1	0	4
CS-905B	Distributed Systems	3	1	0	4
CS-905C	Software Reliability & Quality Management	3	1	0	4
CS-905D	Computer Vision & Image Processing	3	1	0	4
CS-905E	Natural Language Processing & Language Models	3	1	0	4
CS-905F	Big Data Analytics	3	1	0	4

Semester X

Sub. Code	Subject Name	Category	L	T	P	C
CS-1002	Mobile & Wireless Computing	Advanced Computer Science	3	1	0	4
CS-1003	Information Security	Advanced Computer Science	3	1	0	4
CS-1004	Cyber Laws and Ethics in Computing	Humanities and Management	3	1	0	4
CS-1005	Elective - II	Professional Electives	3	1	0	4
CS-1006	Comprehensive Viva	Virtual	0	0	0	4
			Total			20

Professional Electives - II

Sub. Code	Subject Name	L	T	P	C
CS-1005A	Wireless Sensor Networks & IoT	3	1	0	4
CS-1005B	Deep Learning	3	1	0	4
CS-1005C	Optimization Techniques	3	1	0	4
CS-1005D	Robotics & Numerical Control	3	1	0	4
CS-1005E	Quantum Computing	3	1	0	4
CS-1005F	Development Operations and Orchestration	3	1	0	4

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