B.Tech. in Computer Science & Engineering (CSE)

1st Semester

Courses	T	L	T	P	C
Classical Physics	IC	3	1	0	4
Mathematics – I	IC	3	1	0	4
Basic Electronics	IC	3	1	0	4
Basic Electronics Lab	IC	0	0	3	2
Computer Programming	IC	3	0	0	3
Computer Programming Lab	IC	0	0	3	2
Technical Comm. in English	IC	3	0	0	3

2nd Semester

Courses	T	L	T	P	C
Mathematics – II	IC	3	1	0	4
UG Physics Laboratory	IC	0	0	3	2
Data Structures & Algorithms	IC	3	0	0	3
Data Structures & Algorithms Lab	IC	0	0	2	1
Value Education and Ethics	IC	3	0	0	3
Environmental Ecology & Biology	IC	2	0	2	3
Discrete Mathematical Structures	PC	3	0	0	3
Digital Systems	PC	3	0	0	3
Introduction to Modern Physics*	OE	3	0	0	3

3rd Semester

Courses	T	L	T	P	C
Mathematics – III	IC	3	1	0	4
Economics for Engineers/ Psychology, Tech. & Society	IC	3	0	0	3
Com. Organization & Architecture	PC	3	0	2	4
Advanced Programming	PC	3	0	2	4
IDBMS	PC	3	0	2	4
Optimization Techn. & Applications	PC	3	0	0	3

4th Semester

Courses	T	L	T	P	C
Economics for Engineers/ Psychology, Technology & Society	IC	3	0	0	3
Probability and Statistics	PC	3	1	0	4
Design and Analysis of Algorithms	PC	3	0	0	3
Theory of Computation	PC	3	0	0	3
Operating Systems	PC	3	0	0	4
Computer Networks	PC	3	0	1	4
Program Elective – 1	PE	3	0	1	3

5th Semester

Courses	T	L	T	P	C
Artificial Intelligence	PC	3	0	0	3
Computer Security	PC	3	0	0	3
Introduction to Data Science	PC	3	0	0	3
Software Engineering	PC	3	0	0	3
Integrated Software Devel. Lab	PC	0	0	3	2
Program Elective – 2	PE	3	0	0	3
Program Elective – 3	PE	3	0	0	3

6th Semester

Courses	T	L	T	P	C
Compiler Design	PC	3	0	0	3
B.Tech. Project	IC	3	0	0	3
Program Elective – 4	PE	3	0	0	3
Program Elective – 5	PE	3	0	0	3
Program Elective – 6	PE	3	0	0	3

7th Semester

Courses	T	L	T	P	C
B.Tech. Project	IC	3	0	0	3
Program Elective – 7	PE	3	0	0	3
Program Elective – 8	PE	3	0	0	3
Other Elective – 1	OE	3	0	0	3
Other Elective – 2	OE	3	0	0	3

8th Semester

Courses	T	L	T	P	C
Program Elective – 9	PE	3	0	0	3
Other Elective – 3	OE	3	0	0	3
Other Elective – 4	OE	3	0	0	3

B.Tech. (Hons.) in CSE with Specialization in Data Science & Artificial Intelligence

1st Semester

Courses	T	L	T	P	C
Classical Physics	IC	3	1	0	4
Mathematics – I	IC	3	1	0	4
Basic Electronics	IC	3	1	0	4
Basic Electronics Lab	IC	0	0	3	2
Computer Programming	IC	3	0	0	3
Computer Programming Lab	IC	0	0	3	2
Technical Communication in English	IC	3	0	0	3

2nd Semester

Courses	T	L	T	P	C
Mathematics – II	IC	3	1	0	4
UG Physics Laboratory	IC	0	0	3	2
Data Structures and Algorithms	IC	3	0	0	3
Data Structures and Algorithms Lab	IC	0	0	2	1
Value Education and Ethics	IC	3	0	0	3
Environmental Ecology & Biology	IC	2	0	2	3
Discrete Mathematical Structures	PC	3	0	0	3
Digital Systems	PC	3	0	0	3
Introduction to Modern Physics*	OE	3	0	0	3

3rd Semester

Courses	T	L	T	P	C
Mathematics – III	IC	3	1	0	4
Economics for Engineers/ Psychology, Technology & Society	IC	3	0	0	3
Com. Organization & Architecture	PC	3	0	2	4
Advanced Programming	PC	3	0	2	4
Information and Database Management Systems	PC	3	0	2	4
Optimization Techn. & Applications	PC	3	0	0	3

4th Semester

Courses	T	L	T	P	C
Economics for Engineers/ Psychology, Technology & Society	IC	3	0	0	3
Probability and Statistics	PC	3	1	0	4
Design and Analysis of Algorithms	PC	3	0	0	3
Theory of Computation	PC	3	0	0	3
Operating Systems	PC	3	0	2	4
Computer Networks	PC	3	0	2	4
Program Elective – 1	PE	3	0	0	3

5th Semester

Courses	T	L	T	P	C
Artificial Intelligence	PC	3	0	0	3
Computer Security	PC	3	0	0	3
Introduction to Data Science	PC	3	0	0	3
Software Engineering	PC	3	0	0	3
Integrated Software Devel. Lab	PC	0	0	3	2
Program Elective – 2	PE	3	0	0	3
Program Elective – 3	PE	3	0	0	3
Multiagent Systems	SC	3	0	0	3
Data Science Lab	SC	0	0	2	1
Artificial Intelligence Lab	SC	0	0	2	1

6th Semester

Courses	T	L	T	P	C
Compiler Design	PC	3	0	0	3
BTP	IC	3	0	0	3
Program Elective – 4	PE	3	0	0	3
Program Elective – 5	PE	3	0	0	3
Program Elective – 6	PE	3	0	0	3
Machine Learning	SC	3	0	0	3
Machine Learning Lab	SC	0	0	2	1
Specialization Elective 1	SE	3	0	0	3

7th Semester

Courses	T	L	T	P	C
BTP	IC	3	0	0	3
Program Elective – 7	PE	3	0	0	3
Program Elective – 8	PE	3	0	0	3
Other Elective – 1	OE	3	0	0	3
Other Elective – 2	OE	3	0	0	3
Introduction to Big Data	SC	2	0	2	3
Specialization Elective 2	SE	3	0	0	3

8th Semester

Courses	T	L	T	P	C
Program Elective – 9	PE	3	0	0	3
Other Elective – 3	OE	3	0	0	3
Other Elective – 4	OE	3	0	0	3
Ethics in AI & DS	SC	1	0	0	1

B.Tech.-M.Tech. (5-year Integrated Dual Degree) CSE

1st Semester

Courses	T	L	T	P	C
Classical Physics	IC	3	1	0	4
Mathematics – I	IC	3	1	0	4
Basic Electronics	IC	3	1	0	4
Basic Electronics Lab	IC	0	0	3	2
Computer Programming	IC	3	0	0	3
Computer Programming Lab	IC	0	0	3	2
Technical Comm. in English	IC	3	0	0	3

2nd Semester

Courses	T	L	T	P	C
Mathematics – II	IC	3	1	0	4
UG Physics Laboratory	IC	0	0	3	2
Data Structures & Algorithms	IC	3	0	0	3
Data Structures & Algorithms Lab	IC	0	0	2	1
Value Education and Ethics	IC	3	0	0	3
Environmental Ecology & Biology	IC	2	0	2	3
Discrete Mathematical Structures	PC	3	0	0	3
Digital Systems	PC	3	0	0	3
Introduction to Modern Physics*	OE	3	0	0	3

3rd Semester

Courses	T	L	T	P	C
Mathematics – III	IC	3	1	0	4
Economics for Engineers/ Psychology, Tech. & Society	IC	3	0	0	3
Com. Organization & Architecture	PC	3	0	2	4
Advanced Programming	PC	3	0	2	4
IDBMS	PC	3	0	2	4
Optimization Techn. & Applications	PC	3	0	0	3

4th Semester

Courses	T	L	T	P	C
Economics for Engineers/ Psychology, Technology & Society	IC	3	0	0	3
Probability and Statistics	PC	3	1	0	4
Design and Analysis of Algorithms	PC	3	0	0	3
Theory of Computation	PC	3	0	0	3
Operating Systems	PC	3	0	2	4
Computer Networks	PC	3	0	2	4
Program Elective – 1	PE	3	0	0	3

5th Semester

Courses	T	L	T	P	C
Artificial Intelligence	PC	3	0	0	3
Computer Security	PC	3	0	0	3
Introduction to Data Science	PC	3	0	0	3
Software Engineering	PC	3	0	0	3
Integrated Software Devel. Lab	PC	0	0	3	2
Program Elective – 2	PE	3	0	0	3
Program Elective – 3	PE	3	0	0	3

6th Semester

Courses	T	L	T	P	C
Compiler Design	PC	3	0	0	3
Program Elective – 4	PE	3	0	0	3
Program Elective – 5	PE	3	0	0	3
Program Elective – 6	PE	3	0	0	3
Other Elective – 1	OE	3	0	0	3

7th Semester

Courses	T	L	T	P	C
M. Tech. Thesis	PC	3	0	0	3
Program Elective – 7	PE	3	0	0	3
Program Elective – 8	PE	3	0	0	3
Program Elective – 9	PE	3	0	0	3
Other Elective – 2	OE	3	0	0	3

8th Semester

Courses	T	L	T	P	C
M. Tech. Thesis	PC	3	0	0	3
Program Elective – 10	PE	3	0	0	3
Program Elective – 11	PE	3	0	0	3
Other Elective – 3	OE	3	0	0	3
Other Elective – 4	OE	3	0	0	3

9th Semester

Courses	T	L	T	P	C
M. Tech. Thesis	PC	9	0	0	9
Program Elective – 12	PE	3	0	0	3

10th Semester

Courses	T	L	T	P	C
M. Tech. Thesis	PC	9	0	0	9
Program Elective – 13	PE	3	0	0	3

M.Tech. in Computer Science & Engineering

1st Semester

Courses		T/L	T	P	C
Advanced Data Structures & Algo.	PC	3	0	2	4
Mathematical Structures for Engg.	PC	3	0	0	3
Program Elective 1	PE	3	0	0	3
Program Elective 2	PE	3	0	0	3
Program Elective 3	PE	3	0	0	3

2nd Semester

Courses		T/L	T	P	C
Machine Learning & Pattern Reco.	PC	3	0	2	4
Tech. Writing & Research Metho.	PC	4	0	0	4
Program Elective – 4	PE	3	0	0	3
Program Elective – 5	PE	3	0	0	3
Program Elective – 6	PE	3	0	0	3

3rd Semester

Courses		T/L	T	P	C
M. Tech. Thesis I	PC	0	0	18	9
Program Elective – 7	PE	3	0	0	3
Open Elective	OE	3	0	0	3

4th Semester

Courses		T/L	T	P	C
M. Tech. Thesis II	PC	0	0	36	18

List of Programme Electives

Approximation & Randomised Algorithms	Introduction to Convex Optimization	Machine Learning
Big Data Analytics	Introduction to Convex Optimization	Multiagent Systems
Cloud Computing	Natural Language Processing	Wireless Sensor Networks
Computer Graphics	Internet-of-Things Technologies	Network Security
Compiler Optimization	Information Retrieval and Web Search	Network-on-Chip
Data Mining	Introduction to Simulation & Modeling	Optimization Techniques & Applications
Soft Computing	Digital Image Processing	Parallel Computer Architecture
Malware: Threats and Analysis	Introduction to Game Theory	Principles of Programming Languages
Deep Learning	Mobile Ad Hoc Networks	Real Time Systems
Functional and Non-Functional Testing	Machine Learning & Pattern Recognition	Software Metrics and Design Strategies
Genetic Algorithms & Applications	Mathematical Structures for Engineers	Social Network Analysis
Introduction to Artificial Intelligence	Multimedia Processing & Applications	

List of Specialization Electives

Analytics for Internet of Things	Knowledge Graphs	Reinforcement Learning
Computer Vision & Applications	Knowledge Representation, Reasoning & Applications	Sequential Pattern Mining
Deep Learning		Social Network Analysis
Human-Computer Interaction	Mining Massive Datasets	Security and Privacy in Data Science
Information Visualization	Natural Language Processing	Other Relevant Electives

List of Other Electives (Available to all UG Programmes)

Active Directory	French	Natural Nano world: DFM
Algebra	Graph Theory	Numeric Linear Algebra
Automotive Electronics	Green Communication and Networking	Numerical Analysis
Autosar	Indian Modernity: Text & Context	Numerical Methods
Basics of Finance and Soft Skills	Industrial Engineering and Management	Operation Research
Bio-Medical Engineering	Industrial Management	Optimization
Biosensors: Concepts and Applications	International Economics and Soft Skills	Organic Electronics & Opto Electronics: MA
Cinema and Indian Society	Internet of Things	Organizational Behaviour
Classical Mechanics and Field Theory	Introduction to Nano Science & Engg.	Pervasive Computing
Colonialism & the Making of Modern India	Linear Algebra	Physics of Material
Computational Physics	Logical and Critical Thinking	Physics of The Universe
Corpus Pragmatics	Macro Economics for Managers	Pragmatics in Social Media
Digital VLSI Circuits	Mathematical Physics	Solid State Physics
Electrical Machines & Power Systems	Mathematical Structures for Engineers	Superconductivity: Basics & Applications
Engineering Chemistry	Modernism: Literary Representation	System Dynamics and Control
Entrepreneurship Practice	Nano Technology	System Level Specifications and Design
Ethnic Conflict: Literature & South Asia	Non Linear Dynamics and Chaos	The Self: Aspects and Implications