



SCHOOL OF COMPUTING SCIENCE AND ENGINEERING

CURRICULUM & SYLLABUS

of

**B.Tech. CSE Specialization in Artificial Intelligence and Machine
Learning**

(2021-2022) Admitted Students

Course Structure:	Programme Core (PC)	Programme Elective (PE)	University Core (UC)	University Elective (UE)	Total
		55	15	69	21

PROGRAM CORE			55 Credits
Course Code	Course Title	Type	Credit
XXXX	Data Structures and Analysis of Algorithms	LTP	4
	Digital Logic and Computer Architecture	LTP	4
CSE3001	Database Management Systems	LTP	4
CSE2001	Object Oriented Programming with C++	LTP	4
CSA4002	Artificial Neural Networks	LTP	4
CSE3003	Operating Systems	LTP	4
	Reinforcement And Representation Learning	LTP	4
CSA4008	Applied Machine Learning	LTP	4
CSE3006	Computer Networks	LTP	4
CSA4003	Data Mining and Warehousing	LTP	4
CSA4006	Natural Language Processing	LTP	4
CSE3011	Python Programming	LP	3
CSE2004	Theory Of Computation and Compiler Design	LT	4
CSA4004	Deep Learning	LTP	4

PROGRAM ELECTIVE			Any 15 Credits
Course Code	Course Title	Type	Credit
Core AI and ML			
CSA3004	Data Visualization	LP	3
	Machine Learning with Big Data	LP	3
CSA4016	Hardware Architectures for Machine Learning	LT	3
CSA4005	Expert Systems and Fuzzy Logic	LT	3
	GPU Programming and Architecture	LP	3
CSA3001	Agent Based Intelligent System	LT	3
CSA3002	Convex Optimization	LT	3
	Bayesian Data Analysis	LT	3
AI, Neuroscience and Natural Intelligence			
CSA4011	Information Retrieval and Web Search	LT	3
CSA4012	Introduction to Brain and Neuro Science	LT	3
CSA4015	Computational Intelligence	LT	3
	Knowledge Engineering	LT	3
	Theoretical and Computational Neuroscience	LT	3
Robotics			

	Introduction to Vision and Robotics	LP	3
	Robotics and Control	LT	3
	Kinematics and Kinetics for Robotics	LT	3
	Robotics Operating System	LT	3
CSA2002	Introduction to Drones	LT	3
Speech And Vision			
CSE3010	Computer Vision	LT	3
CSG2002	Human Computer Interaction	LT	3
	Speech Systems	LT	3
	Surveillance Video Analytics and Image Processing	LT	3
	Computer Vision for Autonomous Vehicles	LT	3
	Immersive Multimedia	LT	3
	Pattern Recognition and Image Analysis	LT	3
AI: Cyber, Gaming, Automation			
	AI In Bitcoins and Cryptocurrencies	LT	3
	AI In Game Development	LT	3
	Pervasive AI for IOT Applications	LT	3
	Game AI	LT	3
	AI In Industry 4.0	LT	3
	Cloud Analytics & Automation	LT	3
Future Skills			
NAS1001	Nasscom Future Skills - Associative Data Analyst	LP	3
NAS2001	Nasscom Future Skills – Advanced Data Analyst	LP	3
	C# And .Net Programming	LP	3
	Advanced Python Programming	LP	3
	Advanced Java Programming	LP	3
	R Programming	LP	3
	Scala Programming	LP	3
	UML Programming	LP	3
Data Analytics			
CSA4007	Cognitive Analytics	LT	3
	Predictive and Time Series Analysis	LT	3
	Graph Analytics for Big Data	LT	3
	Parallel And Distributed Systems	LT	3
CSA4010	Data Analytics Using Scala Programming	LT	3
	AI Into Kubernetes	LT	3
	Independent Study Elective	PJ	3
* Independent Study Elective			
	Design Project		3
	Simulation Project		
	Product Development		
	Special Project		
	Computer Project		

UNIVERSITY CORE			69 Credits
Natural Science Core			23 credits
PHY1001	Engineering Physics	LTP	4
CHY1005	Introduction To Computational Chemistry	LTP	4
MAT1001	Calculus And Laplace Transforms	LT	4
MAT3002	Applied Linear Algebra	LT	3
MAT3003	Probability, Statistics and Reliability	LT	4
MAT2002	Discrete Mathematics and Graph Theory	LT	4
Basic Engineering Sciences Core			12 credits
	Engineering Design and Modeling	LTP	4
EEE1001	Electric Circuits and Systems	LTP	4
CSA2001	Fundamentals Of AI and ML	LTP	4
Skill Development Courses			13 credits
CSE1021	Introduction To Problem Solving and Programming	LP	4
CSE3002	Programming In Java	LP	3
	Competitive Coding Practices	LP	3
	Skills For Employment	P	1
	Quantitative Skills	LT	2
Humanities Social Science & Management Core			7 credits
ENG1004	Effective Communication	LT	3
ENG2005	Advanced Technical Communication Skills	LT	2
CHY1006	Environmental Sustainability	LT	2
Projects & Internships			14 credits
DSN2098	Project Exhibition - I	PJ	1
DSN2099	Project Exhibition - II	PJ	1
DSN3099	Engineering Project in Community Service	PJ	2
	Summer Industrial Internship	PJ	1
	Semester Internship	PJ	4
	Capstone Project	PJ	5

University Elective			21 Credits
NATURAL SCIENCE ELECTIVES (Select any 2 Subject)			Any 6 Credits
MAT2003	Applied Numerical Methods	LT	3
MAT3008	Computational Game Theory	LT	3
MAT2004	Operations Research	LT	3
MAT2001	Differential and Difference Equations	LT	3
MAT3004	Random Process	LT	3
MAT3016	Stochastic Process	LP	3
MAT3017	Statistical Inferences and Series of Functions	LT	3
MULTIDISCIPLINARY ELECTIVES (Select any 2 Subject)			Any 6 Credits
CSG2002	Human-Computer Interaction	LT	3
	Biometric and Security Systems	LT	3
	Sensor and IOT	LP	3
	Unmanned Aerial Vehicles	LT	3
	Body Area Network	LT	3
	Digital Fabrication/Mems	LT	3
	Bio Inspired Designs	LT	3
	Cyber Physical Systems	LT	3
	Foundations Of Data Science	LP	3
	Introduction to Linguistics	LT	3
	Intellectual Property Rights	LT	3
HUMANITIES, SOCIAL SCIENCES AND MANAGEMENT ELECTIVES (Select any 1 Subject)			Any 3 Credits
	Emotional Intelligence	LT	3
	Anthropology For Engineers	LT	3
MGT1001	Principles of Management and Organizational Behavior	LT	3
	International Business	LT	3
MGT2003	Technology Entrepreneurship	LT	3
MGT2004	Supply Chain Management	LT	3
	Disaster Recovery and Business Continuity Management	LT	3
	Judgement and Decision Making	LT	3
	Operational Management	LT	3
	Engineering Economics and Financial Accounting	LT	3
BMT1013	Human Resource Management	LT	3
	Information Systems	LT	3
FREE ELECTIVES			Any 6 Credits
-	Elective / Specialization Courses from other Schools	LT	6
-	MOOC / Certification Courses	LT	