VIT BHOPAL UNIVERSITY, BHOPAL

SCHOOL OF COMPUTING SCIENCE AND ENGINEERING

CURRICULUM

B.Tech. (Computer Science and Engineering) Specialization in Artificial Intelligence and Machine Learning

Category	Core Credits	Elective Credits	Total Credits
Natural Science	29	6	**35**
Engineering and Technology	96	21	**117**
Humanities and Management	13	9	**22**
Open Electives	0	6	**6**
Total Credits			**180**

SUBJECT BASKETS

B Tech (Computer Science and Engineering) Specialization in Artificial Intelligence and Machine Learning			
Program Core(96 Cr)			
Code	**Subject Name**	**Type**	**Credits**
CSE1001	Introduction to problem solving and programming	LTP	4
EEE1001	Electric Circuits and Systems	LTP	4
CSE2001	Object oriented programming with C++	LTP	4
CSA3002	Introduction to Drones	LT	2
CSA2001	Fundamental of AI and ML	LTP	4
CSA4008	Applied Machine Learning	LTP	4
ECE2002	Digital Logic Design	LTP	4
CSE2002	Data Structures and Algorithms	LTP	4
CSE2003	Computer Architecture and Organization	LT	4
CSE3004	Design and Analysis of Algorithms	LTP	4
CSE2004	Theory of Computation and Compiler Design	LT	4
CSE3001	Database Management Systems	LTP	4
CSE3003	Operating Systems	LTP	4
CSE3006	Computer Networks	LTP	4
CSA4006	Natural Language Processing	LT	3
CSA4002	Artificial Neural Networks	LTP	4
CSA4004	Deep Learning	LP	3
CSA3003	Reinforcement Learning	LT	2
CSA3002	Convex Optimization	LT	2
DSN2098	Project Exhibition – I	PJ	1
DSN2099	Project Exhibition – II	PJ	1
CSE3099	Engineering Project in Community Service	PJ	2
DSN2097	Internship	PJ	2
DSN2096	Engineering Design	LT	2
DSN4099	Capstone Project	PJ	20
		Total	**96**

**B Tech (Computer Science and Engineering) Specialization in Artificial Intelligence and Machine Learning**
**Program Electives**
Code	**Subject Name**	**Type**	**Credits**
CSA4003	Data Mining and Warehousing	LT	3
CSA4015	Computational Intelligence	LT	3
	R Programming	LP	3
CSE4006	Knowledge Engineering	LT	3
CSA4007	Cognitive Analytics	LT	3
CSE3010	Computer Vision	LT	3
CSG2003	Human Computer Interaction	LT	3
CSA3004	Data Visualization	LP	3
CSA4005	Expert Systems and Fuzzy Logic	LT	3
	Introduction to Vision and Robotics	LT	3
CSE3008	Soft computing	LT	3
CSA3001	Agent Based Intelligent System	LT	3
CSA4009	Open Source Operating System	LT	3
	Pattern Recognition and Image Analysis	LT	3
CSE3011	Python Programming	LP	3
	Scalable and Cloud Computing	LT	3
CSA4012	Introduction to Brain and Neuro Science	LT	3
CSA4017	Optimization Methods in Machine Learning	LT	3
CSA4001	Algorithm for Intelligent Systems	LP	3
	Bayesian Data Analysis	LT	3
	Machine Learning with Big Data	LT	3
CSA4011	Information Retrieval and Web Search	LT	3
NAS1001	NASSCOM Future Skills Associative Data Analyst	LTP	4
NAS2001	Advanced Data Analytics	LTP	4
CSA4013	Open Source Frameworks in Machine Learning	LT	3
CSA4010	Data Analytics using Scala Programming	LT	3
CSA4014	Applications of AI in Healthcare	LT	3
	Decision Support System		
CSA4018	Randomized Algorithms	LT	3
	Game AI	LT	3
	Business in Artificial Intelligence	LT	3
	**Select Any Seven**		**21**

B Tech (Computer Science and Engineering) Specialization in Artificial Intelligence and Machine Learning			
Natural Science Core (29 Cr)			
Code	**Subject Name**	**Type**	**Credits**
PHY1001	Engineering Physics	LTP	4
CHY1001	Engineering Chemistry	LTP	4
MAT1001	Calculus and Laplace Transforms	LT	4
MAT2002	Discrete Mathematics and Graph Theory	LT	4
MAT3002	Applied Linear Algebra	LT	3
MAT3003	Probability, Statistics And Reliability	LT	4
CHY1002	Environmental Science	LT	3
MAT3016	Stochastic Processes	LT	3
		Total	**29**
Natural Science Electives			
PHY2003	Computational Physics	LT	3
MAT3004	Random Processes	LT	3
MAT3017	Statistical Inferences and Serious of Functions	LT	3
MAT2003	Applied Numerical Methods	LT	3
	Select Any Two	**Total**	**6**

B Tech (Computer Science and Engineering) Specialization in Artificial Intelligence and Machine Learning				
HUM and MGT Core				
Code	**Subject Name**	**Type**	**Credits**	
ENG1002	Communication for Technical Professionals	LT	3	
ENG2001	Technical Writing & Composition	LT	2	
HUM1008	Swachh Bharat	PJ	2	
HUM1007	Ethics and Values	LT	2	
STS1001	Soft Skills-I	LT	1	
STS1002	Soft Skills-II	LT	1	
EXC1001	Extracurricular Activity		2	
		Total	**13**	
HUM and MGT Electives				
		LT	3	
HUM1013/ HUM1014	Indian Culture and Heritage / Indian Constitution	LT	3	
HUM1012	Logic and Language Structures	LT	3	
PLA1001	Programming for Computing Engineers	LT	4	
PLA1002	Programming for Engineers	LT	4	
PLA1003	Logic and Problem Solving for Engineers	LT	2	
	Select Any Three	**Total**	**09**	

B Tech (Computer Science and Engineering) Specialization in Artificial Intelligence and Machine Learning			
Open Elective			
Code	**Subject Name**	**Type**	**Credits**
	Elective or Spl Courses from other School		
	ONL - Coursera Course (Certification)	-	-
	Select Any Two	**Total**	**6**

Semester Course Arrangement – B Tech (Computer Science and Engineering) Specialization in Artificial Intelligence and Machine Learning

Semester 1				Semester 2				Semester 3				Semester 4			
Course Code	Course Title	Type	Cr.	Course Code	Course Title	Type	Cr.	Course Code	Course Title	Type	Cr.	Course Code	Course Title	Type	Cr.
PHY1001	Engineering Physics	LTP	4	ENG2001	Technical Writing & Composition	LT	2	MAT3003	Probability, Statistics and Reliability	LT	4	MAT3002	Applied Linear Algebra	LT	3
MAT1001	Calculus and Laplace Transforms	LT	4	MAT2002	Discrete Mathematics and Graph Theory	LT	4	ECE2002	Digital Logic Design	LTP	4	CSE3004	Design and Analysis of Algorithms	LT	4
CSE1001	Introduction to problem solving and programming	LTP	4	CSA3002	Introduction to Drones	LT	2	CSE3003	Operating System	LTP	4	CSE3001	Database Management Systems	LTP	4
ENG1002	Communication for Technical Professionals	LT	3	CSE2001	Object Oriented Programming with C++	LTP	4	CSE2002	Data Structures Algorithms	LTP	4	CSA4001	Applied Machine Learning	LTP	4
EEE1001	Electric Circuits and System	LTP	4	CSA2001	Fundamental of AI and ML	LTP	4		Hum & Mgt Elective - I	LT	3		Open Elective-I	LT	3
CHY1001	Engineering Chemistry	LTP	4	HUM1008	Swachh Bharat	PJ	2	CSE2003	Computer Architecture and Organization	LT	4		NS Elective - I	LT	3
HUM1007	Ethics and values	LT	2	CHY1002	Environmental Science	LT	3	DSN2098	Project Exhibition - I	PJ	1	DSN2099	Project Exhibition - II	PJ	1
					Engineering Design	LT	2						Extra-Curricular Activity		2
	Total credits		25		Total credits		21		Total credits		24		Total credits		24

Semester 5				Semester 6				Semester 7				Semester 8			
Course Code	Course Title	Type	Cr.	Course Code	Course Title	Type	Cr.	Course Code	Course Title	Type	Cr.	Course Code	Course Title	Type	Cr.
CSE3006	Computer Networks	LTP	4	CSA4002	Artificial Neural Networks	LP	3	CSA4006	Natural Language Processing	LT	3	DSN4099	Capstone Project	PJ	20
	Convex Optimization	LT	2		Program Elective-II	LP/LT	3	CSA4004	Deep Learning	LTP	4				
CSE2004	Theory of Computation and Compiler Design	LT	4		Program Elective-III	LP/LT	3		Reinforcement Learning	LT	2				
	Stochastic Processes	LT	3		Program Elective-IV	LP/LT	3		Program Elective-VI	LP/LT	3				
STS1001	Soft-Skills - I	P	1	STS2001	Soft-Skills - II	P	1		Program Elective-VII	LP/LT	3				
	Program Elective-I	LP/LT	3		Hum & Mgt Elective - II	LT	3		Internship	PJ	2				
	Open Elective-II	LT	3	CSE3099	Engineering Project in Community Services	PJ	2		Hum & Mgt Elective - III	LT	3				
	NS Elective - II	LT	3		Program Elective-V	LP/LT	3								
	Total credits		23		Total credits		21		Total credits		20		Total credits		20