

B.Tech. CSE

Artificial Intelligence and Machine Learning

(In Association with IBM)

Programme Code: CSIB

Duration: 4 Years

Course Structure under Choice Based Credit System (CBCS)



EFFECTIVE FROM SESSION: 2021-2022

Department of Computer Science and Information Technology

Faculty of Engineering & Technology

**CHHATRAPATI SHIVAJI MAHARAJ
UNIVERSITY PANVEL, NAVI MUMBAI**

Eligibility:

All such Candidates who have been awarded or are qualified for 10+2 Std. Examination or equivalent certificate with Physics and Mathematics as compulsory subjects along with one of the Chemistry/ Biotechnology/ Biology/Technical Vocational subject with at least 45% marks in aggregate OR Passed Diploma examination in relevant branch of Engineering with at least 45% marks in aggregate are eligible to apply for admission to the **B. Tech. Computer Science and Engineering** programme.

Duration:

The **B. Tech Computer Science and engineering** programme will normally be four academic years duration spanning over **eight semesters**.

Semester-wise Teaching and Evaluation scheme:

Semester I										
Course Type	Course Code	Course Name	L	T	P	IA	UE	Total Marks	Credit	
BS	MTHG1000	Engineering Mathematics-I	3	1	-	30	70	100	4	
BS	PHYG1000	Engineering Physics	3	1	-	30	70	100	4	
ES	CSEG1000	Programming for Problem Solving	3	-	-	30	70	100	3	
HSM	ENGG1000	English Communication Skill	2	-	1	30	70	100	3	
ISC	IBMB1010	Python Programming	2	-	1	-	-	100	3	
BS	PHYG1001	Engineering Physics Lab	-	-	3	15	35	50	1	
ES	CSEG1001	Programming for Problem Solving Lab	-	-	3	15	35	50	1	
ES	MECG1000	Engineering Mechanics	3	-	-	30	70	100	3	
MC		Induction Program*	3 weeks duration							0
		Total	16	2	8	-	-	700	22	



Semester II									
Course Type	Course Code	Course Name	L	T	P	IA	UE	Total Marks	Credit
BS	MTHG2000	Engineering Mathematics II	3	1	-	30	70	100	4
BS	CHYG2000	Engineering Chemistry	4	-	-	30	70	100	4
ES	MECG2001	Engineering Graphics	1	-	4	30	70	100	3
ES	ELEG2000	Basic Electrical Engineering	3	-	-	30	70	100	3
ISC	IBMB2010	Cloud Computing (Mastery Badge)	2	-	2	-	-	150	3
BS	CHYG2001	Engineering Chemistry Lab	-	-	4	15	35	50	1
ES	MECG2001	Workshop	1	-	4	30	70	100	3
ES	ELEG2000	Basic Electrical Engineering Lab	-	-	2	15	35	50	1
MC	EVSG2000	Environmental Studies	2	1		15	35	50	0
		Total	16	2	16	-	-	800	22

Semester III									
Course Type	Course Code	Course Name	L	T	P	IA	UE	Total Marks	Credit
DC	CSIB3010	Introduction to AI & ML	3	-	-	30	70	100	3
DC	CSEB3010	Data Structure With C	3	-	-	30	70	100	3
DC	CSEB3020	Software Engineering	3	-	-	30	70	100	3
ES	EETB3110	Digital Logic Design	3	-	-	30	70	100	3
ISC	IBMB3010	Data Visualization with Python & R	2	-	2	-	-	100	3
BS	MTHG3000	Engineering Mathematics-III	3	1	-	30	70	100	4
DC	CSEB3011	Data Structure With C Lab	-	-	2	15	35	50	1
DC	CSEB3021	Software Engineering and Computer Networks Lab	-	-	2	15	35	50	1
DC	EETB3111	Digital Logic Design Lab	-	-	2	15	35	50	1
DC	SEMB3005	Seminar-I	-	-	2	15	35	50	1
		Total	17	1	10	-	-	800	23

Semester IV

Course Type	Course Code	Course Name	L	T	P	IA	UE	Total Marks	Credit
DC	CSEB4010	Computer Organization And Architecture	3	-	-	30	70	100	3
DC	CSEB4020	Operating Systems	3	-	-	30	70	100	3
DC	CSEB4030	Database Management Systems	3	-	-	30	70	100	3
DC	ITEB4040	Web Designing	3	-	-	30	70	100	3
ISC	IBMB4010	Business Intelligence (Mastery Badge)	2	-	2	-	-	150	3
ES	MTHG4000	Discrete Mathematics and Statistical Tools	2	1	-	30	70	100	3
DC	CSEB4011	Computer Organization And Architecture Lab	-	-	2	15	35	50	1
DC	CSEB4021	Operating Systems Lab	-	-	2	15	35	50	1
DC	CSEB4031	Database Management Systems Lab	-	-	2	15	35	50	1
DC	ITEB4041	Web Designing Lab	-	-	2	15	35	50	1
DC	SEMB4005	Seminar-II	-	-	2	15	35	50	1
		Total	16	1	12	-	-	900	23

Semester V

Course Type	Course Code	Course Name	L	T	P	IA	UE	Total Marks	Credit
DC	CSEB5010	Formal Language and Automata Theory	3	-	-	30	70	100	3
DC	CSEB5020	Design & Analysis of Algorithms	3	-	-	30	70	100	3
DC	CSEB5030	Computer Networks	2	1	-	30	70	100	3
DC	CSEB5040	Object Oriented Programming	2	-	-	30	70	100	3
ISC	IBMB5010	Development of Machine Learning Models	2	-	2	-	-	100	3
DE	**	Elective-I	3	-	-	30	70	100	3
HM	LLL5000	Constitution of India	1	-	-	15	35	50	0
DC	CSEB5011	Formal Language and Automata Theory Lab	-	-	2	15	35	50	1
DC	CSEB5021	Design & Analysis of Algorithms Lab	-	-	2	15	35	50	1
DC	CSEB5040	Object Oriented Programming Lab	-	-	2	15	35	50	1
EC	**	Elective-I Lab	-	-	2	15	35	50	1
DC	CSIB5051	Aptitude and Simulation Lab	-	-	1	15	35	50	1
		Total	16	1	11	-	-	900	23

Semester VI

Course Type	Course Code	Course Name	L	T	P	IA	UE	Total Marks	Credit
DC	CSEB6010	Compiler Design	3	-	-	30	70	100	3
DC	CSEB6020	Artificial Intelligence	3	-	-	30	70	100	3
DC	CSIB6010	Application of Machine Learning in industries	3	-	-	30	70	100	3
ISC	IBMB6010	Predictive Modelling	2	-	2	-	-	150	3
ISC	IBMB6020	IBM Watson Services	2	1	-	-	-	100	3
DE	**	Elective-II	3	-	-	30	70	100	3
OE	**	Open Elective-I	2	-	-	30	70	100	2
DC	CSEB6011	Compiler Design Lab	-	-	2	15	35	50	1
DC	CSEB6021	Artificial Intelligence Lab	-	-	2	15	35	50	1
DE	**	Elective-II Lab	-	-	2	15	35	50	1
Total			18	1	8	-	-	900	23

Semester VII

Course Type	Course Code	Course Name	L	T	P	IA	UE	Total Marks	Credit
DC	CSEB7010	Cryptography and Network Security	3	-	-	30	70	100	3
ISC	IBMB7010	AI Analyst (Mastery Badge)	2	-	2	-	-	150	3
DE	**	Elective-III	3	-	-	30	70	100	3
OE	**	Open Elective-II	3	-	-	30	70	100	3
DC	CSEB7011	Cryptography and Network Security Lab	-	-	2	15	35	50	1
DC	CSEB7021	Mobile Computing Lab	-	-	2	15	35	50	1
DC	CSEB7003	Internal Major Project & Seminar	-	-	-	-	-	200	6
DE	**	Elective-III Lab	-	-	2	15	35	50	1
Total			11	0	6	-	-	800	21

Semester VIII

Course Type	Course Code	Course Name	L	T	P	IA	UE	Total Marks	Credit
DE	**	Elective-IV	3	-	-	30	70	100	3
DC	IBMB8003	IBM Remote Mentored Project	-	-	-	-	-	200	7
DE	**	Elective-IV Lab	-	-	2	15	35	50	1
DC		Seminar	-	-	4	15	35	50	2
Total			9	0	6	-	-	600	13

Total Credit: 170

O1 Ability Enhancement Mandatory Courses (AEMC)

Semester	Offering Department	Course Code	Course Name	(L-T-P)	Credits
I	Humanities	ENGG1000	English Communication	2-0-1	3
II	Basic Sciences	EVSG2000	Environmental Sciences	2-0-0	0

List of Open Electives Papers (OE-1 to OE-4) offered by Department for students in B. Tech. in Allied Programmes

Semester	Course	Course Code (T)	Course Name	(L-T-P)	Credit
VI	Open Elective-I	CSEB6460	Cyber Law and Ethics	3-0-0	3
VI		HUMB7450	Introduction to Philosophical Thoughts	3-0-0	3
VII	Open Elective-II	HUMG8000	Economic Policies in India	3-0-0	3
VII		CIVB8210	Metro Systems and Engineering	3-0-0	3

List of Discipline Specific Elective Papers (DE-1 to DE-5) offered by the Department for students in B. Tech Computer Science Engineering

Semester	Course	Course Code (T+P)	Course Name	(L-T-P)	Credit
V	Elective-I	CSIB5310/1	Digital Signal Processing	3-0-1	4
V		CSIB5320/1	Introduction to Soft Computing	3-0-1	4
VI	Elective-II	CSEB6310/1	Parallel Processing & High Performance Computing	3-0-1	4
		CSDB6310/1	Data Mining and Warehousing	3-0-1	4
VI		CSEB6320/1	Mobile Computing	3-0-1	4
VII	Elective-III	CSIB7310/1	Introduction to Data Science	3-0-1	4
VII		CSIB7320/1	Algorithm for Intelligent Systems and Robotics	3-0-1	4
VIII	Elective-IV	CSIB8310/1	Computational Linguistics and Natural Language Processing	3-0-1	4
VIII		CSIB8330/1	Cognitive Analytics	3-0-1	4
VIII		CSIB8340/1	Pattern and Anomaly Detection	3-0-1	4
VIII		CSIB8350/1	Image Recognition and Processing	3-0-1	4