

Birla Institute of Technology, Mesra, Ranchi

Course Structure for B.Tech. (AI and ML)

Based on NEP-2020, CBCS and OBE, Effective from 2024-2025

Sr. No.	Semester of Study (Recommended)	Category of Course	Course Code	Subjects	Mode of Delivery & Credits L-Lecture; T-Tutorial; P-Practical			Total Credits
					L (Periods / Week)	T (Periods/ Week)	P (Periods/ Week)	
FIRST					THEORY			
I.1		FS	MA24101	Mathematics - I	3	1	0	4
I.2			CH24101	Chemistry	3	1	0	4
I.3		GE	EC24101	Basic Electronics	2	1	0	3
I.4			ME24101	Basic of Mechanical Engineering	2	1	0	3
I.5		FS	CE24101	Environmental Sciences	2	0	0	2
LABORATORIES								
I.6		FS	CH24102	Chemistry Lab	0	0	2	1
I.7		GE	EC24102	Basic Electronics Lab	0	0	2	1
I.8			ME24102	Engineering Graphics	0	0	4	2
I.9		PE24102	Workshop Practice	0	0	2	1	
I.10		MC	MC24 101/ 102 /103/ 104/105	Choice of : NCC/NSS/ PT & Games/ Creative Arts (CA)/Entrepreneurship	0	0	2	1
TOTAL (Theory + Labs)								22
SECOND					THEORY			
II.1		FS	MA24103	Mathematics - II	3	1	0	4
II.2			PH24101	Physics	3	1	0	4
II.3			BE24101	Biological Sciences for Engineers	2	0	0	2
II.4		GE	CS24101	Programming for Problem Solving	3	1	0	4
II.5			EE24101	Basics of Electrical Engineering	2	1	0	3
LABORATORIES								
II.6		FS	PH24102	Physics Lab	0	0	2	1
II.7		GE	CS24102	Programming for problem Solving Lab.	0	0	2	1
II.8			EE24102	Electrical Engineering Lab.	0	0	2	1
II.9		HSS	HS24131	Communication Skill - I	0	0	3	1.5
II.10		MC	MC24 106 /107/108/ 109/110	Choice of : NCC/NSS/ PT & Games/ Creative Arts (CA)/Entrepreneurship	0	0	2	1
TOTAL (Theory + Labs)								22.5
GRAND TOTAL FOR FIRST YEAR								44.5
THIRD					THEORY			
III.1		PC/	MA24205	Discrete Mathematics	3	0	0	3
III.2			EC24203	Digital System Design	3	0	0	3

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III.3		PE	CS24201	Data Structures	3	1	0	4
III.4			CS24203	Object Oriented Programming and Design Pattern	3	0	0	3
III.5			CS24205	Computer Organization and Architecture	3	0	0	3
III.6		HSS	MT24131	UHV-II: Understanding Harmony	3	0	0	3
		LABORATORIES						
III.7		PC/PE	EC24204	Digital System Design Lab	0	0	2	1
III.8			CS24202	Data Structures Lab	0	0	3	1.5
III.9			CS24204	OOPDP Lab	0	0	3	1.5
III.10		MC	MC24 201/202/ 203/204 / 205	Choice of : NCC/NSS/ PT & Games/ Creative Arts (CA) / Entrepreneurship	0	0	2	1
		TOTAL (Theory + Labs)						
	FOURTH	THEORY						
IV.1	PC/PE	CS24211	DBMS	3	1	0	4	
IV.2		AI24201	Mathematics for Data Science	3	1	0	4	
IV.3		CS24213	Design and Analysis of Algorithms	3	0	0	3	
IV.4		AI24205	Introduction to AI	3	0	0	3	
IV.5	OE	XX24XXX /MO2420 1	Open Elective - I / MOOC - I	3	0	0	3	
IV.6	GS	MA24201	Numerical Methods	2	0	0	2	
IV.7	GS	HS24211	Indian Knowledge System	2	0	0	0	
	LABORATORIES							
IV.8	PC/PE	CS24212	DBMS Lab	0	0	3	1.5	
IV.9		CS24214	Design and Analysis of Algorithms Lab	0	0	3	1.5	
IV.10		AI24204	Python Programming for Data Science	0	0	3	1.5	
IV.11	GS	MA24202	Numerical Methods Lab	0	0	2	1	
IV.12	MC	MC24 205/206/ 207/208 / 210	Choice of : NCC/NSS/ PT & Games/ Creative Arts (CA) / Entrepreneurship	0	0	2	1	
	TOTAL (Theory + Labs)							24
	GRAND TOTAL FOR SECOND YEAR							48
	FIFTH	THEORY						
V.1	PC/PE	CS24317	Operating System Concepts	3	0	0	3	
V.2		AI24301	Basics of Supervised Learning	3	0	0	3	
V.3		AI24XXX	PE-I	3	0	0	3	
V.4		AI24XXX	PE-II	3	0	0	3	
V.5		OE	XX24XXX / MO24301	Open Elective - II / MOOC - II	3	0	0	3
	LABORATORIES							
V.6	PC/PE	AI24306	Data Analysis Lab	0	0	3	1.5	
V.7		CS24216	Shell & Kernel Programming	0	0	3	1.5	

V.8			AI24302	Basics of Supervised Learning Lab	0	0	3	1.5
V.9			AI24XXX	PE-Lab	0	0	3	1.5
		PC	AI24300	Project - I				2
TOTAL (Theory + Labs)								23
SIXTH		THEORY						
VI.1		PC/PE	CS24311	Data Communication and Computer Networks	3	0	0	3
VI.2			AI24303	Fundamental of Unsupervised Learning	3	0	0	3
VI.3			AI24305	Deep Learning	3	0	0	3
VI.4			AI24XXX	PE-III	3	0	0	3
VI.5			AI24307	Modern AI	3	0	0	3
VI.6		OE	XX24XXX /MO24303	Open Elective - III / MOOC - III	3	0	0	3
VI.7		HSS	MT24304	Constitution of India	2	0	0	0
LABORATORIES								
VI.8		PC	AI24304	Fundamental of Unsupervised Learning Lab	0	0	3	1.5
VI.9			AI24306	Deep Learning Lab	0	0	3	1.5
VI.10			AI24350	Project - II				2
VI.11		HSS	HS24133	Communication Skill - II	0	0	3	1.5
TOTAL (Theory + Labs)								24.5
GRAND TOTAL FOR THIRD YEAR								47.5
SEVENTH		THEORY						
VII.1		OE	XX24XXX / MO24401	Open Elective - IV / MOOC - IV	3	0	0	3
VII.2		PE	AI24XXX	PE-IV	3	1	0	4
VII.3		PE	AI24XXX	PE-V	3	1	0	4
LABORATORIES								
VII.4		MC	MC24400	Summer Training (Minimum Four Weeks / 160 Hrs)				4
VII.5		PE	AI24XXX	PE Lab-IV	0	0	3	1.5
VII.6		PE	AI24XXX	PE-Lab V	0	0	3	1.5
VII.7		PC	AI24400	Project - III				3
TOTAL (Theory + Labs)								21
VIII.1	EIGHTH	PC/PE	AI24450/ AI24490	Project-IV / Industry Internship				6
VIII.2			AI24498	Comprehensive Viva				1
TOTAL (Theory + Labs)								7
GRAND TOTAL FOR FOURTH YEAR								28
GRAND TOTAL FOR B.TECH.								168

Head
Computer Science and Engineering

Dean (UGS)