

Birla Institute of Technology, Mesra, Ranchi

Course Structure for B.Tech. (Production and Industrial Engineering)

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			PH24101	Physics	3	1	0	4	
I.3			BE24101	Biological Science for Engineers	2	0	0	2	
I.4			GE	CS24101	Programming for Problem Solving	3	1	0	4
I.5				EE24101	Basics of Electrical Engineering	2	1	0	3
LABORATORIES									
I.6		FS	PH24102	Physics Laboratory	0	0	2	1	
I.7			GE	CS24102	Programming for Problem Solving Laboratory	0	0	2	1
I.8				EE24102	Electrical Engineering Laboratory	0	0	2	1
I.9			HSS	HS24131	Communication Skill - I	0	0	3	1.5
I.10			MC	MC24 101/102/1 03 /104/105	Choice of : NCC/NSS/ PT & Games/ Creative Arts (CA) /Entrepreneurship	0	0	2	1
TOTAL (Theory + Labs)								22.5	
SECOND					THEORY				
II.1		FS	MA24103	Mathematics - II	3	1	0	4	
II.2			CH24101	Chemistry	3	1	0	4	
II.3		GE	EC24101	Basic Electronics	2	1	0	3	
II.4			ME24101	Basics of Mechanical Engineering	2	1	0	3	
II.5		FS	CE24101	Environmental Science	2	0	0	2	
LABORATORIES									
II.6		FS	CH24102	Chemistry Laboratory	0	0	2	1	
II.7			GE	EC24102	Basic Electronics Laboratory	0	0	2	1
II.8				ME24102	Engineering Graphics	0	0	4	2
II.9				PE24102	Workshop Practice	0	0	2	1
II.10			MC	MC24 106/107/1 08/109 /110	Choice of : NCC/NSS/ PT & Games/ Creative Arts (CA) /Entrepreneurship	0	0	2	1
TOTAL (Theory + Labs)								22	
GRAND TOTAL FOR FIRST YEAR								44.5	
THIRD					THEORY				
III.1		FS	MA24201	Numerical Methods	2	0	0	2	
III.2			PC	PE24201	Introduction to Materials Engineering	3	0	0	3

III.3			PE24203	Operations Research	3	0	0	3
III.4			ME24205	Strength of Materials	3	1	0	4
III.5			ME24221	Thermal and Fluid Engineering	3	0	0	3
III.6		HSS	MT24131	UHV-II: Understanding Harmony	3	0	0	3
LABORATORIES								
III.7		FS	MA24202	Numerical Methods Laboratory	0	0	2	1
III.8		PC	PE24202	Materials Engineering Lab	0	0	3	1.5
III.9			ME24208	Basic Mechanical Engineering Lab	0	0	2	1
III.10		MC	MC24 201/202/2 03/204 /205	Choice of : NCC/NSS/ PT & Games/ Creative Arts (CA) / Entrepreneurship	0	0	2	1
TOTAL (Theory + Labs)								22.5
FOURTH		THEORY						
IV.1		PC	ME24207	Kinematics and Dynamics of Machines	3	1	0	4
IV.2			PE24205	Foundry, Forming, and Welding Technologies	3	0	0	3
IV.3			PE24207	Metrology & Measurement	3	0	0	3
IV.4			PE24209	Production and Operations Management	4	0	0	4
IV.5		PE		Program Elective - I	3	0	0	3
IV.6		OE	XXXXXXX X/MO2420 I	Open Elective - I / MOOC - I	3	0	0	3
IV.7		MC	HS24211	Indian Knowledge System				0
LABORATORIES								
IV.8		PC	PE24206	Foundry, Forming, and Welding Lab	0	0	2	1
IV.9			PE24208	Metrology and Measurement Lab	0	0	2	1
IV.10			PE24210	Modeling and Simulation Lab	0	0	2	1
IV.11		MC	MC24206/ 207/208/2 09/210	Choice of: NCC/NSS/PT & Games/ Creative Arts (CA) / Entrepreneurship	0	0	2	1
TOTAL (Theory + Labs)								24
GRAND TOTAL FOR SECOND YEAR								46.5
FIFTH		THEORY						
V.1		PC	PE24301	Machining Science and Machine Tools	3	0	0	3
V.2			PE24303	Design of Machine Elements	3	0	0	3
V.3			PE24305	Statistical Quality Control	3	0	0	3
V.4		PE		Program Elective - II	3	0	0	3
V.5		PE		Program Elective - III	3	0	0	3
V.6		OE	XXXXXXX X/MO2430 I	Open Elective - II / MOOC - II	3	0	0	3
LABORATORIES								
V.7		PC	HS24133	Communication Skills – II	0	0	3	1.5
V.8			PE24302	Machine Tools Lab	0	0	2	1
V.9		HSS	PE24304	Machine Drawing and	0	0	3	1.5

				CAD Lab				
V.10		PC	PE24300	Project - I				2
TOTAL (Theory + Labs)								24
SIXTH		THEORY						
VI.1		PC	PE24329	Machine Tool Design	3	0	0	3
VI.2			PE24331	Work System Design	3	0	0	3
VI.3			PE24333	Supply Chain Management	3	0	0	3
VI.4		PE		Program Elective - IV	3	0	0	3
VI.5				Program Elective - V	3	0	0	3
VI.6		OE	XXXXXX X/MO2430 3	Open Elective - III / MOOC - III	3	0	0	3
LABORATORIES								
VI.7		PC	PE24330	Machine Tool Design Sessional	0	0	2	1
VI.8			PE24332	Work System Design Lab	0	0	2	1
VI.9			PE24350	Project - II				2
TOTAL (Theory + Labs)								22
GRAND TOTAL FOR THIRD YEAR								46
SEVENTH		THEORY						
VII.1		PC	PE24401	Computer Integrated Manufacturing & Cyber- Physical Systems	3	0	0	3
VII.2			PE24403	Production Economics and Financial Management	3	0	0	3
VII.3			PE24405	Project Engineering	3	0	0	3
VII.4		PE		Program Elective - VI	3	0	0	3
VII.5		OE	XXXXXX X/MO244 01	Open Elective - IV / MOOC - IV	3	0	0	3
VII.6		HSS	MT24204	Constitution of India	2	0	0	0
LABORATORIES								
VII.7		PC	PE24402	Manufacturing Automation Lab	0	0	2	1
VII.8		MC	MC24400	Summer Training (Minimum Four Weeks / 160 Hrs)				4
VII.9		PC	PE24400	Project - III				3
TOTAL (Theory + Labs)								23
VIII.1	EIGHTH	PC	PE24450/ PE24490	Project-IV / Industry Internship				6
VIII.2			PE24498	Comprehensive Viva				2
TOTAL (Theory + Labs)								8
GRAND TOTAL FOR FOURTH YEAR								31
GRAND TOTAL FOR B.TECH.								168

Head
Production and Industrial Engineering

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