

Course Structure

B.Tech. (Computer Science and Engineering)

Batch-2025

B.Tech. (Computer Science and Engineering) 2025

1st Semester						
Course Category	Course Name	Course Code	L	T	P	Credit
EP	Engineering Visualization	ME121	0	1	3	5
EP	Computer Science Engineering Practices	CS102	1	0	2	5
IE	Computer Programming	CS101	3	1	0	11
IE	Computer Programming Laboratory	CS101L	0	0	2	2
IS	Biology	BY101	2	1	0	8
IS	Classical Physics	PY111	3	1	0	11
IS	Inorganic and Physical Chemistry	CY111	3	1	0	11
IS	Real Analysis & Calculus	MA111	3	1	0	11
IS	Chemistry Laboratory	CY111L	0	0	2/2	1
IS	Physics Laboratory	PY111L	0	0	2/2	1
		Total Credits				66
LM	Basic English*	LM101	1	2	0	7

*It is not a compulsory course

2nd Semester						
Course Category	Course Name	Course Code	L	T	P	Credit
DC	Advanced Computer Programming	CS103	1	0	2	5
EP	Workshop Practices	ME131	0	0	3	3
IE	Engineering Thermodynamics	CH161	3	1	0	11
IE	Fundamentals of Electronics Engineering	ECE102	3	1	0	11
IE	Fundamentals of Electronics Engineering Laboratory	ECE102L	0	0	2	2
IS	Differential Equations	MA121	3	1	0	11
IS	Modern Physics	PY121	2	1	0	8
IS	Physics Laboratory	PY121L	0	0	2/2	1
		Total Credits				52
HU	Community Internship	HU102	0	0	5	5

Summer Internship						
Course Category	Course Name	Course Code	L	T	P	Credit
DP	Summer Internship/Industrial Visit (I)	DP	0	0	14*	2
*2 credits are equivalent to 14 hours per week if summer internship/project will be completed in 2 weeks only.						

3rd Semester						
Course Category	Course Name	Course Code	L	T	P	Credit
IE	Data Structure and Algorithm	CS211	3	0	0	9
IE	Data Structure and Algorithm Laboratory	CS211L	0	0	2	2
DC	Discrete Mathematics	MA213	3	0	0	9
DC	Graphics and Visual Computing	CS231	3	0	0	9
DC	Graphics and Visual Computing Laboratory	CS231L	0	0	2	2
IE	Material Engineering and Device Fabrication Practices	CH213	3	0	0	9
IS	Linear Algebra & Complex Analysis	MA211	2	1	0	8
LM	Professional Communications	PC101	2	1	0	8
		Total Credits				56

4th Semester						
Course Category	Course Name	Course Code	L	T	P	Credit
DC	Artificial Intelligence	CS360	3	0	0	9
DC	Artificial Intelligence Laboratory	CS360L	0	0	2	2
DC	Computer Organization and Architecture	CS232	3	0	0	9
DC	Database Management System	CS212	3	0	0	9
DC	Database Management System Laboratory	CS212L	0	0	2	2
DC	Design and Analysis of Algorithms	CS241	3	0	0	9
DC	Design and Analysis of Algorithms Laboratory	CS241L	0	0	2	2
DC/MA	Operations Research	MA325	3	0	0	9
DC	Operations Research Laboratory	CS484L	0	0	2	2
IS	Numerical Methods	MA221	2	1	0	8
IS	Statistical Methods & Data Analysis	MA231	2	1	0	8
		Total Credits				69

Summer Internship						
Course Category	Course Name	Course Code	L	T	P	Credit
DP	Summer Internship/Industrial Visit (II)	DP	0	0	12*	3
*5 credits are equivalent to 11.67 hours (around 12 hours) (P) per week if summer internship/project will be completed in 6 weeks only						

5th Semester						
Course Category	Course Name	Course Code	L	T	P	Credit
DC	Operating Systems	CS311	3	0	0	9
DC	Operating Systems Laboratory	CS311L	0	0	2	2
DC	Quantum Computing	CS551	3	0	0	9
DC	Theory of Computation	CS321	3	0	0	9
DE-1	Data Analytics	CS457	3	0	0	9
DE-2	Deep Learning	CS365	3	0	0	9
	Deep Learning Laboratory	CS365L	0	0	2	2
DE-3	Information Retrieval	CS567	3	0	2	11
	Natural Language Processing	CS566	3	0	2	
IE	Embedded System	ECE325	3	0	0	9
		Total Credits				69

6th Semester						
Course Category	Course Name	Course Code	L	T	P	Credit
DC	Compiler Design	CS312	3	0	0	9
DC	Compiler Design Laboratory	CS312L	0	0	2	2
DC	Computer Networks	CS351	3	0	0	9
DC	Computer Networks Laboratory	CS351L	0	0	2	2
DC	Data Mining	CS458	3	0	0	9
DC	Data Mining Laboratory	CS458L	0	0	2	2
DC	Software Engineering	CS331	3	0	0	9
DC	Generative AI	CS441	2	0	0	6
DC	Generative AI Laboratory	CS441L	0	0	2	2
DC	Parallel and Distributive Computing	CS322	3	0	0	9
		Total Credits				59

Summer Internship						
Course Category	Course Name	Course Code	L	T	P	Credit
DP	Summer Internship/Industrial Visit (III)	DP	0	0	12*	5
*5 credits are equivalent to 11.67 hours (around 12 hours) (P) per week if summer internship/project will be completed in 6 weeks only.						

7th Semester						
Course Category	Course Name	Course Code	L	T	P	Credit
DE-4	Computer Vision and Pattern Recognition	CS454	3	0	0	9
EP	CDC: Employability Skill and Industry Readiness		0	0	2	2
HSS-1	Organizational Psychology	HU331	2	0	0	6
HSS-1	Sociology of Industry and Work Culture	HU313	2	0	0	6
HSS-3	CDC: Ethics and Corporate Governance		2	0	0	6
LM-1	CDC Leadership and People Management		2	0	0	6
	Principles of Economics	MT5100	2	0	0	
LM-2	Foundations of Management	MT5405	2	0	0	6
OE-1			3	0	0	9
OE-2			3	0	0	9
		Total Credits				59

8th Semester						
Course Category	Course Name	Course Code	L	T	P	Credit
DP	Internship/BTP		0	0	40	40
		Total Credits				40

Course Summary				
Category Code	Course Category	Min	Max	Offered
HU	Humanities and Social Science	22	22	23
IS	Institute Science	70	90	87
IE	Institute Engineering	40	70	66
EP	Engineering Practices	18	24	15
LM	Language & Management	18	24	20
DC	Departmental Core	145	190	166
DE	Departmental Elective	30	75	40
OE	Open Elective	15	20	18
DP	Project/Industrial Visit	20	50	50
Total		440	490	485

HU Courses						
Course Name	Course Code	L	T	P	Credit	
Organizational Psychology (HSS-1)	HU331	2	0	0	6	
Sociology of Industry and Work Culture (HSS-2)	HU313	2	0	0	6	
CDC: Ethics and Corporate Governance (HSS-3)		2	0	0	6	
Community Internship	HU102	0	0	5	5	
Total Credits					23	

Institute Science Course (IS)					
Course Name	Course Code	L	T	P	Credit
Biology	BY101	2	1	0	8
Classical Physics	PY111	3	1	0	11
Inorganic and Physical Chemistry	CY111	3	1	0	11
Real Analysis & Calculus	MA111	3	1	0	11
Chemistry Laboratory	CY111L	0	0	2/2	1
Physics Laboratory	PY111L	0	0	2/2	1
Differential Equations	MA121	3	1	0	11
Modern Physics	PY121	2	1	0	8
Physics Laboratory	PY121L	0	0	2/2	1
Linear Algebra & Complex Analysis	MA211	2	1	0	8

Numerical Methods	MA221	2	1	0	8
Statistical Methods & Data Analysis	MA231	2	1	0	8
Total Credits					87

Institute Engineering Course (IE)						
Course Name	Course Code	L	T	P	Credit	
Computer Programming	CS101	3	1	0	11	
Computer Programming Laboratory	CS101L	0	0	2	2	
Engineering Thermodynamics	CH161	3	1	0	11	
Fundamentals of Electronics Engineering	ECE102	3	1	0	11	
Fundamentals of Electronics Engineering Laboratory	ECE102L	0	0	2	2	
Material Engineering and Device Fabrication Practices	CH213	3	0	0	9	
Embedded System	ECE325	3	0	0	9	
Data Structure and Algorithm	CS211	3	0	0	9	
Data Structure and Algorithm Laboratory	CS211L	0	0	2	2	
Total Credits					66	

EP Courses						
Course Name	Course Code	L	T	P	Credit	
CDC: Employability Skill and Industry Readiness		0	0	2	2	
Computer Science Engineering Practices	CS102	1	0	2	5	
Engineering Visualization	ME121	0	1	3	5	
Workshop Practices	ME131	0	0	3	3	
Total Credits					15	

LM Courses						
Course Name	Course Code	L	T	P	Credit	
Professional Communications	PC101	2	1	0	8	
CDC Leadership and People Management		2	0	0	6	
Principles of Economics	MT5100	2	0	0		
Foundations of Management	MT5405	2	0	0	6	
Total Credits					20	

Department Core Courses (DC)						
Course Name	Course Code	L	T	P	Credit	
Advanced Computer Programming	CS103	1	0	2	5	
Discrete Mathematics	MA213	3	0	0	9	
Graphics and Visual Computing	CS231	3	0	0	9	
Graphics and Visual Computing Laboratory	CS231L	0	0	2	2	
Artificial Intelligence	CS360	3	0	0	9	
Artificial Intelligence Laboratory	CS360L	0	0	2	2	
Computer Organization and Architecture	CS232	3	0	0	9	
Database Management Systems	CS212	3	0	0	9	
Database Management Systems Laboratory	CS212L	0	0	2	2	
Design and Analysis of Algorithms	CS241	3	0	0	9	
Design and Analysis of Algorithms Laboratory	CS241L	0	0	2	2	
Operations Research	MA325	3	0	0	9	
Operations Research Laboratory	CS484L	0	0	2	2	
Operating Systems	CS311	3	0	0	9	
Operating Systems Laboratory	CS311L	0	0	2	2	
Quantum Computing	CS551	3	0	0	9	
Theory of Computation	CS321	3	0	0	9	
Compiler Design	CS312	3	0	0	9	
Compiler Design Laboratory	CS312L	0	0	2	2	
Computer Networks	CS351	3	0	0	9	
Computer Networks Laboratory	CS351L	0	0	2	2	
Parallel and Distributive Computing	CS322	3	0	0	9	
Data Mining	CS458	3	0	0	9	
Data Mining Laboratory	CS458L	0	0	2	2	
Software Engineering	CS331	3	0	0	9	
Generative AI	CS441	2	0	0	6	
Generative AI Laboratory	CS441L	0	0	2	2	
	Total Credits				166	

Department Elective Courses (DE)						
Course Name	Course Code	L	T	P	Credit	
Data Analytics (DE-1)	CS457	3	0	0	9	
Deep Learning (DE-2)	CS365	3	0	0	9	
Deep Learning Laboratory (DE-2)	CS365L	0	0	2	2	
Information Retrieval (DE-3)	CS567	3	0	2	11	
Natural Language Processing (DE-3)	CS566	3	0	2		
Computer Vision and Pattern Recognition (DE-4)	CS454	3	0	0	9	
Total Credits					40	

OE Courses					
Course Name	Course Code	L	T	P	Credit
OE-1		3	0	0	9
OE-2		3	0	0	9
Total Credits					18

Project/Industry Visit (DP)						
Course Name	Course Code	L	T	P	Credit	
Summer Internship/Industrial Visit (I)		0	0	14***	2	
Summer Internship/Industrial Visit (II)		0	0	11**	3	
Summer Internship/Industrial Visit (III)		0	0	12*	5	
Internship/BTP		0	0	40	40	
Total Credits					50	

*5 credits are equivalent to 11.67 hours (around 12 hours) (P) per week if summer internship/project will be completed in 6 weeks only.

**3 credits are equivalent to 10.5 hours (around 11 hours) (P) per week if summer internship/project will be completed in 4 weeks only.

***2 credits are equivalent to 14 hours per week if summer internship/project will be completed in 2 weeks only.