

Course Structure

B.Tech. (Computer Science and Engineering)

Batch-2024

B.Tech. (Computer Science and Engineering) 2024

1st Semester						
Course Category	Course Name	Course Code	L	T	P	Credit
EP	Engineering Graphics	ME121	0	0	3	3
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	Chemistry Laboratory	CY111L	0	0	2/2	1
IS	Classical Physics	PY111	3	1	0	11
IS	Inorganic and Physical Chemistry	CY111	3	1	0	11
IS	Physics Laboratory	PY111L	0	0	2/2	1
IS	Real Analysis & Calculus	MA111	3	1	0	11
		Total Credits				59
LM	Basic English*	LM101	1	2	0	7
HU	Universal Human values	HU101	1	1	0	5
*It is not a compulsory course						

2nd Semester						
Course Category	Course Name	Course Code	L	T	P	Credit
EP	Computer Science Engineering Practices	CS102	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	Chemistry Laboratory	CY121L	0	0	2/2	1
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				53
HU	Community Internship	HU102	0	0	5	5

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	CS201	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	11*	3	

*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.

7th Semester							
Course Category	Course Name	Course Code	L	T	P	Credit	
DC	Generative AI	CS441	2	0	0	6	
DC	Generative AI Laboratory	CS441L	0	0	2	2	
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-2	Sociology of Industry and Work Culture	HU313	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				61	

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	22
IS	Institute Science	70	90	88
IE	Institute Engineering	40	70	66
EP	Engineering Practices	18	24	13
LM	Language & Management	18	24	20
DC	Departmental Core	145	190	172
DE	Departmental Elective	30	75	40
OE	Open Elective	15	20	18
DP	Project/Industrial Visit	20	50	48
Total		440	490	487

HU Courses						
Course Name	Course Code	L	T	P	Credit	
Universal Human values	HU101	1	1	0	5	
Community Internship	HU102	0	0	5	5	
Organizational Psychology (HSS-1)	HU331	2	0	0	6	
Sociology of Industry and Work Culture (HSS-2)	HU313	2	0	0	6	
Total Credits					22	

Institute Science Course (IS)						
Course Name	Course Code	L	T	P	Credit	
Biology	BY101	2	1	0	8	
Chemistry Laboratory	CY111L	0	0	2/2	1	
Classical Physics	PY111	3	1	0	11	
Inorganic and Physical Chemistry	CY111	3	1	0	11	
Physics Laboratory	PY111L	0	0	2/2	1	
Real Analysis & Calculus	MA111	3	1	0	11	
Chemistry Laboratory	CY121L	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					88	

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 Graphics	ME121	0	0	3	3
Workshop Practices	ME131	0	0	3	3
	Total Credits				13

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					
Course Name	Course Code	L	T	P	Credit
Graphics and Visual Computing	CS231	3	0	0	9
Graphics and Visual Computing Laboratory	CS231L	0	0	2	2
Discrete Mathematics	CS201	3	0	0	9
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 System	CS212	3	0	0	9
Database Management System 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
Advanced Algorithms	CS341	3	0	0	9
Advanced Algorithms Laboratory	CS341L	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
Data Mining	CS458	3	0	0	9
Data Mining Laboratory	CS458L	0	0	2	2
Parallel and Distributive Computing	CS322	3	0	0	9
Software Engineering	CS331	3	0	0	9
Generative AI	CS441	2	0	0	6
Generative AI Laboratory	CS441L	0	0	2	2
	Total Credits				172

Department Elective Courses					
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 (II)		0	0	11**	3
Summer Internship/Industrial Visit (III)		0	0	12*	5
Internship/BTP		0	0	40	40
	Total Credits				48
*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.					