

COURSE STRUCTURE
for
B.Tech Degree
in
Computer Science and Design
Engineering
2023-27 Batch

Institute Science Courses

Course	L	T	P	Credit
Classical Physics (IS) (PY111)	3	1	0	11
Inorganic and Physical Chemistry(IS) (CY121)	3	1	0	11
Real Analysis & Calculus (IS) (MA111)	3	1	0	11
Biology(IS) (BY101)	2	1	0	8
Modern Physics (IS) (PY121)	2	1	0	8
Differential Equations (IS) (MA121)	3	1	0	11
Physics lab (IS) (PY121L)	0	0	2/2	2
Chemistry lab (IS) (CY121L)	0	0	2/2	2
Linear Algebra & Complex Analysis (IS) (MA211)	2	1	0	8
Numerical Methods (IS) (MA221)	2	1	0	8
Statistical Methods and Data Analysis (IS) (MA231)	2	1	0	8
Total				88

Institute Engineering Courses

Course	L	T	P	Credit
Computer Programming (CS 101)	3	1	2	13
Fundamentals of Electronics Engineering (ECE102)	3	1	2	13
Web Technology (CS222)	3	0	2	11
Data Structure and Algorithm	3	0	2	11
Engineering Thermodynamics (CH161)	3	1	0	11
Total Credit				59

EP, LM and HU Courses

	Course	L	T	P	Credit
EP	Engineering Graphics (ME121)	0	0	3	3
	Workshop(ME131)	0	0	3	3
	Computer Engineering Practices (CS102)	1	0	2	5
	Group Discussion	0	0	2	2
	Seminar	0	0	2	2
	Total Credit				15
LM	Foundations of Management (MT5405)	3	0	0	9
	Principles of Economics (MT5100)	3	0	0	9
	Professional Communications	2	1	0	8
	Total Credit				26
HU	Universal Human Values (HU101)	1	1	0	5
	Community Internship (HU102)	1	1	0	5
	Sociology of Industry and Work Culture (HU313)	2	0	0	6
	Organizational Psychology (HU331)	2	0	0	6
	Total Credit				22

Department Core courses

Discrete Mathematics (DC) CS201	3	0	0	9
Data Structure and Algorithm(DC) CS211	3	0	2	11
Data Handling and Visualization(DC) CS233	2	0	2	8
Aerial robotic designing CS241	3	0	2	11
Computer Vision CS251	3	0	0	9
Cyber Security CS237	3	0	2	11
Machine Learning CS264	3	0	0	9
Linear Optimization (CS381)	3	0	0	9
Computer Game Design and Programming	3	0	2	11
Animation Design	3	0	2	11
Multimedia technologies (Video/Audio Engg)	3	0	2	11
Software Engineering (DC) (CS331)	3	0	0	9
Biomedical Imaging	3	0	2	11
Spatial Computing	1	0	2	5
Pattern Recognition	3	0	0	9
Mobile Computing (DC) (CS411)	3	0	0	9
Robotics Design	2	0	2	8
Digital Image Processing (DC) CS431	2	0	2	8
Total				169

Departmental Elective Courses

Course	L	T	P	Credit
Deep Learning (CS465)	3	0	0	9
Combinatorics (CS402)	3	0	0	9
Natural Language Processing (CS466)	3	0	0	9
Image, Speech, Video Processing (CS455)	3	0	0	9
Robotics (CS467)	3	0	0	9
Information Retrieval (CS511)	3	0	0	9
Information Theory (CS512)	3	0	0	9
Formal Language and Automata Theory (CS422)	3	0	0	9
AI Applications (CS561)	3	0	0	9
Machine Design	3	0	0	9
Intelligent Transportation System Design	3	0	0	9
Geometric and solid modelling	3	0	0	9
Total Credit (for 4 selected)				36

Departmental Elective Courses

Course	L	T	P	Credit
Genetic Algorithm(CS361)	3	0	0	9
Computer Vision and Pattern Recognition (CS454)	3	0	0	9
Image, Speech, Video Processing (CS455)	3	0	0	9
Advanced Com. Architecture & Parallel Processing (CS372)	3	0	0	9
Distributed Computing CS472	3	0	0	9
Information Retrieval (CS511)	3	0	0	9
Information Coding Theory (CS512)	3	0	0	9
Cryptography (CS430)	3	0	0	9
Cyber Security (CS431)	3	0	0	9
Cryptology (CS432)	3	0	0	9
AI Applications (CS561)	3	0	0	9
Blockchain Technology (CS513)	3	0	0	9
Data Compression (CS514)	3	0	0	9
Total Credit (for 4 selected)				36

1st Semester

Course/Subject	L	T	P	Cr
Classical Physics (IS) (PY111)	3	1	0	11
Inorganic and Physical Chemistry(IS) (CY121)	3	1	0	11
Real Analysis & Calculus (IS) (MA111)	3	1	0	11
Computer Programing (IE) (CS101)	3	1	0	11
Computer Programing Lab (IE) (CS101L)	0	0	2	2
Biology(IS) (IS) (BY101)	2	1	0	8
Engineering Graphics (EP) (ME121)	0	0	3	3
Physics lab (IS) (PY121L)	0	0	2/2	1
Chemistry lab (IS) (CY121L)	0	0	2/2	1
Total Credits				59
Basic English (HU)* (LM101)	1	2	0	7
Universal Human values (HU) (HU101)	1	1	0	5
*For students with less proficiency in English				

2nd Semester

Course/Subject	L	T	P	Cr
Modern Physics (IS) (PY121)	2	1	0	8
Fundamentals of Electronics Engineering(IE) (ECE102)	3	1	2	13
Differential Equations (IS) (MA121)	3	1	0	11
Engineering Thermodynamics (IE) (CH161)	3	1	0	11
Computer Sc Engg Practices (EP) (CS102)	1	0	2	5
Physics lab (IS) (PY121L)	0	0	2/2	1
Chemistry lab (IS) (CY121L)	0	0	2/2	1
Workshop (EP) (ME131)	0	0	3	3
Total Credits				53
Community Internship	0	0	5	5

3rd Semester

4th Semester

Course/Subject	L	T	P	Cr	Course/Subject	L	T	P	Cr
Linear Algebra & Complex Analysis (IS)	2	1	0	8	Cyber Security (CS237)	3	0	2	11
Discrete Mathematics (DC) (CS201)	3	0	0	9	Numerical Methods (IS) (MA221)	2	1	0	8
Data Structure and Algorithm(DC) (CS211)	3	0	0	9	Machine Learning (CS264)	3	0	0	9
Data Structure and Algorithm Lab (CS211L)	0	0	2	2	Web Technology (IE) (CS222)	3	0	0	9
Graphics and Visual Computing (DC) (CS 231)	2	0	0	6	Web Technology Lab(CS222L)	0	0	2	2
Graphics and Visual Computing Lab (CS 231L)	0	0	2	2	Statistical Methods and Data Analysis (IS) (MA231)	2	1	0	8
Aerial robotic designing (DC) (CS241)	3	0	0	9	Computer Game Design and Programming	3	0	0	9
Aerial robotic designing Lab(CS241L)	0	0	2	2	Computer Game Design and Programming Lab	0	0	2	2
Professional Communications (PC101)	2	1	0	8	Group Discussion	0	0	2	2
Data Handling and Visualization (CS233)	2	0	2	8					
Total Credits				63	Total Credits				60

5th Semester

6th Semester

Course/Subject	L	T	P	Cr	Course/Subject	L	T	P	Cr
Animation Design	3	0	2	11	Pattern Recognition	3	0	0	9
Multimedia technologies (Video/Audio Engg)	3	0	2	11	Biomedical Imaging	3	0	2	11
Software Engineering (DC) (CS331)	3	0	0	9	Spatial Computing	1	0	2	5
DE-1 (DE)	3	0	0	9	DE-2 (DE)	3	0	0	9
Seminar	0	0	2	2	Linear Optimization (CS381)	2	0	2	8
B.Tech. Project (DP)	0	0	5	5	B.Tech. Project (DP)	0	0	5	5
Total Credits				47	Total Credits				47

Summer Internship	10
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7th Semester

8th Semester

Course/Subject	L	T	P	Cr	Course/Subject	L	T	P	Cr
Mobile Computing (DC) (CS411)	3	0	0	9	Robotics Design	2	0	2	8
DE-3 (DE)	3	0	0	9	Digital Image Processing (DC) CS431	2	0	2	8
OE-1 (OE)	3	0	0	9	DE-4(DE)	3	0	0	9
Foundations of Management (MT5405)	3	0	0	9	OE-2 (OE)	3	0	0	9
Sociology of Industry and Work Culture (HU313)	2	0	0	6	Principles of Economics (MT5100)	3	0	0	9
Total Credits				42	Organizational Psychology (HU331)	2	0	0	6
					Total Credits				49

Course Credits for B.Tech CSDE

Category	Program components	Min	Max	Recommended
HU	Humanities and social science	22	22	22
IS	Institute Science	70	90	88
IE	Institute requirement engineering	40	70	59
EP	Engineering drawing, workshop	18	24	15
LM	Language and Management	18	24	26
DC	Departmental Core	145	190	169
DE	Departmental Elective	30	75	36
OE	Open Elective	15	20	18
DP	Project/industrial visit	20	50	20
	Total	440	490	453