

COURSE STRUCTURE

for

B.Tech Degree

in

Computer Science and Engineering

2023-27 Batch

Streams in Computer Science and Engineering

1. Artificial Intelligence
2. High Performance Computing
3. IoT and Cloud Computing

	Artificial Intelligence	High Performance Computing	IoT and Cloud Computing
DE1	Artificial Intelligence CS360	Cloud Computing CS374 or Artificial Intelligence CS360	Cloud Computing CS374 or Artificial Intelligence CS360
DE2	Deep Learning CS365 or Genetic Algorithm CS361	Parallel Computing CS371 or Advanced Computer Architecture and Parallel Processing CS372	Internet of Things (IoT) CS346
DE3	Data Analytics CS457	Data Analytics CS457	Cryptography CS 430 or Data Analytics CS457 or Cloud Computing CS374
DE4	Computer Vision and Pattern Recognition CS454	Distributed Computing CS472	Cyber Security CS432 or Cryptology CS442

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
Material Science (MS211)	3	1	0	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

Course	L	T	P	Credit
Discrete Mathematics (DC) CS201	3	0	0	9
Data Structure and Algorithm(DC) CS211	3	0	2	11
Graphics and Visual Computing (DC) CS231	2	0	2	8
Database Management Systems (DC) CS212	3	0	2	11
Computer Organization and Architecture (DC) CS232	3	0	0	9
Digital Circuits and Systems (ECE221)	3	1	2	13
Operating Systems (DC) CS311	3	0	2	11
Microprocessor and Embedded System (ECE321)	3	0	2	11
Theory of Computation (DC) CS321	3	0	0	9
Software Engineering (DC) CS331	3	0	0	9
Design and Analysis of Algorithms (DC) CS341	3	0	2	11
Computer Networks (DC) CS351	3	0	2	11
Compiler Design (DC) CS312	3	0	2	11
Linear Optimization (CS381)	2	0	3	8
Mobile Computing (DC) CS411	3	0	0	9
Soft Computing (DC) CS468	2	0	2	8
Digital Image Processing (DC) CS431	2	0	2	8
Data Mining (DC) CS458	2	0	2	8
Total				175

Department Elective courses

	Course	L	T	P	Credit
DE1	Artificial Intelligence(CS360)	3	0	0	9
	Cloud Computing (CS374)	3	0	0	9
DE2	Deep Learning (CS365)	3	0	0	9
	Genetic Algorithm(CS361)	3	0	0	9
	Parallel Computing(CS371)	3	0	0	9
	Advanced Com. Architecture & Parallel Processing (CS372)	3	0	0	9
	Internet of Things (IoT)(CS346)	3	0	0	9
DE3	Data Analytics(CS457)	3	0	0	9
	Cryptography (CS430)	3	0	0	9
DE4	Computer Vision and Pattern Recognition(CS454)	3	0	0	9
	Distributed Computing(CS472)	3	0	0	9
	Cyber Security(CS432)	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 (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

Course/Subject	L	T	P	Cr
Linear Algebra & Complex Analysis (IS) (MA211)	2	1	0	8
Discrete Mathematics (DC) (CS201)	3	0	0	9
Data Structure and Algorithm(DC) (CS211)	3	0	0	9
Data Structure and Algorithm Lab (CS211L)	0	0	2	2
Material Science (IE) (MS211)	3	0	0	9
Graphics and Visual Computing (DC) (CS 231)	2	0	0	6
Graphics and Visual Computing Lab (CS 231L)	0	0	2	2
Professional Communications	2	1	0	8
Total Credits				53

4th Semester

Course/Subject	L	T	P	Cr
Database Management Systems (DC) (CS212)	3	0	0	9
Database Management Systems Lab (CS212L)	0	0	2	2
Numerical Methods (IS) (MA221)	2	1	0	8
Statistical Methods and Data Analysis (IS) (MA231)	2	1	0	8
Web Technology (IE) (CS222)	3	0	0	9
Web Technology Lab(CS222L)	0	0	2	2
Computer Organization and Architecture (DC) (CS232)	3	0	0	9
Digital Circuits and Systems (ECE 221)	3	1	0	11
Digital Circuits and Systems Lab(ECE 221L)	0	0	2	2
Group Discussion	0	0	2	2
Total Credits				62

5th Semester

Course/Subject	L	T	P	Cr
Operating Systems (DC) (CS311)	3	0	0	9
Operating Systems Lab(DC) (CS311L)	0	0	2	2
Microprocessor and Embedded System (ECE321)	3	0	2	11
Theory of Computation (DC) (CS321)	3	0	0	9
DE-1 (DE)	3	0	0	9
Design and Analysis of Algorithms (DC) (CS341)	3	0	0	9
Design and Analysis of Algorithms Lab(CS341L)	0	0	2	2
B.Tech. Project (DP)	0	0	5	5
Seminar	0	0	2	2
Total Credits				58

6th Semester

Course/Subject	L	T	P	Cr
Software Engineering (DC) (CS331)	3	0	0	9
Computer Networks (DC) (CS351)	3	0	0	9
Computer Networks Lab(CS351L)	0	0	2	2
Compiler Design (DC) (CS312)	3	0	0	9
Compiler Design Lab (CS312L)	0	0	2	2
DE-2 (DE)	3	0	0	9
Linear Optimization (CS381)	2	0	2	8
Data Mining (CS458) (DC)	2	0	0	6
Data Mining Lab (CS458L)	0	0	2	2
B.Tech. Project (DP)	0	0	5	5
Total Credits				61

Summer Internship	10
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7th Semester

Course/Subject	L	T	P	Cr
Mobile Computing (DC) (CS411)	3	0	0	9
DE-3 (DE)	3	0	0	9
OE-1 (OE)	3	0	0	9
Foundations of Management (MT5405)	3	0	0	9
Sociology of Industry and Work Culture (HU313)	2	0	0	6
Total Credits				42

8th Semester

Course/Subject	L	T	P	Cr
Soft Computing (DC) (CS468)	2	0	2	8
Digital Image Processing (DC) CS431	2	0	0	6
Digital Image Processing Lab CS431L	0	0	2	2
Principles of Economics (MT5100)	3	0	0	9
Organizational Psychology (HU331)	2	0	0	6
DE-4(DE)	3	0	0	9
OE-2 (OE)	3	0	0	9
Total Credits				49

Course Credits for B.Tech CSE

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	175
DE	Departmental Elective	30	75	36
OE	Open Elective	15	20	18
DP	Project/industrial visit	20	50	20
	Total	440	490	459