

COURSE STRUCTURE
for
B.Tech Degree
in
Information Technology
2023-27 Batch

Streams in Information Technology

1. IT and Geoinformatics Engineering
2. Modern Robotics
3. Digital Communication

	IT and Geoinformatics Engineering	Modern Robotics	Digital Communication
DE1	Cloud Computing CS374 or Computer Vision and Pattern Recognition CS454 or Artificial Intelligence CS360	Cloud Computing CS374 or Robot Motion Planning CS492 or Artificial Intelligence CS360	Cloud Computing CS374 or Artificial Intelligence CS360
DE2	Geoinformatics CS381 or Remote Sensing and Aerial Photogrammetry CS382 or UAV Remote Sensing CS383	Robotics and Industrial Automation CS367	Digital Communication System CS371
DE3	GPS and Adjustment Computation CS 384	Cognition and Cognitive System CS368	Wireless Sensor Network CS372
DE4	Geographic Information System CS481 or Data Analytics CS457	Speech and Language Technology CS491 or Natural Language Processing CS466	Wireless Digital Communication CS481

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
Object Oriented Methodologies (DC) (CS224)	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
Principles of Programming Languages (DC) CS223	3	0	0	9
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 (DC) (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				184

Department Elective courses

	Course	L	T	P	Credit
DE1	Artificial Intelligence(CS360)	3	0	0	9
	Cloud Computing (CS374)	3	0	0	9
DE2	Geoinformatics (CS365)	3	0	0	9
	Remote Sensing and Aerial Photogrammetry (CS382)	3	0	0	9
	UAV Remote Sensing (CS383)	3	0	0	9
	Robotics and Industrial Automation (CS367)	3	0	0	9
	Digital Communication System(CS371)	3	0	0	9
DE3	GPS and Adjustment Computation(CS384)	3	0	0	9
	Cognition and Cognitive System(CS368)	3	0	0	9
	Wireless Sensor Network (CS372)	3	0	0	9
DE4	Data Analytics(CS457)	3	0	0	9
	Geographic Information System (CS363)	3	0	0	9
	Speech and Language Technology CS491	3	0	0	9
	Wireless Digital Communication CS481	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

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(DC) (CS211L)	0	0	2	2
Principles of Programming Languages (DC) (CS223)	3	0	0	9
Graphics and Visual Computing (DC) (CS 231)	2	0	0	6
Graphics and Visual Computing Lab(DC) (CS 231L)	0	0	2	2
Object Oriented Methodologies (DC) (CS224)	3	0	0	9
Object Oriented Methodologies (DC) (CS224L)	0	0	2	2
Professional Communications	2	1	0	8
Total Credits				64

4th Semester

Course/Subject	L	T	P	Cr
Database Management Systems (DC) (CS212)	3	0	0	9
Database Management Systems Lab(DC) (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(IE) (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 IT

Category	Program components	Min	Max	Recommended
HU	Humanities and social science	22	20	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	184
DE	Departmental Elective	30	75	36
OE	Open Elective	15	20	18
DP	Project/industrial visit	20	50	20
	Total	440	480	468