

IDD – B.Tech in CSE and M.Tech  
in Artificial Intelligence  
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 CS431 or Cryptology CS432
DE 5 -6	Deep Learning CS465/Natural Language Processing CS466 /Genetic Algorithm CS461/Image, Speech, Video Processing CS455 /Robotics /Combinatorics CS402	Deep Learning CS465/Natural Language Processing CS466 /Formal Language and Automata Theory CS422/Combinatorics CS402/Quantum Computing CS501	Deep Learning CS465/Natural Language Processing CS466 /Formal Language and Automata Theory CS422 /Blockchain Technology CS513/Data Compression CS514

# 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
<b>Total</b>				<b>88</b>

# Institute Engineering Courses

<b>Course</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credit</b>
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
<b>Total Credit</b>				<b>59</b>

# 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
	<b>Total Credit</b>				<b>15</b>
LM	Foundations of Management (MT5405)	3	0	0	9
	Principles of Economics (MT5100)	3	0	0	9
	Professional Communications	2	1	0	8
	<b>Total Credit</b>				<b>26</b>
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
	<b>Total Credit</b>				<b>22</b>

# Department Core courses

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 (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
Natural Language Processing (CS566)	3	0	2	11
Image, Speech, Video Processing (CS555)	3	0	2	11
UAV Data Processing (CS556)	3	0	2	11
<b>Total</b>				<b>208</b>

# 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(CS431)	3	0	0	9
	Total Credit (for 4 selected)				<b>36</b>

# Departmental Elective Courses

	Course	L	T	P	Credit
DE5	Information Retrieval (CS511)	3	0	0	9
	Formal Language and Automata Theory (CS522)	3	0	0	9
DE6	AI Applications (CS561)	3	0	0	9
	Information Theory (CS512)	3	0	0	9
	Total Credit (for 2 selected)				18



# 1<sup>st</sup> Semester

<b>Course/Subject</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Cr</b>
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
<b>Total Credits</b>				<b>59</b>
Basic English (HU)* (LM101)	1	2	0	7
Universal Human values (HU) (HU101)	1	1	0	5

\*For students with less proficiency in English

## 2<sup>nd</sup> Semester

<b>Course/Subject</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Cr</b>
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
<b>Total Credits</b>				<b>53</b>
Community Internship	0	0	5	5

## 3<sup>rd</sup> 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
Material Science (IE) (MS211)	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
Professional Communications	2	1	0	8
<b>Total Credits</b>				<b>53</b>

## 4<sup>th</sup> 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
<b>Total Credits</b>				<b>62</b>

## 5<sup>th</sup> Semester

<b>Course/Subject</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Cr</b>
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
<b>Total Credits</b>				<b>58</b>

## 6<sup>th</sup> Semester

<b>Course/Subject</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Cr</b>
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
<b>Total Credits</b>				<b>61</b>

<b>Summer Internship</b>	<b>10</b>
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## 7<sup>th</sup> Semester

<b>Course/Subject</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Cr</b>
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
<b>Total Credits</b>				<b>42</b>

## 8<sup>th</sup> Semester

<b>Course/Subject</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Cr</b>
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
<b>Total Credits</b>				<b>49</b>



## 9<sup>th</sup> Semester

<b>Course/Subject</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Cr</b>
Natural Language Processing (CS566)	3	0	0	9
Natural Language Processing Lab(CS566L)	0	0	2	2
Image, Speech, Video Processing (CS555)	3	0	0	9
Image, Speech, Video Processing Lab (CS555L)	0	0	2	2
UAV Data Processing (CS556)	3	0	0	9
UAV Data Processing Lab (CS556L)	0	0	2	2
DE-5 (DE)	3	0	0	9
DE-6 (DE)	3	0	0	9
Thesis	0	0	10	10
<b>Total Credits</b>				<b>61</b>

## 10<sup>th</sup> Semester

<b>Course/Subject</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Cr</b>
<b>Thesis</b>	0	0	50	50
<b>Total Credits</b>				<b>50</b>

# Course Credits for IDD CSE-AI

Category	Program components	Min	Max	Recommended
HU	Humanities and social science	22	22	<b>22</b>
IS	Institute Science	70	90	<b>88</b>
IE	Institute requirement engineering	40	70	<b>59</b>
EP	Engineering drawing, workshop	18	24	<b>15</b>
LM	Language and Management	18	24	<b>26</b>
DC	Departmental Core	145	190	<b>208</b>
DE	Departmental Elective	60	105	<b>54</b>
OE	Open Elective	15	20	<b>18</b>
DP	Project/industrial visit/Thesis	20	50	<b>20</b>
DT	Dissertation	70	80	<b>70</b>
	<b>Total</b>	550	600	<b>580</b>