

# **SARALA BIRLA UNIVERSITY RANCHI**



Established under the Sarala Birla University Act 2017 Govt. of Jharkhand as per Section 2(f) of UGC Act. 1956

## **CURRICULUM FOR Diploma in Computer Science & Engineering (Based on UGC & AICTE-CBCS)**

**Effective from 2019-20**

## DEFINITION OF CREDIT

1 Hr. Lecture (L) per week	1 credit
1 Hr. Tutorial (T) per week	1 credit
1 Hr. Practical (P) per week	0.5 credit
2 Hours Practical (Lab)/week	1 credit
4 Hours Practical (Lab)/week	2 credits

## COURSE CODE AND DEFINITION

Course Code	Definition
<b>BSC-D</b>	Basic Science courses
<b>ESC-D</b>	Engineering Science courses
<b>HSMC-D</b>	Humanities and Social Sciences including Management courses
<b>MC-D</b>	Mandatory Courses
<b>ECCA-D</b>	Extra Co-Curricular Activities Courses
<b>PCC-CSE-D</b>	Professional core courses
<b>PEC-CSE-D</b>	Professional Elective courses
<b>OEC-CSE-D</b>	Open Elective Courses
<b>CSE-DP1</b>	Project stage-I
<b>CSE-DP2</b>	Project stage-II

## STRUCTURE OF UNDERGRADUATE DIPLOMA IN CSE PROGRAM

S.No	Course Category	Credit Breakup
1	Humanities and Social Sciences including Management courses	13
2	Basic Science courses	25
3	Engineering Science courses including workshop, drawing, basics of electrical/mechanical/computer etc	15
4	Mandatory Courses	4
5	Professional Core courses	57
6	Professional Elective courses relevant to chosen specialization/branch	12
7	Open subjects – Electives from other technical and /or emerging subjects	8
8	Project work, seminar and internship in industry or elsewhere	8
9	Extra Co-Curricular Activities Courses	2
<b>Total Credits</b>		<b>144</b>

### CREDITS DISTRIBUTION (SEMESTER-WISE AND COURSE-WISE )

Semester	HSMC-D	BSC-D	ESC-D	MC-D	PCC-CSE-D	PEC-CSE-D	OEC-Dept. Code-D	Project (CSE-DP1+ CSE-DP2)	ECCA-D	Total Credit Semester-wise
Semester I	3	10	7						1	21
Semester II	3	10	8						1	22
Semester III	3	5		4	10		4			26
Semester IV	2				23					25
Semester V					15	4	4	2		25
Semester VI	2				9	8		6		25
<b>Total Credit Course-wise Semestere-wise</b>	<b>13</b>	<b>25</b>	<b>15</b>	<b>4</b>	<b>57</b>	<b>12</b>	<b>8</b>	<b>8</b>	<b>2</b>	
<b>Total Credits</b>										<b>144</b>

## MARKS DISTRIBUTION OF DIPLOMA IN CSE PROGRAM

S. No	Year	Semester	Total Credits	Total Classes per Week	Theory			Lab			Total Marks
					IA	ESE	TM	IA	ESE	TM	
1	1st	I	21	27	120	280	400	120	80	200	600
2		II	22	28	120	280	400	150	100	250	650
3	2nd	III	26	30	210	490	700	120	80	200	900
4		IV	25	28	180	420	600	90	60	150	750
5	3rd	V	25	31	150	350	500	195	105	300	800
6		VI	25	33	150	350	500	210	90	300	800
<b>Total</b>			<b>144</b>	<b>177</b>	<b>930</b>	<b>2170</b>	<b>3100</b>	<b>885</b>	<b>515</b>	<b>1400</b>	<b>4500</b>

**IA- Internal Assessment, ESE-End Semester Examination**

**TM- Total Marks**

## BASIC SCIENCE COURSES

Sl. No.	Course Code	Course Title	Hours per week			Credits	Preferred Semester
			L	T	P		
1	BSC-D101	Basic Chemistry	3	1	0	4	I
2	BSC-D102	Basic Chemistry Lab	0	0	2	1	I
3	BSC-D103	Basic Physics	3	1	0	4	II
4	BSC-D104	Basic Physics Lab	0	0	2	1	II
5	BSC-D105	Basic Mathematics	4	1	0	5	I
6	BSC-D106	Engineering Mathematics	4	1	0	5	II
7	BSC-D107	Applied Mathematics	4	1	0	5	III
<b>Total Credits:</b>						<b>25</b>	

## ENGINEERING SCIENCE COURSES

Sl. No.	Course Code	Course Title	Hours per week			Credits	Preferred Semester
			L	T	P		
1	ESC-D101	Fundamentals of Computer	3	0	0	3	I
2	ESC-D102	Fundamentals of Computer Lab	0	0	4	2	I
3	ESC-D103	Workshop Practice	0	0	4	2	I
4	ESC-D104	Fundamentals of Electrical and Electronics	3	1	0	4	II
5	ESC-D105	Fundamentals of Electrical and Electronics Lab	0	0	2	1	II
6	ESC-D106	Engineering Graphics	1	0	4	3	II
<b>Total Credits:</b>						<b>15</b>	

## HUMANITIES & SOCIAL SCIENCES INCLUDING MANAGEMENT COURSES

Sl. No.	Course Code	Course Title	Hours per week			Credits	Preferred Semester
			L	T	P		
1	HSMC-D101	Technical English	3	0	0	3	I
2	HSMC-D102	Communication Skills	2	0	0	2	II
3	HSMC-D103	Life Skills & Professional Practices-I	0	0	2	1	II
4	HSMC-D104	Life Skills & Professional Practices-II	0	0	2	1	III
5	HSMC-D105	French Through Communicative Approach-I	2	0	0	2	III
6	HSMC-D106	French Through Communicative Approach-II	2	0	0	2	IV
7	HSMC-D107	Organisational Behaviour	2	0	0	2	VI
<b>Total Credits:</b>						<b>13</b>	



## MANDATORY COURSES

Sl. No.	Course Code	Course Title	Hours per week			Credits	Preferred Semester
			L	T	P		
1	MC-D101	Induction Program	0	0	0	0	I
2	MC-D102	Environmental Science	2	0	0	2	III
2	MC-D103	Values and Ethics	2	0	0	2	IV
<b>Total Credits:</b>						<b>4</b>	

## EXTRA CO-CURRICULAR ACTIVITIES COURSES

Sl. No.	Course Code	Course Title	Hours per week			Credits	Preferred Semester
			L	T	P		
1	ECCA-D101	PT and Games/NSS/NCC/CA	0	0	2	1	I
2	ECCA-D102	PT and Games/NSS/NCC/CA	0	0	2	1	II
<b>Total Credits:</b>						<b>2</b>	

## PROFESSIONAL CORE COURSES

**Branch: Computer Science & Engineering**

Sl. No.	Course Code	Course Title	Hrs. /Week L: T: P	Credits	Preferred Semester
1	PCC-CSE-D201	C Programming and Scripting Language	3:01:00	4	III
2	PCC-CSE-D202	C Programming and Scripting Language Lab	0:00:02	1	III
3	PCC-CSE-D203	Database Management System	3:01:00	4	III
4	PCC-CSE-D204	Database Management System Lab	0:00:02	1	III
5	PCC-CSE-D205	Computer Hardware	3:01:00	4	IV
6	PCC-CSE-D206	Computer Hardware Lab	0:00:02	1	IV
7	PCC-CSE-D207	Data Structures	3:01:00	4	IV
8	PCC-CSE-D208	Data Structures Lab	0:00:02	1	IV
9	PCC-CSE-D209	Object Oriented Programming	3:01:00	4	IV
10	PCC-CSE-D210	Object Oriented Programming Lab	0:00:02	1	IV
11	PCC-CSE-D211	Computer Organization and Architecture	3:01:00	4	IV
12	PCC-CSE-D212	Formal Language & Automata Theory	3:01:00	4	IV
13	PCC-CSE-D301	Computer Networks	3:01:00	4	V
14	PCC-CSE-D302	Computer Networks Lab	0:00:02	1	V
15	PCC-CSE-D303	Operating Systems	3:01:00	4	V
16	PCC-CSE-D304	Operating Systems Lab	0:00:02	1	V
17	PCC-CSE-D305	Software Engineering	3:01:00	4	V
18	PCC-CSE-D306	Software Engineering Lab	0:00:02	1	V
19	PCC-CSE-D307	Web Technologies	3:01:00	4	VI
20	PCC-CSE-D308	Web Technologies Lab	0:00:02	1	VI
21	PCC-CSE-D309	Computer Graphics and Multimedia	3:01:00	4	VI
<b>Total Credits:</b>				<b>57</b>	



# PROFESSIONAL ELECTIVE COURSES

**Branch: Computer Science & Engineering**

SL NO.	Course Code	Course Title	Hrs. /Week L: T: P	Credits	Preferred Semester
1	PEC-CSE-D301	Mobile Computing	3:00:00	3	V/VI
2	PEC-CSE-D302	Mobile Computing Lab	0:00:02	1	V/VI
3	PEC-CSE-D303	Multimedia Technologies	3:00:00	3	V/VI
4	PEC-CSE-D304	Multimedia Technologies Lab	0:00:02	1	V/VI
5	PEC-CSE-D305	Advance Computer Networks	3:00:00	3	V/VI
6	PEC-CSE-D306	Advance Computer Networks Lab	0:00:02	1	V/VI
7	PEC-CSE-D307	Information Security	3:00:00	3	V/VI
8	PEC-CSE-D308	Information Security Security Lab	0:00:02	1	V/VI
9	PEC-CSE-D309	Network Forensics	3:00:00	3	V/VI
10	PEC-CSE-D310	Network Forensics Lab	0:00:02	1	V/VI
11	PEC-CSE-D311	FOSS (Free and Open Source Software)	3:00:00	3	V/VI
12	PEC-CSE-D312	FOSS (Free and Open Source Software) Lab	0:00:02	1	V/VI
13	PEC-CSE-D313	Software Testing	3:00:00	3	V/VI
14	PEC-CSE-D314	Software Testing Lab	0:00:02	1	V/VI
15	PEC-CSE-D315	Web App Development	3:00:00	3	V/VI
16	PEC-CSE-D316	Web App Development Lab	0:00:02	1	V/VI
17	PEC-CSE-D317	Image Processing	3:00:00	3	V/VI
18	PEC-CSE-D318	Image Processing Lab	0:00:02	1	V/VI

19	PEC-CSE-D319	Fundamentals of Artificial Intelligence	3:01:00	4	V/VI
20	PEC-CSE-D320	Data Sciences: Data Warehousing and Data Mining	3:01:00	4	V/VI
21	PEC-CSE-D321	Soft Computing	3:01:00	4	V/VI
22	PEC-CSE-D322	Cloud Computing	3:01:00	4	V/VI
23	PEC-CSE-D323	Cyber Law and Ethics	3:01:00	4	V/VI
24	PEC-CSE-D324	Big Data Analytics	3:01:00	4	V/VI

## OPEN ELECTIVE COURSES

Branch: Computer Science & Engineering

Sl. No.	Course Code	Course Title	Hrs./ Week L: T: P	Credits	Preferred Semester
1	OEC-ECE-D201	Basic Electronics	3:00:00	3	III
2	OEC-ECE-D202	Basic Electronics Lab	0:00:02	1	III
3	OEC-EEE-D302	Microprocessors & Microcontrollers	3:00:00	3	V
4	OEC-EEE-D303	Microprocessors & Microcontrollers Lab	0:00:02	1	V

# **PROJECT FOR COMPUTER SCIENCE & ENGINEERING BRANCH**

**Branch: Computer Science & Engineering**

<b>Sl. No.</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Hrs. /Week L: T: P</b>	<b>Credits</b>	<b>Preferred Semester</b>
1	CSE-DP1	Project Stage-I	0:00:04	2	V
2	CSE-DP2	Project Stage-II	0:00:12	6	VI
<b>Total Credits:</b>				<b>8</b>	





# COURSE STRUCTURE

SEMESTER I (FIRST YEAR)

Branch: Computer Science & Engineering

Sl. No.	Category	Course Code	Course Title	Hours			Credit	Marks		
				L	T	P		IA	ESE	Total
<b>Theory</b>										
1	Basic Science Course	BSC-D101	Basic Chemistry	3	1	0	4	30	70	100
2	Basic Science Course	BSC-D105	Basic Mathematics	4	1	0	5	30	70	100
3	Humanities and Social Sciences including Management Courses	HSMC-D101	Technical English	3	0	0	3	30	70	100
4	Engineering Science Course	ESC-D101	Fundamentals of Computer	3	0	0	3	30	70	100
<b>Total(A)</b>							<b>15</b>	<b>120</b>	<b>280</b>	<b>400</b>
<b>Practical/Drawing/Design</b>										
1	Basic Science Course	BSC-D102	Basic Chemistry Lab	0	0	2	1	30	20	50
2	Engineering Science Course	ESC-D102	Fundamentals of Computer Lab	0	0	4	2	30	20	50
3	Engineering Science Course	ESC-D103	Workshop Practice	0	0	4	2	30	20	50
4	Extra Co-curricular Activities Course	ECCA-D101	PT and Games/NSS/NCC /CA	0	0	2	1	30	20	50
<b>Total(B)</b>							<b>6</b>	<b>120</b>	<b>80</b>	<b>200</b>
<b>Grand Total (A+B)</b>							<b>21</b>	<b>240</b>	<b>360</b>	<b>600</b>
<b>L-Lecture, T-Tutorial, P-Practical</b> <b>IA- Internal Assessment, ESE-End Semester Examination</b>										

# COURSE STRUCTURE

SEMESTER II (FIRST YEAR)

Branch: Computer Science & Engineering

Sl. No.	Category	Course Code	Course Title	Hours			Credit	Marks		
				L	T	P		IA	ESE	Total
<b>Theory</b>										
1	Basic Science Course	BSC-D103	Basic Physics	3	1	0	4	30	70	100
2	Basic Science Course	BSC-D106	Engineering Mathematics	4	1	0	5	30	70	100
3	Humanities and Social Sciences including Management Courses	HSMC-D102	Communication Skills	2	0	0	2	30	70	100
4	Engineering Science Course	ESC-D104	Fundamentals of Electrical and Electronics	3	1	0	4	30	70	100
<b>Total(A)</b>							<b>15</b>	<b>120</b>	<b>280</b>	<b>400</b>
<b>Practical/Drawing/Design</b>										
1	Basic Science Course	BSC-D104	Basic Physics Lab	0	0	2	1	30	20	50
2	Engineering Science Course	ESC-D105	Fundamentals of Electrical and Electronics Lab	0	0	2	1	30	20	50
3	Engineering Science Course	ESC-D106	Engineering Graphics	1	0	4	3	30	20	50
4	Humanities and Social Sciences including Management Courses	HSMC-D103	Life Skills & Professional Practices-I	0	0	2	1	30	20	50
5	Extra Co-curricular Activities Course	ECCA-D102	PT and Games/NSS/NCC/CA	0	0	2	1	30	20	50
<b>Total(B)</b>							<b>7</b>	<b>150</b>	<b>100</b>	<b>250</b>
<b>Grand Total (A+B)</b>							<b>22</b>	<b>270</b>	<b>380</b>	<b>650</b>

L-Lecture, T-Tutorial, P-Practical

IA- Internal Assessment, ESE-End Semester Examination

# COURSE STRUCTURE

**SEMESTER III (SECOND YEAR)**

**Branch: Computer Science & Engineering**

Sl. No.	Category	Course Code	Course Title	Hours			Credit	Marks		
				L	T	P		IA	ESE	Total
<b>Theory</b>										
1	Mandatory Course	MC-D102	Environmental Science	2	0	0	2	30	70	100
2	Mandatory Course	MC-D103	Values & Ethics	2	0	0	2	30	70	100
3	Basic Science Course	BSC-D107	Applied Mathematics	4	1	0	5	30	70	100
4	Humanities and Social Sciences including Management Courses	HSMC-D105	French Through Communicative Approach-I	2	0	0	2	30	70	100
5	Professional Core Course	PCC-CSE-D201	C Programming and Scripting Language	3	1	0	4	30	70	100
6	Professional Core Course	PCC-CSE-D203	Database Management System	3	1	0	4	30	70	100
7	Open Elective Course	OEC-ECE-D201	Basic Electronics	3	0	0	3	30	70	100
<b>Total(A)</b>							<b>22</b>	<b>210</b>	<b>490</b>	<b>700</b>
<b>Practical/Drawing/Design</b>										
1	Humanities and Social Sciences including Management Courses	HSMC-D104	Life Skills & Professional Practices-II	0	0	2	1	30	20	50
2	Professional Core Course	PCC-CSE-D202	C Programming and Scripting Language Lab	0	0	2	1	30	20	50
3	Professional Core Course	PCC-CSE-D204	Database Management System Lab	0	0	2	1	30	20	50
4	Open Elective Course	OEC-ECE-D202	Basic Electronics Lab	0	0	2	1	30	20	50
<b>Total(B)</b>							<b>4</b>	<b>120</b>	<b>80</b>	<b>200</b>
<b>Grand Total (A+B)</b>							<b>26</b>	<b>330</b>	<b>570</b>	<b>900</b>

**L-Lecture, T-Tutorial, P-Practical**

**IA- Internal Assessment, ESE-End Semester Examination**



# COURSE STRUCTURE

SEMESTER IV (SECOND YEAR)

Branch: Computer Science & Engineering

Sl. No.	Category	Course Code	Course Title	Hours			Credit	Marks		
				L	T	P		IA	ESE	Total
<b>Theory</b>										
1	Humanities and Social Sciences including Management Courses	HSMC-D106	French Through Communicative Approach-II	2	0	0	2	30	70	100
2	Professional Core Course	PCC-CSE-D205	Computer Hardware	3	1	0	4	30	70	100
3	Professional Core Course	PCC-CSE-D207	Data Structures	3	1	0	4	30	70	100
4	Professional Core Course	PCC-CSE-D209	Object Oriented Programming	3	1	0	4	30	70	100
5	Professional Core Course	PCC-CSE-D211	Computer Organization and Architecture	3	1	0	4	30	70	100
6	Professional Core Course	PCC-CSE-D212	Formal Language & Automata Theory	3	1	0	4	30	70	100
<b>Total(A)</b>							<b>22</b>	<b>180</b>	<b>420</b>	<b>600</b>
<b>Practical/Drawing/Design</b>										
1	Professional Core Course	PCC-CSE-D206	Computer Hardware Lab	0	0	2	1	30	20	50
2	Professional Core Course	PCC-CSE-D208	Data Structures Lab	0	0	2	1	30	20	50
3	Professional Core Course	PCC-CSE-D210	Object Oriented Programming Lab	0	0	2	1	30	20	50
<b>Total(B)</b>							<b>3</b>	<b>90</b>	<b>60</b>	<b>150</b>
<b>Grand Total (A+B)</b>							<b>25</b>	<b>270</b>	<b>480</b>	<b>750</b>
<b>L-Lecture, T-Tutorial, P-Practical</b> <b>IA- Internal Assessment, ESE-End Semester Examination</b>										

# COURSE STRUCTURE

**SEMESTER V (THIRD YEAR)**

**Branch: Computer Science & Engineering**

Sl. No.	Category	Course Code	Course Title	Hours			Credit	Marks		
				L	T	P		IA	ESE	Total
<b>Theory</b>										
1	Professional Core Course	PCC-CSE-D301	Computer Networks	3	1	0	4	30	70	100
2	Professional Core Course	PCC-CSE-D303	Operating Systems	3	1	0	4	30	70	100
3	Professional Core Course	PCC-CSE-D305	Software Engineering	3	1	0	4	30	70	100
4	Professional Elective Course	PEC-CSE-D319	Fundamentals of Artificial Intelligence	3	1	0	4	30	70	100
5	Open Elective Course	OEC-EEE-D302	Microprocessors & Microcontrollers	3	0	0	3	30	70	100
<b>Total(A)</b>							<b>19</b>	<b>150</b>	<b>350</b>	<b>500</b>
<b>Practical/Drawing/Design</b>										
1	Professional Core Course	PCC-CSE-D302	Computer Networks Lab	0	0	2	1	30	20	50
2	Professional Core Course	PCC-CSE-D304	Operating Systems Lab	0	0	2	1	30	20	50
3	Professional Core Course	PCC-CSE-D306	Software Engineering Lab	0	0	2	1	30	20	50
4	Open Elective Course	OEC-EEE-D303	Microprocessors & Microcontrollers Lab	0	0	2	1	30	20	50
5	Project Work	CSE-DP1	Project Stage-I (Mini Project/ Computer Science and Engineering Workshop)	0	0	4	2	75	25	100
<b>Total(B)</b>							<b>6</b>	<b>195</b>	<b>105</b>	<b>300</b>
<b>Grand Total (A+B)</b>							<b>25</b>	<b>345</b>	<b>455</b>	<b>800</b>
<b>L-Lecture, T-Tutorial, P-Practical</b> <b>IA- Internal Assessment, ESE-End Semester Examination</b>										

# COURSE STRUCTURE

**SEMESTER VI (THIRD YEAR)**

**Branch: Computer Science & Engineering**

Sl. No.	Category	Course Code	Course Title	Hours			Credit	Marks		
				L	T	P		IA	ESE	Total
<b>Theory</b>										
1	Humanities and Social Sciences including Management Courses	HSMC-D107	Organisational Behaviour	2	0	0	2	30	70	100
2	Professional Core Course	PCC-CSE-D307	Web Technologies	3	1	0	4	30	70	100
3	Professional Core Course	PCC-CSE-D309	Computer Graphics and Multimedia	3	1	0	4	30	70	100
4	Professional Elective Course	PEC-CSE-D307	Information Security	3	0	0	3	30	70	100
5	Professional Elective Course	PEC-CSE-D320	Data Sciences: Data Warehousing and Data Mining	3	1	0	4	30	70	100
<b>Total(A)</b>							<b>17</b>	<b>150</b>	<b>350</b>	<b>500</b>
<b>Practical/Drawing/Design</b>										
1	Professional Core Course	PCC-CSE-D308	Web Technologies Lab	0	0	2	1	30	20	50
2	Professional Elective Course	PEC-CSE-D308	Information Security Lab	0	0	2	1	30	20	50
3	Project Work	CSE-DP2	Project Stage-II (Major Project Work & Dissertation)	0	0	12	6	150	50	200
<b>Total(B)</b>							<b>8</b>	<b>210</b>	<b>90</b>	<b>300</b>
<b>Grand Total (A+B)</b>							<b>25</b>	<b>360</b>	<b>440</b>	<b>800</b>
L-Lecture, T-Tutorial, P-Practical										
IA- Internal Assessment, ESE-End Semester Examination										