



SARALA
BIRLA
UNIVERSITY

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

CURRICULUM FOR

Master of Computer Application

(Based on UGC/AICTE- CBCS)

Effective from 2021-2022

Department of Computer Science & Engineering

Breakup of Credits

Sl. No.	Category	Credits
1	Professional Core Course	47
2	Discipline Specific Elective Course	16
4	Skill Enhancement Course	9
5	Ability Enhancement Compulsory Course	2
6	Project work/ Dissertation/ OJT	8
Total Credits:		82

Definition of Credit

1 Hr. Lecture (L) Per Week

1 Hr. Tutorial (T) Per Week

1 Hr. Practical (P) Per Week

2 Hr. Practical (P) Per Week

Course Code Definitions

Course code	Definitions
PCC	Professional Core Course
DSE	Discipline Specific Elective Course
SEC	Skill Enhancement Course
AEC	Ability Enhancement Compulsory Course
Project Work/ Dissertation/ OJT	Project work/Dissertation/OJT

CREDITS DISTRIBUTION (SEMESTER-WISE AND COURSE-WISE)						
Semester	PCC	DSE	SEC	AEC	Project Work / Dissertation/ OJT	Total Credit Semester-wise
1st	20	4	0	0	0	24
2nd	17	4	0	2	0	22
3rd	11	4	6	0	2	23
4th	0	4	3	0	6	13
Total Credit Course-wise	48	16	9	2	8	82
Total Credit						82

Professional Core Course (Sem-I to IV)

MCA

Sl. No.	Course Code	Course Title	Hrs. /Week L: T: P	Credits	Preferred Semester
1	MCA-101	Mathematical Concepts in Computer Science	03:00:00	3	I
2	MCA-102	Advanced Data Structures and Algorithms	03:01:00	3	I
3	MCA-103	Advanced Data Structures and Algorithms Lab	00:00:04	2	I
4	MCA-104	Distributed Systems	03:01:00	4	I
5	MCA-105	Advanced Relational Database Management System	03:01:00	3	I
6	MCA-106	Advanced Relational Database Management System Lab	00:00:04	2	I
7	MCA-107	Social Networks	03:00:00	3	I
9	MCA-108	Java Programming	03:00:00	3	II
10	MCA-109	Java Programming Lab	00:00:04	2	II
11	MCA-110	Internet and Web Technology	03:00:00	3	II
12	MCA-111	Internet and Web Technology Lab	00:00:02	2	II
13	MCA-112	Cryptography and Network Security	03:00:01	4	II
15	MCA-113	Software Engineering	03:00:00	3	II
16	MCA-201	Data Warehousing & Data Mining	03:00:00	3	III
17	MCA-202	Operations Research	03:01:00	4	III
18	MCA-203	Artificial Intelligence	03:01:00	4	III
Total:				48	

Discipline Specific Elective Course (Sem-II to IV)

MCA

Sl. No.	Course Code	Course Title	Hrs./ Week L: T: P	Credits	Preferred Semester
1	MCA-301	Computational Intelligence	03:01:00	4	I/II
2	MCA-302	Machine Learning	03:01:00	4	I/II
3	MCA-303	Object-Oriented Modeling and Design	03:00:00	3	I/II
4	MCA-304	Object-Oriented Modeling and Design Lab	00:00:01	1	I/II
5	MCA-305	Advanced Computer Networks	03:00:00	3	I/II
6	MCA-306	Advanced Computer Networks Lab	00:00:01	1	I/II
7	MCA-307	Advanced Graph Theory	03:01:00	4	I/II
8	MCA-308	Blockchain Technology	03:01:00	4	I/II
9	MCA-309	Wireless Sensor Networks	03:01:00	4	I/II
10	MCA-310	Computational Geometry	03:01:00	4	I/II
11	MCA-311	Cloud Computing	03:01:00	4	III/IV
12	MCA-312	Deep Learning	03:01:00	4	III/IV
13	MCA-313	Computer Vision	03:01:00	4	III/IV
14	MCA-314	Data Science	03:01:00	4	III/IV
15	MCA-315	Information Theory & Coding	03:00:00	3	III/IV
16	MCA-316	Information Theory & Coding Lab	00:00:01	1	III/IV
17	MCA-317	Mobile Computing	03:01:00	4	III/IV
18	MCA-318	Advance Image and video Processing	03:01:00	4	III/IV
19	MCA-319	Internet of Things	03:01:00	4	III/IV
20	MCA-320	Open Source Technologies	03:00:00	3	III/IV
21	MCA-321	Open Source Technologies Lab	00:00:01	1	III/IV

Skill Enhancement Course

MCA

Sl. No.	Course Code	Course Title	Hrs./ Week L: T: P	Credits	Preferred Semester
1	MCA-204	Cyber Law and Information Security	03:00:00	3	III
2	MCA-205	Programming in Python	01:00:04	3	III
3	MCA-211	Android Application Development	01:00:04	3	IV
Total Credit				9	

Ability Enhancement Compulsory Course

MCA

Sl. No.	Course Code	Course Title	Hrs./ Week L: T: P	Credits	Preferred Semester
1	MCA-114	Induction Program	02:00:00	0	I
2	MCA-115	PDP-I	02:00:00	0	I
3	MCA-116	Environmental Science	02:00:00	2	II
4	MCA-117	PDP-II	02:00:00	0	II
5	MCA-207	Values & Ethics	02:00:00	0	III
6	MCA-208	PDP-III	02:00:00	0	III
7	MCA-213	PDP-IV	02:00:00	0	IV
Total Credit				2	

COURSE STRUCTURE

SEMESTER I (1st YEAR)

Sl. No.	Category	Course Code	Course Title	Hours			Credit	Marks		
				L	T	P		IA	ESE	Total
Theory										
1	Professional Core Course	MCA-101	Mathematical Concepts in Computer Science	3	0	0	3	30	70	100
2	Professional Core Course	MCA-102	Advanced Data Structures and Algorithms	3	0	0	3	30	70	100
3	Professional Core Course	MCA-104	Distributed Systems	3	1	0	4	30	70	100
4	Professional Core Course	MCA-105	Advanced Relational Database Management System	3	0	0	3	30	70	100
5	Professional Core Course	MCA-107	Social Networks	3	0	0	3	30	70	100
6	Discipline Specific Elective Course	MCA-302	Machine Learning	3	1	0	4	30	70	100
Total(A)							20	180	420	600
Practical/Drawing/Design										
1	Professional Core Course	MCA-103	Advanced Data Structures and Algorithms Lab	0	0	4	2	30	20	50
2	Professional Core Course	MCA-106	Advanced Relational Database Management System Lab	0	0	4	2	30	20	50
Total(B)							4	60	40	100
UGC Recommended Audit Courses										
1	Ability Enhancement Compulsory Course	MC-114	Induction Program	0	0	0	0	0	0	0
2	Ability Enhancement Compulsory Course	MC-115	PDP-I	2	0	0	0	0	0	0
Total(C)							0	0	0	0
Grand Total (A+B+C)							24	240	460	700
L-Lecture, T-Tutorial, P-Practical IA- Internal Assessment, ESE-End Semester Examination										

COURSE STRUCTURE

SEMESTER II (1st YEAR)

Sl. No.	Category	Course Code	Course Title	Hours			Credit	Marks					
				L	T	P		IA	ESE	Total			
Theory													
1	Professional Core Course	MCA-108	Java Programming	3	0	0	3	30	70	100			
2	Professional Core Course	MCA-110	Internet and Web Technology	3	0	0	3	30	70	100			
3	Professional Core Course	MCA-112	Cryptography and Network Security	3	0	1	4	30	70	100			
4	Professional Core Course	MCA-113	Software Engineering	3	0	0	3	30	70	100			
5	Discipline Specific Elective Course	MCA-305	Advanced computer Networks	3	1	0	4	30	70	100			
Total(A)							17	150	350	500			
Practical/Drawing/Design													
1	Professional Core Course	MCA-109	Java Programming Lab	0	0	2	1	30	20	50			
2	Professional Core Course	MCA-111	Internet and Web Technology Lab	0	0	2	1	30	20	50			
3	Discipline Specific Elective Course	MCA-306	Advanced computer Networks Lab	0	0	2	1	30	20	50			
Total(B)							0	0	6	3	60	40	100
UGC Recommended Audit Courses													
1	Ability Enhancement Compulsory Course	MC-116	Environmental Science	2	0	0	2	0	0	0			
2	Ability Enhancement Compulsory Course	MC-117	PDP-II	2	0	0	0	0	0	0			
Total(C)							2	0	0	0			
Grand Total (A+B+C)							22	210	390	600			
L-Lecture, T-Tutorial, P-Practical IA- Internal Assessment, ESE-End Semester Examination													

COURSE STRUCTURE

SEMESTER III (2nd YEAR)

Sl. No.	Category	Course Code	Course Title	Hours			Credit	Marks		
				L	T	P		IA	ESE	Total
Theory										
1	Professional Core Course	MCA-201	Data Warehousing & Data Mining	3	0	0	3	30	70	100
2	Professional Core Course	MCA-202	Operations Research	3	1	0	4	30	70	100
4	Professional Core Course	MCA-203	Artificial Intelligence	3	1	0	4	30	70	100
5	Skill Enhancement Course	MCA-204	Cyber Law and Information Security	3	0	0	3	30	70	100
6	Discipline Specific Elective Course	MCA-320	Open Source Technologies	3	0	0	3	30	70	100
Total(A)							17	150	350	500
Practical/Drawing/Design										
1	Discipline Specific Elective Course	MCA-321	Open Source Technologies Lab	0	0	2	1	30	20	50
2	Skill Enhancement Course	MCA-205	Programming in Python	1	0	4	3	30	20	50
3	Project work/ Dissertation/ OJT	MCA-206	Mini Project (To be Continued in 4th semester)	0	0	4	2	75	25	100
Total(B)							6	135	65	200
UGC Recommended Audit Courses										
1	Ability Enhancement Compulsory Course	MCA-207	Values & Ethics	2	0	0	0	0	0	0
2	Ability Enhancement Compulsory Course	MCA-208	PDP-III	2	0	0	0	0	0	0
Total(C)							0	0	0	0
Grand Total (A+B+C)							23	285	415	700
L-Lecture, T-Tutorial, P-Practical IA- Internal Assessment, ESE-End Semester Examination										

COURSE STRUCTURE

SEMESTER IV (2nd YEAR)

Sl. No.	Category	Course Code	Course Title	Hours			Credit	Marks		
				L	T	P		IA	ESE	Total
Theory										
1	Discipline Specific Elective Course	MCA-319	Internet of Things	3	1	0	4	30	70	100
Total(A)							4	30	70	100
Practical/Drawing/Design										
2	Skill Enhancement Course	MCA-211	Android Application Development	1	0	4	3	30	20	50
3	Project work/ Dissertation/ OJT	MCA-212	Major Project/Research	0	0	12	6	150	50	200
Total(B)							9	180	70	250
Mandatory Courses/MOOC'S										
1	Ability Enhancement Compulsory Course	MCA-213	PDP-IV	2	0	0	0	0	0	0
Total(C)							0	0	0	0
Grand Total (A+B+C)							13	210	140	350
L-Lecture, T-Tutorial, P-Practical IA- Internal Assessment, ESE-End Semester Examination										