

**REVISED DETAILED STRUCTURE OF
FIVE YEAR INTEGRATED
BCA & MCA (Data Science)**

with effect from Session 2021-22

**FIVE YEAR INTEGRATED
BCA & MCA (Data Science)**



Centre of Computer Education & Training

Institute of Professional Studies

University of Allahabad

Prayagraj-211002

CREDIT STRUCTURE of Five Year Integrated BCA and MCA (Data Science) Programme**SEMESTER-I**

S. No.	Course Code	Course Title	L	T	P	Credit	Int.	Ext.
THEORY								
1.	IDS001	Mathematics-I	2	1	0	3	40	60
2.	IDS002	'C' Programming with Data Structures	2	1	0	3	40	60
3.	IDS003	Data Engineering	2	1	0	3	40	60
4.	IDS004	Foundations of Data Science	2	1	0	3	40	60
5.	IDS005	Computer Fundamentals & Internet Programming	2	1	0	3	40	60
6.	IDS006	Communications Skills	2	1	0	3	40	60
7.	IDS051	Data structures using 'C' Lab	0	1	3	4	40	60
8.	IDS052	Internet Programming Lab	0	1	3	4	40	60
TOTAL			12	08	06	26		

SEMESTER-II

S. No.	Course Code	Course Title	L	T	P	Credit	Int.	Ext.
THEORY								
1.	IDS007	Applied Algebra	2	1	0	3	40	60
2.	IDS008	Object Oriented Programming using PYTHON	2	1	0	3	40	60
3.	IDS009	Computer Organization & Architecture	2	1	0	3	40	60
4.	IDS010	Database Management System	2	1	0	3	40	60
5.	IDS011	Operating System	2	1	0	3	40	60
6.	IDS012	Entrepreneurship Development & Management	2	1	0	3	40	60
7.	IDS053	Python Programming Lab	0	1	4	5	40	60
8.	IDS054	DBMS Lab + Digital Electronics Lab	0	1	4	5	40	60
TOTAL			12	08	08	28		

SEMESTER-III

S. No.	Course Code	Course Title	L	T	P	Credit	Int.	Ext.
THEORY								
1.	IDS013	Fundamentals of Statistics	2	1	0	3	40	60
2.	IDS014	Introduction to Artificial Intelligence	2	1	0	3	40	60
3.	IDS015	Advanced Data Structures	2	1	0	3	40	60
4.	IDS016	Discrete Mathematical Structures	2	1	0	3	40	60
5.	IDS017	Web Development Using PYTHON	2	1	0	3	40	60
6.	IDS018	Fundamentals of Computer Networks	2	1	0	3	40	60
7.	IDS055	Advanced Data Structures Lab	0	1	4	5	40	60
8.	IDS056	Web Development Lab	0	1	4	5	40	60
TOTAL			12	08	08	28		

SEMESTER-IV

S. No.	Course Code	Course Title	L	T	P	Credit	Int.	Ext.
THEORY								
1.	IDS019	Probability Theory for Data Science	2	1	0	3	40	60
2.	IDS020	Advanced Algorithms and Analysis	2	1	0	3	40	60
3.	IDS021	Software Engineering	2	1	0	3	40	60
4.	IDS022	Advanced Database Management	3	1	0	4	40	60
5.	IDS023	Computational Intelligence	3	1	0	4	40	60
6.	IDS024	Ethics in Information Technology	2	1	0	3	40	60
7.	IDS057	AI and Software Engineering Lab	0	0	4	4	40	60
8.	IDS058	Database Management System Lab	0	0	4	4	40	60
TOTAL			14	6	08	28		

SEMESTER-V

S. No.	Course Code	Course Title	L	T	P	Credit	Int.	Ext.
THEORY								
1.	IDS025	Optimization Techniques	2	1	0	3	40	60
2.	IDS026	Introduction to Machine Learning	2	1	0	3	40	60
3.	IDS027	Data Visualization	2	1	0	3	40	60

4.	IDS028	Statistical Analysis using ‘R’ Language	2	1	0	3	40	60
5.	IDS029	Transforms and Their Applications	2	1	0	3	40	60
6.	IDS030	Statistical Pattern Recognition	2	1	0	3	40	60
7.	IDS059	Machine Learning Lab	0	1	4	5	40	60
8.	IDS060	‘R’ programming Lab	0	1	4	5	40	60
TOTAL			12	08	08	28		

SEMESTER-VI

S. No.	Course Code	Course Title	L	T	P	Credit	Int.	Ext.
THEORY								
1.	IDS031	Data Mining & Warehousing	3	1	0	4	40	60
2.	IDS032	Formal Languages & Automata Theory	2	1	0	3	40	60
3.	IDS033	Big Data Systems	2	1	0	3	40	60
4.	IDS034	Mathematical Modeling and Simulations	2	1	0	3	40	60
5.	IDS035	Artificial Neural Network and Deep learning	3	1	0	4	40	60
6.	IDS036	Business Analytics	2	1	0	3	40	60
7.	IDS061	Deep Learning Lab	0	1	3	4	40	60
8.	IDS062	Data Mining Lab	0	1	3	4	40	60
TOTAL			14	08	06	28		

SEMESTER-VII

S. No.	Course Code	Course Title	L	T	P	Credit	Int.	Ext.
THEORY								
1.	IDS037	Bio-inspired Data Engineering	3	1	0	4	40	60
2.	IDS038	Research Methodology	2	1	0	3	40	60
3.	IDS039	Work Place Skills	1	1	0	2	40	60
4.	IDS063	Colloquium	0	1	2	3	40	60
5.	IDS064	Research / Development based	0	0	16	16		

		Project Phase One					40	60
TOTAL			06	04	18	28		

SEMESTER-VIII

S. No.	Course Code	Course Title	L	T	P	Credit	Int.	Ext.
THEORY								
1.	IDS040	Fuzzy Logic and its Applications	3	1	0	4	40	60
2.	IDS041	Blockchain Technology	3	1	0	4	40	60
3.	IDS065	Research/ Development based Project Phase Two	0	0	20	20	40	60
TOTAL			06	02	20	28		

SEMESTER-IX

S. No.	Course Code	Course Title	L	T	P	Credit	Int.	Ext.
THEORY								
1.	IDS042	Language Processing and Information Retrieval	3	1	0	4	40	60
2.	IDS043	Applied Predictive Analytics	3	1	0	4	40	60
3.	IDS044	Multivariate & Time Series Analysis	3	1	0	4	40	60
4.	IDS045	Complex Network Analysis	3	1	0	4	40	60
5.	IDS –EL01– A/B/C	Elective-I	3	1	0	4	40	60
6.	IDS066	Lab	0	0	4	4	40	60
7.	IDS067	Mini Project	0	0	6	6	40	60
TOTAL			15	05	10	30		

SEMESTER-X

S. No.	Course Code	Course Title	L	T	P	Credit	Int.	Ext.
THEORY								
1.	IDS046	Domain Engineering	3	1	0	4	40	60
2.	IDS047	Applications of Data Science	3	1	0	4	40	60
3.	IDS-EL02-	Elective-II	3	1	0	4	40	60

	A/B/C							
4.	IDS-EL03-A/B/C	Elective-III	3	1	0	4	40	60
5.	IDS068	Elective Basket Lab	0	0	6	6	40	60
6.	IDS069	Main Project	0	0	10	10	40	60
TOTAL			12	04	16	32		

List of Electives:

Electives	Bucket A	Bucket B (Cloud computing)	Bucket C (Data Security)	Bucket D (Mathematics for Data Science)
Elective I	Image and Video Analysis	Cloud computing	Cryptography	Calculus and Its Applications
Elective II	Text Analytics	Security in Cloud	Introduction to Cyber forensics	Linear Algebra
Elective III	Computer Vision	Parallel and distributed computing	Data and Information security	Ordinary Differential Equation(ODE) and its Applications