PROGRAMME COURSE STRUCTURE (ALL SEMESTERS)

BIRLA INSTITUTE OF TECHNOLOGY-MESRA, RANCHI
NEW COURSE STRUCTURE – To be effective from academic session 2022-23
Based on CBCS & OBE model
Recommended scheme of study (**BACHELOR OF COMPUTER APPLICATIONS**)

Semester / Session of Study (Recommended)	Course Level	Category Of Course	Course Code	Courses	Mode of delivery & credits *L-Lecture; T-Tutorial; P-Practical*			Total Credits *C-Credits*
					L (*Periods/week*)	T (*Periods/week*)	P (*Periods/week*)	C
				THEORY				
FIRST Monsoon	FIRST	CORE	CA111	Fundamentals of C programming	3	1	0	4
		CORE	CA103	Logical Organizations of Computers	3	1	0	4
		AECC	MT132	Communication Skills- I	**0**	**0**	**3**	**1.5**
		GE-1		Annexure I/ II/ III *	6	0	0	6
				LABORATORIES				
	FIRST	CORE	CA112	C programming Lab	0	0	4	2
			CA114	UNIX Programming Lab	0	0	4	2
				TOTAL				**19.5**

				THEORY				
SECOND Spring	FIRST	CORE	CA155	Data Structures	3	1	0	4
		CORE	CA163	Discrete Mathematics	3	1	0	4
		CORE	CA165	Fundamentals of Operating System	3	1	0	4
		AECC	CE101	Environmental Science	2	0	0	2
		GE-2		Annexure I/ II/ III *	6	0	0	6
				LABORATORIES				
	FIRST	CORE	CA156	Data Structures Lab	0	0	4	2
		CORE	CA166	Fundamentals of Operating Systems Lab	0	0	4	2
		CORE	CA168	MATLAB Programming Lab	0	0	4	2
				TOTAL				**26**
THIRD Monsoon	SECOND	CORE	CA203	Database Management Systems	3	1	0	4
		CORE	CA205	Java Programming	3	1	0	4
		CORE	CA207	Introduction to Computer Algorithms	3	1	0	4
		GE-3		Annexure I/ II/ III *	4	0	0	4
		SEC-I		Paper I (Skill Enhancement Course)	0	0	4	2
				LABORATORIES				
	SECOND	CORE	CA204	DBMS Lab	0	0	4	2
		CORE	CA206	Java Programming Lab	0	0	4	2
		CORE	CA208	Computer Algorithms Lab	0	0	4	2
		GE-3		Annexure I/ II/ III *	0	0	4	2
				TOTAL				**26**

				THEORY				
FOURTH Spring	SECOND	CORE	CA251	Web Programming Concepts	3	1	0	4
		CORE	CA253	Principles of Software Engineering	3	1	0	4
		GE -4		Annexure I/ II/ III *	5	1	0	6
		(SEC-II)		Paper II (Skill Enhancement Course)	0	0	4	2
				LABORATORIES				
	SECOND	CORE	CA252	Web Programming Concepts Lab	0	0	4	2
		CORE	CA254	Principles of Software Engineering Lab	0	0	4	2
TOTAL								20
FIFTH Monsoon	THIRD			THEORY				
		CORE	CA305	Computer Graphics	3	1	0	4
		CORE	CA307	Introduction to Computer Networks	3	1	0	4
		AECC	MT133	Communication Skills- II	0	0	0	1.5
		DSE 1		Annexure I/ II/ III *	4	0	0	4
		DSE 2		Annexure I/ II/ III *	4	0	0	4
				LABORATORIES				
	THIRD	CORE	CA306	Computer Graphics Lab	0	0	4	2
		CORE	CA308	Computer Networks Lab	0	0	4	2
		DSE 1		Annexure I/ II/ III *	0	0	4	2
		DSE 2		Annexure I/ II/ III *	0	0	4	2
TOTAL								25.5

				THEORY				
SIXTH Spring	THIRD	CORE	CA351	Introduction to Distributed Computing	3	0	0	3
		CORE	CA353	Data Mining &Warehousing	3	1	0	4
		DSE 3		Annexure I/ II/ III *	3	0	0	3
		DSE 4		Annexure I/ II/ III *	3	0	0	3
				LABORATORIES				
	THIRD	CORE	CA352	Distributed Computing Lab	0	0	4	2
		CORE	CA354	Data Mining Lab	0	0	4	2
			CA360	Project	0	0	0	6
TOTAL								**23**
TOTAL PROGRAM CREDITS								**140**

				Mode of delivery & credits *L-Lecture; T-Tutorial; P-Practical*			Total Credits
PROGRAM ELECTIVES (LIST OF SKILL ENHANCEMENT COURSES)							
PE/ LEVEL		Code No	Subjects	L (*Periods / week*)	T (*Periods/ week)*	P (*Periods / week)*	C
1	SEC-I	CA212	Office Automation Tools Lab	0	0	4	2
		CA214	Desktop Publishing Lab	0	0	4	2
		CA216	HTML Programming Lab	0	0	4	2
2	SEC-II	CA260	Visual Basic Lab	0	0	4	2
		CA262	Computerized Accounting Lab	0	0	4	2
		CA264	Graphic Design and Photo Editing Lab	0	0	4	2

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Annexure I: BCA
Annexure II: BCA with AI & ML Specialization
Annexure III: BCA with Data Science Specialization

ANNEXURE I

General Electives

	Course Code	Courses	Mode of delivery & credits *L-Lecture; T-Tutorial; P-Practical*			Total Credits *C-Credits*
			L *(Periods/ week)*	T *(Periods/ week)*	P *(Periods/week)*	C
GE-1	CA105	Basics of Mathematics	3	0	0	3
	CA115	Introduction To Computer Science	3	0	0	3
GE-2	CA169	Mathematics for Computing	3	0	0	3
	CA171	Concepts of Programming Languages	3	0	0	3
GE-3	CA209	Computer oriented Numerical and Statistical Methods	4	0	0	4
	CA210	Computer oriented Numerical and Statistical Methods Lab	0	0	4	2
GE-4 (Any 1)	CA265	Fundamentals of Optimization Techniques	3	1	0	4
	CA267	Business Intelligence	3	1	0	4
GE-4	CA269	Human Values and Professional Ethics	2	0	0	2

Department Specialization Specific Electives

- From DSE1 *Any One with the Corresponding Lab- Total Credit 06*
- From DSE2 *Any One with the Corresponding Lab- Total Credit 06*
- From DSE3 *Any One - Total Credit 03*
- From DSE4 *Any One – Total Credit 03*

	Course Code	Courses	Mode of delivery & credits *L-Lecture; T-Tutorial; P-Practical*			Total Credits *C-Credits*
			L *(Periods/week)*	T *(Periods/week)*	P *(Periods/week)*	C
DSE 1 **(Any One Theory and Corresponding Lab)**	CA309	Introduction to Python Programming	3	1	0	4
	CA310	Introduction to Python Programming Lab	0	0	4	2
	CA311	Introduction to Android Programming	3	1	0	4
	CA312	Introduction to Android Programming Lab	0	0	4	2
	CA313	Mobile Application	3	1	0	4
	CA314	Mobile Application Lab	0	0	4	2
DSE 2 **(Any One Theory and Corresponding Lab)**	CA315	Soft Computing	3	1	0	4
	CA316	Soft Computing Lab	0	0	4	2
	CA317	Introduction to Internet Technologies	3	1	0	4
	CA318	Internet Technologies Lab	0	0	4	2
	CA329	Data Analytics	3	1	0	4
	CA330	Data Analytics Lab	0	0	4	2
DSE 3 (Any 1)	CA357	Introduction to Cloud Computing	3	0	0	3
	CA359	Internet of Things	3	0	0	3
DSE 4 (Any 1)	CA361	System Programming	3	0	0	3
	CA363	Decision Support System	3	0	0	3

ANNEXURE II
(Artificial Intelligence & Machine Learning)

General Electives

	Course Code	Courses	Mode of delivery & credits *L-Lecture; T-Tutorial; P-Practical*			Total Credits *C- Credits*
			L *(Periods/ week)*	T *(Periods/ week)*	P *(Period s/ week)*	C
GE-1	CA105	Basics of Mathematics	3	0	0	3
	CA115	Introduction To Computer Science	3	0	0	3
GE-2	CA169	Mathematics For Computing	3	0	0	3
	CA173	Introduction to Artificial Intelligence	3	0	0	3
GE-3	CA309	Introduction to Python Programming	3	1	0	4
	CA310	Introduction to Python Programming Lab	0	0	4	2
GE-4	CA335	Data Visualization	3	1	0	4
	CA269	Human Values and Professional Ethics	2	0	0	2

Department Specialization Specific Electives

	Course Code	Courses	Mode of delivery & credits *L-Lecture; T-Tutorial; P-Practical*			Total Credits *C- Credits*
			L *(Periods/ week)*	T *(Periods/ week)*	P *(Period s/ week)*	C
DSE 1	CA333	Machine Learning	3	1	0	4
	CA334	Machine Learning Lab.	0	0	4	2
DSE 2 **(Any One Theory and Corresponding Lab)**	CA329	Data Analytics	3	1	0	4
	CA330	Data Analytics Lab	0	0	4	2
	CA337	Natural Language Processing	3	1	0	4
	CA338	Natural Language Processing Lab	0	0	4	2
DSE 3	CA369	Deep Learning	3	0	0	3
DSE 4 (Any 1)	CA357	Introduction to Cloud Computing	3	0	0	3
	CA365	Image Processing	3	0	0	3
	CA367	Cryptography & Network Security	3	0	0	3

General Electives

	Course Code	Courses	Mode of delivery & credits *L-Lecture; T-Tutorial; P-Practical*			Total Credits *C- Credits*
			L (*Periods / week*)	T (*Periods / week*)	P (*Periods / week*)	C
GE-1	CA105	Basics of Mathematics	3	0	0	3
	CA115	Introduction To Computer Science	3	0	0	3
GE-2	CA169	Mathematics for Computing	3	0	0	3
	CA175	Foundations of Data Science	3	0	0	3
GE-3	CA309	Introduction to Python Programming	3	1	0	4
	CA310	Introduction to Python Programming Lab	0	0	4	2
GE-4	CA279	Statistical Data Analysis	3	1	0	4
	CA269	Human Values and Professional Ethics	2	0	0	2

Department Specialization Specific Electives

	Course Code	Courses	Mode of delivery & credits *L-Lecture; T-Tutorial; P- Practical*			Total Credits *C- Credits*
			L (*Periods/ week*)	T (*Periods/ week*)	P (*Periods / week*)	C
DSE 1	CA329	Data Analytics	3	1	0	4
	CA330	Data Analytics Lab	0	0	4	2
DSE 2 (Any One Theory and Corresponding Lab)	CA335	Data Visualization	3	1	0	4
	CA336	Data Visualization Lab	0	0	4	2
	CA339	NoSQL Database	3	1	0	4
	CA340	NoSQL Database Lab	0	0	4	2
DSE 3	CA373	Introduction to Machine Learning	3	0	0	3
DSE 4 (Any 1)	CA357	Introduction to Cloud Computing	3	0	0	3
	CA359	Internet of Things	3	0	0	3
	CA371	Big Data Analytics	3	0	0	3