Semester wise Structure and Curriculum for UG Course in BCA

SEMESTER-I

S. No.	Course Code	Course Title	L	T	P	Credit
3 WEEKS COMPULSORY INDUCTION PROGRAM (UHV-I)						
1	CC101	Mathematics Foundations to Computer Science- I	3	0	0	3
2	SEC101	Problem Solving Techniques	3	0	4	5
3	CC102	Computer Architecture	3	0	4	5
4	AEC101	General English-I	1	1	0	2
5	MDE101	Indian Knowledge System^	2	0	0	2
6	VAC101	Environmental Science and sustainability	2	0	0	2
7	AEC102	Additional Course - Indian or Foreign Language Other than Mother Tongue and English(1-1-0)) [optional course]*	1	1	0	0*
TOTAL						19

Note:^Indian Knowledge System: Indian Culture and Civilization Indian Vision for Human Society Indian Science Indian Town Planning and Architecture Indian Mathematics and Astronomy Indian Aesthetics Indian Health, Wellness

*Indian Languages: Sanskrit/Hindi/All Regional languages
Foreign Languages: (not limited to) Spanish/German/French/Korean/Mandarin etc.

SEMESTER-II

S. No.	Course Code	Course Title	L	T	P	Credit
1	CC103	Mathematics Foundations to Computer Science-II	3	0	0	3
2	CC104	Data Structures	3	0	4	5
3	CC105	Operating Systems	3	0	2	4
4	SEC102	Object Oriented Programming using Java	3	0	4	5
5	SEC103	Web Technologies	1	0	2	2
6	VAC102	Indian Constitution	2	0	0	2
7	AEC103	Additional Course - Indian or Foreign Language Other than Mother Tongue and English(1-1-0))[optional course]*	1	1	0	0*
TOTAL						21

*Indian Languages: Sanskrit/Hindi/All Regional languages
Foreign Languages: (not limited to)Spanish/German/French/Korean/Mandarin etc.

SEMESTER-III

S. No.	Course Code	Course Title	L	T	P	Credit
1	CC201	Probability and Statistics	3	0	0	3
2	CC202	DataBase Management System	3	0	4	5
3	SEC201	Python Programming	2	0	4	4
4	CC203	Software Engineering	3	0	0	3
5	DSE201*	Professional Elective–I	1	0	4	3
6	VAC201	Yoga/Sports/NCC/NSS/Disaster Management	0	0	4	2
TOTAL						**20**

*To be selected from the Proposed Streams with Discipline- Specific Electives- Data Science/Artificial Intelligence and Machine Learning/Full Stack Development proposed by Universities as indicated at the appendix-A

SEMESTER-IV

S. No.	Course Code	Course Title	L	T	P	Credit
1	CC204	Entrepreneurship and Startup Ecosystem	1	1	0	2
2	CC205	Computer Networks	3	0	4	5
3	CC206	Design and Analysis of Algorithm	3	0	0	3
4	CC207	Artificial Intelligence	3	0	4	5
5	DSE202*	Professional Elective–II	1	0	4	3
6	SEC202	Design Thinking and Innovation	1	1	0	2
TOTAL						**20**

Note:

1. At the end of the Fourth Semester every student shall undergo Summer Training / Internship/Capstone for Eight Weeks in the industry/Research or Academic Institute. This component will be evaluated during the fifth semester.
2. An **UNDER GRADUATE DIPLOMA IN COMPUTER APPLICATION** will be awarded, if a student wishes to exit at the end of Second year.

SEMESTER-V

S. No.	Course Code	Course Title	L	T	P	Credit
1	DSE301*	Professional Elective–III	3	0	4	5
2	DSE302*	Professional Elective–IV	3	0	4	5
3	DSE303*	Professional Elective–V	3	0	4	5
4	SEC301	Quantitative Techniques	0	2	0	2
5	SEC302	Internship/cap stone Project	0	0	8	4
6	SEC303	Major Project [evaluation in sixth semester]	-	-	-	0
TOTAL						**21**

***L-T-P for Discipline Electives depends on the subject that the University offers**

SEMESTER-VI

S. No.	Course Code	Course Title	L	T	P	Credit
1	CC301	Generative AI	2	0	4	4
2	DSE304*	Professional Elective–VI	3	0	4	5
3	DSE305*	Professional Elective–VII	3	0	4	5
4	AEC301	Soft Skills	0	1	0	1
5	SEC304	Major Project [Initiated in 5th Semester]	0	0	8	4
TOTAL						**19**

***L-T-P for Discipline Electives depends on the subject that the University offers**

1. BACHELOR IN COMPUTER APPLICATION Degree will be awarded, if a student wishes to exit at the end of Third year.

Minimum eligibility criteria for opting the course in the fourth year will be as follows:

1. **BCA (Honours with Research):**BCA Degree
2. **For BCA (Honours)**: BCA Degree

SEMESTER-VII-(BCA (Honours))

Specialization–AI & ML

S. No.	Course Code	Course Title	L	T	P	Credit
1	MDE401	Social Network Analysis	-	-	-	3
2	CC401	Optimization of ML	3	-	4	5
3	DSE401*	Professional Elective–VIII	3	-	4	5
4	DSE402*	Professional Elective–IX	-	-	-	3
5	SEC401	Dissertation work [evaluation in Eight semester]	-	-	-	-
6	SEC402	Summer Internship II	0	0	8	4
TOTAL						**20**

***L-T-P w.r.t Open Elective and Discipline Specific Elective depends on the Courses offered by the University**

SEMESTER-VII-(BCA (Honours))

Specialization–Data Science

S. No.	Course Code	Course Title	L	T	P	Credit
1	MDE401	Advanced Statistical Methods for DataScience	-	-	-	3
2	CC401	Python for Data Science	3	-	4	5
3	DSE401*	Professional Elective – VIII	3	-	4	5
4	DSE402*	Professional Elective–IX	-	-	-	3
5	SEC401	Dissertation work [evaluation in Eight semester]	-	-	-	-
6	SEC402	Summer Internship II	0	0	8	4
TOTAL						**20**

***L-T-P w.r.t Open Elective and Discipline Specific Elective depends on the Courses offered by the University**

SEMESTER-VIII-(BCA (Honours))

S. No.	Course Code	Course Title	L	T	P	Credit
1	DSE403*	Professional Elective–X	3	-	4	5
2	DSE404*	Professional Elective–XI	3	-	4	5
3	DSE405*	Professional Elective–XII	2	-	-	2
4	SEC403	Dissertation work [Started in Seventh semester]	0	0	16	8
TOTAL						**20**

***L-T-P w.r.t Open Elective and Discipline Specific Elective depends on the Courses offered by the University**

SEMESTER-VII-(BCA–(Honours with Research))

S. No.	Course Code	Course Title	L	T	P	Credit
1	CC401	Advanced Data Analysis Tools	0	2	4	4
2	CC402	Research Methodology	2	2	0	4
3	CC403	Research Internship Report and Viva–Voce	0	0	8	4
4	DSEXX	Professional Elective–IX	-	-	-	4
5	DSEXX	Professional Elective–X	-	-	-	4
TOTAL						**20**

L-T-P w.r.t Open Elective and Discipline Specific Elective depends on the Courses offered by the University

SEMESTER-VIII-(BCA–(Honours with Research))

S. No.	Course Code	Course Title	L	T	P	Credit
1	SEC401	Dissertation (For Research Track)*	-	-	-	20
TOTAL						**20**

*****The Dissertation work will start from the beginning of fourth year of BCA (Honours with Research) Program.

Students of Fourth Year shall be assessed for Project Work and Research Internship Report and Viva –Voce and Dissertation (For Research Track).

Proposed Streams with Discipline-Specific Electives (DSE)

Note: The following is indicative. Universities/Institutes may add streams / electives as per their specific requirements.

1. Data Science

Sl. No	Semester	Course Code	Professional Elective
1	III	DSE*201	Basics of Data Analytics using Spreadsheet
2	IV	DSE*202	Data Visualization
3	V	DSE301	Introduction to Data Science
4	V	DSE302	Time Series Analysis
5	V	DSE303	Machine Learning
6	VI	DSE304	Big Data Analytics
7	VI	DSE305	Exploratory Data Analysis
8	VII	DSE401	Business Intelligence & Analytics
9	VII	DSE402	Data Mining & Warehousing
10	VIII	DSE403	Advanced Data Visualization
11	VIII	DSE404	Cloud Computing for Data Analytics
12	VIII	DSE405	Data Security & Privacy

2. Artificial Intelligence & Machine Learning

Sl.No	Semester	Course Code	Professional Elective
1	III	DSE*201	Feature Engineering
2	IV	DSE*202	Introduction to ML
3	V	DSE301	Neural Network
4	V	DSE302	Digital Image Processing
5	V	DSE303	Natural Language Processing
6	VI	DSE304	Deep Learning for Computer Vision
7	VI	DSE305	Predictive Analysis
8	VII	DSE401	Explainable AI
9	VII	DSE402	Evolutionary Algorithm
10	VIII	DSE403	Speech Recognition
11	VIII	DSE404	Augmented Reality & Virtual Reality
12	VIII	DSE405	Security aspects of ML

3. Full Stack Development

Sl.No	Semester	Course Code	Professional Elective
1	III	DSE*201	Web Programming-I
2	IV	DSE*202	Web Programming-II