

SCHEME OF EXAMINATION

SYLLABI

for

Bachelor of Computer Applications (BCA)

Scheme and Syllabus (w.e.f. Academic Session 2024-25)

As per UGC Curriculum & Credit Framework for Undergraduate Programme (CCFUP) (Dec 2022)

Offered by

**University School of Information, Communication & Technology GGSIPU
at Affiliated Institutions of the University**



**GURU GOBIND SINGH
INDRAPRASTHA
UNIVERSITY**

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Vision of the School

Create High-Quality Engineering and Computer Application Professionals

Mission of the School

To serve humanity by creating professionally competent, socially sensitive engineers with high ethical values who can work as individuals or in groups in multicultural global environments.

Approval History:

1. Scheme of study of BCA programme, its first year detailed syllabus and implementation rules approved by Board of Study of University School of Information, Communication and Technology on 15.12.2023.

2. Scheme of study of BCA programme, its first year detailed syllabus and implementation rules approved by Academic Council on 20.12.2023.

Bachelor of Computer Applications Curriculum Framework as per CCFUP

Aim: In accordance with the revised UGC Curriculum and Credit Framework for Undergraduate Programmes, the Bachelor of Computer Applications (BCA) programme w.e.f academic session 2024-25 curriculum framework shall be as follows:

The BCA programme covers basic to advanced level concepts in Computer Science, Computer Applications and Information Technology. The theoretical concepts in class room teaching and hands on machine experience in digital laboratories using computer program using computers and standard tools widen the horizon of the students. With the acquired knowledge, students can solve the problems in various domains using computers.

Eligibility Criteria: The students are required to refer the eligibility criteria provided in the admission brochure for BCA programme for the specific academic session. As per the Admission Brochure for the Academic Session (AS) 2023-24, the eligibility criteria for BCA programme is as follows:

“Pass in 12th Class of 10+2 of CBSE or equivalent with a minimum of 50% marks in aggregate* with pass in English (core or elective or functional). Mathematics or Computer Science / or other subject related to Computer Science”.

OR

“Three-year Diploma in a branch of Engineering from a polytechnic duly approved by All India Council for Technical Education and affiliated to a recognized examining body with a minimum of 50% marks in aggregate”.

Duration of the BCA Programme, Provision of Multiple Exit and Awarding Certificate, Diploma, and Degrees

The maximum duration of programme will be as per regulations and recommendations of the statutory bodies governing the BCA programme. As per existing UGC CCFUP, the total duration for completing the BCA programme from the date of admission in first year to completion of Certificate / Diploma / 3 years’ degree/ 4 years Hons. degree (including Breaks) shall not exceed 7 years. The detailed qualification award (Certificate / Diploma/ Degree), exit options and other requirement is given in Table1. Grading System shall be as per Ordinance 11 of the University.

Table1: Duration and qualification Award Details:

No of years of completion	Qualification Awarded	Exit Options	Credit Requirement	Entry Option	Remarks
One Year (I & II Semester)	BCA Certificate	Students have an option of exiting the programme after completion of first year (Semester I and semester II)	Students are required to complete Minimum 52 credits including vocational course which is mandatory.	Students who exit with a BCA certificate are permitted to re-enter within three years from the date	Students are required to secure minimum 48 credits during first year and 4 credits in work based vocational courses during summer break after first year. ii. Students may be permitted to take a break from the study during the period of BCA programme but the total duration for completing the BCA

				when student took break and may complete the BCA programme.	programme from the date of admission in first year shall not exceed 7 years.
Two Years (I to IV Semesters)	BCA Diploma	Students have an option of exiting the programme after completion of second year (Semester III & IV)	Students are required to complete Minimum 96 credits and also secure 4 credits in skill based vocational course either offered after first year or after second year during the summer break time.	Students who exit with a BCA diploma are permitted to re-enter within three years from the date when student took break and may complete BCA programme.	i. Students exiting the programme after securing 96 credits in initial two years of admission will be awarded BCA Diploma provided they secure additional 4 credit in skill based vocational courses offered after first year or after second year during the summer break time. ii. Students may be permitted to take a break from the study during the period of BCA programme but the total duration for completing the BCA programme from the date of admission to first year shall not exceed 7 years.
Three Years (I to VI Semesters)	BCA	Students will be allowed to exit after completion of the 3rd year (V & VI semesters)	Students are required to complete Minimum 146 credits and also secure 4 credits in Summer Internship during the summer break time after 2nd year.	Students who exit with a BCA are permitted to re-enter within two years and complete the four year BCA, but the student is not entitled to re-enter for BCA (Honours).	Students who want to undertake 3-year BCA programme will be awarded BCA Degree upon securing 146 credits Students may be permitted to take a break from the study during the period of BCA programme but the total duration for completing the BCA programme from the date of admission year shall not exceed 7 years.
Four Years (I to VIII Semesters)	BCA Honours (Hons.)		Hons. shall only be awarded if the student acquires full credits in every semester with a total CGPA of above or equal to 7.5, and the degree is	--	Students will be awarded BCA (Hons.) Degree

			awarded after the immediate completion of the 4th year from the year of admission. No Hons. shall be conferred if the degree requirements are not completed in the minimum duration.	
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It is envisioned that the graduates passing out BCA programme, will achieve the following BCA programme specific Learning Outcomes (PLO) and Generic Learning Outcomes (PO) as detailed in Table 2.

Table 2: Programme specific Learning Outcomes (PLO) and Generic Learning Outcomes (GLO)

Programme Specific Learning Outcomes (PLOs)	Description
PSO 1	Comprehensive knowledge and coherent understanding of the Computer Applications in various domains and emerging developments associated with the Computer Science and Information Technology
PSO 2	Practical, professional, and procedural knowledge required for carrying out professional or highly skilled work/tasks in the field of computer science and Information Technology, including knowledge required for undertaking self-employment initiatives, and knowledge and mindset required for entrepreneurship involving enterprise creation, improved product development, or a new mode of organization.
PSO 3	Skills in areas related to specialization in the chosen disciplinary/interdisciplinary area(s) of learning including wide-ranging practical skills, involving variable routine and non-routine contexts relating to the Computer Applications
PSO 4	Capacity to extrapolate from what has been learned, translate concepts to real-life situations and apply acquired competencies in new/unfamiliar contexts, rather than merely replicate curriculum content knowledge, to generate solutions to specific problems.
Programme Outcomes (PO)	The student should be able to demonstrate the capability to:
PO1	Disciplinary Knowledge: Apply the knowledge of computer application concepts and domain knowledge to solve the problems in IT domain/IT industry
PO2	Problem Analysis: Identify, formulate, review research literature, and analyse complex computer application problem at their workplace and for the society.
PO3	Design /Development of Solutions:

	Design and evaluate solutions for computer applications problems, and design the processes that meet specified needs with appropriate consideration for the public health, safety, cultural, societal, and environmental considerations.
PO4	Modern Tool Usage: Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computer application activities, with an understanding of the limitations.
PO 5	Professional Ethics: Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of professional computing practices.
PO 6	Life-long Learning: Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional.
PO 7	Project management and finance: Demonstrate knowledge and understanding of the computing and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 8	Communication Efficacy with Cooperation/teamwork Communicate effectively with the computing community, and with society at large, about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions. Function effectively as an individual and as a member or a leader.
PO 9	Societal and Environmental Concern: Understand and assess societal, environmental, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practices.
PO 10	Innovation and Entrepreneurship Identify a timely opportunity and using innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large.

Curricular components of the BCA programme

The BCA programme curriculum consists of core courses and interdisciplinary / multidisciplinary courses from other disciplines, ability enhancement courses (language courses), skill enhancement courses, and a set of value added courses. Vocational courses are also added which will help the students to equip with job- oriented skills. The minimum credit requirements for each component for 3-year BCA and 4-year BCA (Hons.) are given in Table 3. The distribution of credits across semesters for BCA programme is given in Table 4.

Table 3: Category Wise Minimum Credit Requirements

S.No.	Broad Category of Course	Minimum Credit Requirement	
		3-year BCA	4-Year BCA (Hons.)
1	Core Courses (CCT/ CCP/PCE)	114	124
2	Multidisciplinary Courses	09	09
3	Ability Enhancement Courses (AEC)	08	08
4	Skill Enhancement Courses (SEC)	08	10
5	Value Added Courses (VA)	08	08
6	Summer Internship (SI)	04	04

7	Major/ Minor Project (PRJ)	06	22
	Total	157	185

The student is required to complete one Minor Project in the sixth semester, Major Project-1 in seventh semester and Major Project-2 in eight semesters, all from any emerging technologies.

Table 4: Distribution of Credits across Semesters for BCA Programme

S.No.	Broad Category of Course	Semester (Credits)							
		I	II	III	IV	V	VI	VII	VIII
1	CCT/ CCP/PCE	20	21	20	16	17	20	10	-
2	Multidisciplinary Courses	-	-	3	3	3	-	-	-
3	Ability Enhancement Courses (AEC)	3	3	-	2	-	-	-	-
4	Skill Enhancement Courses (SEC)	1	-	4	2	-	1	2	-
5	Value Added Courses (VA)	2	2	2	-	-	2	-	-
6	Summer Internship (SI)	-	-	-	-	4	-	-	-
7	Major/ Minor Project (PRJ)	-	-	-	-	-	6	6	10
	Total	26	26	29	23	24	29	18	10

***Multidisciplinary Generic Elective (GE) for BCA Students**

GE-1 (choose any One)

- (i) Principles of Management & Organizational Behaviour
- (ii) Any One Paper Offered as open elective by other School /Department / Programme

GE-2 (choose any One)

- (i) Digital Marketing
- (ii) Principles of Accounting
- (iii) Any One Paper Offered as open elective by other School / Department / Programme

GE-3

- (i) Introduction to Management & Entrepreneurship Development
- (ii) MOOC Course

Vocational Courses Recommendations:

The objective of encouraging the students to undertake a vocational course during summer break after First Year (Second semester) and, also after third year (Sixth semester) for four years programme are

- To ensure the development of capabilities across a range of disciplines including sciences, social

sciences, arts, humanities, languages, as well as vocational subjects, a student can undertake programmes /courses of study relating to Languages, Literature, Music, Philosophy, Art, Dance, Theatre, Statistics, Pure and Applied Sciences, Sports, etc., and other such subjects needed for a multidisciplinary and stimulating learning environment

- To prepare professionals in cutting-edge areas that are fast gaining prominence, such as Artificial Intelligence (AI), 3-D machining, big data analysis, and machine learning, Block chain Technology, Full stack web development, Robotic Process Automation or any other emerging technology with important applications to health, environment, and sustainable living the students are also encouraged to undergo training in the emerging technologies which are not part of their curriculum.
- To find a job for those students who exit before completing the programme.

Summer Internship Recommendations

Students can undertake internships with local industry, businesses etc., or with faculty and researchers at their own or other Higher Educational Institutes (HEIs).

Summer Training (Conducted at the end of the 4th Semester and evaluation to be carried in 5th Semester) Report and Viva – Voce: Students will undergo summer training/industry visit/In-house training/In-house project during the summer break after the completion of 4th semester. This will help the students to engage with all aspects of their learning and facilitate their improvement in the employability. A report of the Summer Internship is required to be submitted to the College/ Institution. Viva-voce examination will be conducted based on the report submitted by the student. A panel of examiner will be appointed by the HOD/ Director of the Institution for internal evaluation out of 40 marks. External evaluation of 60 marks will be conducted by the examination division of the university.

Generic (Open) Electives for other undergraduate programmes

The following Core courses (as mentioned in Table 5) of BCA programme may be offered as Generic Elective for other undergraduate programmes. Maximum number of students from other School / Department / Programme should not exceed 20% of total intake for the programme.

Table 5: Generic (Open) Electives offered by BCA programmes for other undergraduate programmes

S.No.	Semester	Subject Code	Subject Name
1	I	BCA 105T BCA 105P	Web Technologies Web Technologies Lab
2	II	BCA 102T BCA 102P	Database Management System Database Management System Lab
3	III	BCA 201T BCA 201P	Python Programming Python Programming Lab

Major/ Minor Project Recommendations

The student shall undertake Minor Project in 6th Semester, Major Project -1 in 7th Semester and Major Project-2 in 8th Semester, all in any of the emerging areas. Four year students not undertaking Major Project-2 will do an industry internship throughout the eighth semester in lieu of a Major project-2 and will be awarded BCA (Hons.). The students who secure 185 credits, including 22 credits from Minor Project, Major Project-1 and Major Project-2 / internship, shall be awarded BCA (Hons.).

The semester wise evaluation scheme of BCA Programme are mentioned from Table 6 to Table 13.

SEMESTER WISE EVALUATION SCHEME

Table 6: FIRST SEMESTER

Code No.	Paper	Course Category	L	T/P	Credits	Marks Internal	Marks External	Max Marks
Core Course Theory (CCT)								
BCA 101T	Programming for Problem Solving using C	CCT	4	-	4	40	60	100
BCA 103T	Fundamental of Information Technology	CCT	4	-	4	40	60	100
BCA 105T#	Web Technologies#	CCT	4	-	4	40	60	100
BCA 107T	Mathematical Foundation for Computer Science	CCT	4	-	4	40	60	100
Core Course Practical (CCP)								
BCA 101P	Programming for Problem Solving using C Lab	CCP	-	4	2	40	60	100
BCA 103P	Fundamental of Information Technology Lab	CCP	-	4	2	40	60	100
Ability Enhancement Course (AEC)								
BCA 141T	Writing Skills	AEC	3	-	3	100	-	100
Skill Enhancement Course (SEC)								
BCA 105P#	Web Technologies Lab	SEC	-	2	1	40	60	100
Value Added Course (VA)								
BCA 191T*	Understanding India*(NUES)	VA	2	-	2	100	-	100
Bridge Course (Mandatory for Students from Non Mathematics background)								
BCA 181T ⁺	Bridge Course in Mathematics+(NUES)	Mandatory for Students from Non Mathematics background	2	-	-	Pass Grade	-	-
Total					26			900

*NUES (Non – University Examination Subject) – Only Internal Assessment by the Institute)

⁺ NUES Non Credit subject mandatory for the students who do not have mathematics in 12th std.

Passing is mandatory for the student by obtaining at least pass marks (40%). The examination of this paper shall be conducted by the concerned teacher teaching the course / paper as Teacher's Continuous Evaluation for a total 100 marks. Only the Pass / Fail status is to be specified on the marksheet of the examination and the result of the student.

Generic Elective (GE) for other undergraduate programmes (Refer Table 5 for details)

SEMESTER WISE EVALUATION SCHEME

Table 7: SECOND SEMESTER

Code No.	Paper	Course Category	L	T/P	Credits	Marks Internal	Marks External	Max Marks
Core Course Theory (CCT)								
BCA 102T#	Database Management System (DBMS)	CCT	4	-	4	40	60	100
BCA 104T	Object Oriented Programming using Java	CCT	4	--	4	40	60	100
BCA 106T	Data Structures and algorithms	CCT	4	-	4	40	60	100
BCA 108T	Software Engineering	CCT	4	-	4	40	60	100
Core Course Practical (CCP)								
BCA 102P#	DBMS Lab	CCP	-	2	1	40	60	100
BCA 104P	Object Oriented Programming using Java Lab	CCP	-	4	2	40	60	100
BCA 106P	Data Structures and algorithms Lab	CCP	-	2	1	40	60	100
BCA 108P	Software Engineering Lab	CCP	-	2	1	40	60	100
Ability Enhancement Course (AEC)								
BCA 142T	Soft Skills	AEC	3	-	3	100	-	100
Value Added Course (VA)								
BCA 192T	Environment Studies	VA	2	-	2	25	75	100
	Total				26			1000

Generic Elective (GE) for other undergraduate programmes (Refer Table 5 for details)

** Students must complete one work based vocational course of 4 credits after the second semester during the summer vacation of the first year for which evaluation will be conducted in the third semester. (As mentioned in the scheme of the Third Semester). Vocational course will be held for 4 weeks after the end of the second semester and its evaluation will be conducted in the third semester.

SEMESTER WISE EVALUATION SCHEME

Table 8: THIRD SEMESTER

Code No.	Paper	Course Type	L	T/P	Credits	Marks Internal	Marks External	Max Marks
Core Course Theory(CCT)								
BCA 201T	Python Programming	CCT	4	--	4	40	60	100
BCA 203T#	Dynamic Web Designing	CCT	4	--	4	40	60	100
BCA 205T	Computer Organization and Architecture	CCT	4	--	4	40	60	100
BCA 207T	Discrete Mathematics	CCT	4	-	4	40	60	100
Core Course Practical (CCP)								
BCA 201P	Python Programming Lab	CCP	-	4	2	40	60	100
BCA 203P#	Dynamic Web Designing Lab	CCP	-	2	1	40	60	100
BCA 205P	Computer Organization and Architecture Lab	CCP	-	2	1	40	60	100
Skills Enhancement Course (SEC)*								
BCA 261*	Vocational Course*	SEC	4	-	4	100	-	100
Multidisciplinary (Generic Elective) (Choose any One)**								
BCA 221T	Principles of Management & Organizational Behavior	GE-1	3	-	3	40	60	100
BCA 223T	Open Elective offered by other Department/School /Programme	GE-1	3	-	3	40	60	100
Value Added Course (VA)								
BCA 291T* **	Human Values and Ethics***(NUES)	VA	2	-	2	40	60	100
Total					29			1100

* Students must complete one work based vocational course of 4 credits after second semester during the summer vacation of the first year for which evaluation will be conducted in third semester.

** Choose one subject from list of GE-1

Generic Elective (GE) for other undergraduate programmes (Refer Table 5 for details)

SEMESTER WISE EVALUATION SCHEME

Table 9: FOURTH SEMESTER

Code No.	Paper	Course Type	L	T/P	Credits	Marks Internal	Marks External	Max Marks	
							Th		
Core Course Theory (CCT)									
BCA 202T	Operating Systems	CCT	4	--	4	40	60	100	
BCA 204T	Software Testing	CCT	4	--	4	40	60	100	
Core Course Practical (CCP)									
BCA 202P	Operating Systems Lab	CCP	-	2	1	40	60	100	
BCA 204P	Software Testing Lab	CCP	-	2	1	40	60	100	
Ability Enhancement Course (AEC)									
BCA 232	Introduction to Logic & Critical Thinking	AEC	-	4	2	100	-	100	
Skill Enhancement Course (SEC)*									
BCA 234*	Health & Wellness, Yoga Education and Sports & Fitness*	SEC	-	4	2	100	-	100	
(Choose Any One Theory and Respective Practical) Programme Core Elective (PCE)									
BCA 212	BCA 212T	Introduction to Data Science and	PCE	4	-	4	40	60	100
	BCA 212P	Data Science Lab	PCE	-	4	2	40	60	100
BCA 216	BCA 216T	Introduction to Security, Acts and Cyber Laws and	PCE	4	-	4	40	60	100

		Cyber Security							
	BCA 216P	Introduction to Security, Acts and Cyber Laws and Cyber Security Lab	PCE	-	4	2	40	60	100
BCA 218	BCA 218T	Web Development Using Python	PCE	4	-	4	40	60	100
	BCA 218P	Web Development Using Python Lab	PCE	-	4	2	40	60	100
BCA 220	BCA 220T	Information Security	PCE	4	-	4	40	60	100
	BCA 220P	Information Security Lab	PCE	-	4	2	40	60	100
<u>Multidisciplinary (Generic Elective)</u> <u>(Choose any One)</u>									
BCA 222T	Digital Marketing	GE-2	3	-	3	40	60	100	
BCA 224T	Principles of Accounting	GE-2	3	-	3	40	60	100	
BCA 226T	Open Elective offered by other Department/ School /programme***	GE-2	3	-	3	40	60	100	
	Total				23			900	

* NUES (Non – University Examination Subject) – Only Internal Assessment by the Institute) i.e. the assessment shall be conducted by the institution for all 100 marks as Teacher’s Continuous Assessment
*** Choose one subject from list of GE-2

Summer Training (Conducted at the end of the 4th Semester and evaluation to be carried in 5th Semester) Report and Viva – Voce: Students will undergo summer training/industry visit/In-house training/In-house project during the summer break after the completion of 4th semester. Report of the same is required to be submitted to the College/ Institution. Viva-voce examination will be conducted based on the report submitted by the student. A panel of examiner will be appointed by the HOD/ Director of the Institution for internal evaluation out of 40 marks. External evaluation of 60 marks will be conduct by the examination division of the university.

SEMESTER WISE EVALUATION SCHEME

Table 10: FIFTH SEMESTER

Code No.	Paper	Course Type	L	T/P	Credits	Marks Internal	Marks External	Max Marks	
Core Course Theory (CCT)									
BCA 301T	Computer Networks	CCT	4	--	4	40	60	100	
BCA 303T	Artificial Intelligence	CCT	4	--	4	40	60	100	
Core Course Practical (CCP)									
BCA 301P	Computer Networks Lab	CCP	-	2	1	40	60	100	
BCA 303P	Artificial Intelligence Lab	CCP	-	4	2	40	60	100	
Choose Any One Theory and Respective Practical (Programme Core Electives (PCE))									
BCA 305	BCA 305T	Natural Language Processing	PCE	4	-	4	40	60	100
	BCA 305P	Natural Language Processing Lab	PCE	-	4	2	40	60	100
BCA 307	BCA 307T	Network Security	PCE	4	-	4	40	60	100
	BCA 307P	Network Security Lab	PCE	-	4	2	40	60	100
BCA 309	BCA 309T	Full Stack Development using Java	PCE	4	-	4	40	60	100
	BCA 309P	Full Stack Development using Java Lab	PCE	-	4	2	40	60	100
Summer Internship (SI)*									
BCA 311*	Summer Training*	SI	0	0	4	40	60	100	
Multidisciplinary (Generic Compulsory) (Choose Any One)									
BCA 313T	Introduction to Management & Entrepreneurship Development	GE-3	3	0	3	40	60	100	
BCA 315T**	MOOC Course**	GE-3	3	0	3	40	60	100	
Total					24			800	

* Summer Training (Conducted at the end of the 4th Semester and evaluation to be carried in 5th Semester) Report and Viva – Voce: Students will undergo summer training/industry visit/In-house training/In-house project during the summer break after the completion of 4th semester. Report of the same is required to be submitted to the College/ Institution. Viva-voce examination will be conducted based on the report submitted by the student. A panel of examiner will be appointed by the HOD/ Director of the Institution for internal evaluation out of 40 marks. External evaluation of 60 marks will be conducted by the examination division of the university.

**The students can learn these courses / technologies through self-paced MOOC courses or through regular courses offered by the institute during the summer break on a fast-track mode. The broad guidelines for undertaking MOOC courses are as follows:

1. MOOC Course should be done from SWAYAM/NPTEL as per the guidelines of UGC.
2. For securing the credits, the student is required to complete the assessment of the course and to provide the certificate of the course done from SWAYAM/NPTEL.
3. The fees (if any) for the registration and/or assessment of the MOOC course must be borne by the student only.
4. If the student secures more than 4 credits for the MOOC Course even then 3 credits shall be considered for this subject and the grade/marks provided by assessing authority shall be transferred to the university by the institution where the student is studying. The University's Examination Division shall take the result of the MOOC course on record and the final result must accommodate the results received from such MOOC courses. The student must submit the result of such papers to their respective institution. All the results for the MOOC courses may be submitted before the completion of other requirements including credits requirement.

SEMESTER WISE EVALUATION SCHEME

Table 11: SIXTH SEMESTER

Code No.	Paper	Course Type	L	T/P	Credits	Marks Internal	Marks External	Max Marks	
Core Course Theory (CCT)									
BCA 302T	Distributed systems and Cloud Computing	CCT	4	-	4	40	60	100	
BCA 304T	Machine Learning	CCT	4	-	4	40	60	100	
BCA 306T	Software Project Management	CCT	4	-	4	40	60	100	
Core Course Practical (CCP)									
BCA 302P	Distributed systems and Cloud Computing Lab	CCP	0	2	1	40	60	100	
BCA 306P	Software Project Management Lab	CCP	0	2	1	40	60	100	
Choose Any One Theory and Respective Practical (Programme Core Electives (PCE))									
BCA 312	BCA 312T	Data Visualization & Analytics	PCE	4	-	4	40	60	100
	BCA 312P	Data Visualization & Analytics Lab	PCE	-	4	2	40	60	100
BCA314	BCA 314T	Deep Learning with Python	PCE	4	-	4	40	60	100
	BCA 314P	Deep Learning with Python Lab	PCE	-	4	2	40	60	100
BCA 316	BCA 316T	Web Security	PCE	4	-	4	40	60	100
	BCA 316P	Web Security Lab	PCE	-	4	2	40	60	100
BCA 318	BCA 318T	Mobile Application Development and	PCE	4	-	4	40	60	100
	BCA 318P	Mobile Application Development Lab	PCE	-	4	2	40	60	100

Minor Project* (PRJ)								
BCA 320	Minor Project	PRJ	0	14	6	40	60	100
Skill Enhancement Course (SEC)								
BCA 304P	Machine Learning Lab	SEC	0	2	1	40	60	100
Value Added Course (VA)**								
BCA 374**	NSS / NCC / Cultural Clubs / Technical Society / Technical Clubs	VA (Mandatory)	0	0	2	100	0	100
	Total				29			1000

*Minor Project: The student shall do the Minor project in any emerging technology.

**NUES (Non – University Examination Subject) Comprehensive evaluation of the students by the concerned coordinator of NCC / NSS / Cultural Clubs / Technical Society / Technical Clubs out of 100 marks as per evaluation schemes worked out by these societies / organizations at the institution / University level. The coordinators shall be responsible for the evaluation of the same. These activities shall start from the 1st semester and evaluation shall be conducted at the end of 6th semester for the students admitted in the first semester.

SEMESTER WISE EVALUATION SCHEME

Table 12: SEVENTH SEMESTER

Code No.	Paper	Course Type	L	T/P	Credits	Marks Internal	Marks External	Max Marks
Core Course Theory (CCT)								
Choose Any Two Theory and Respective Practical Electives								
BCA 401T	E-Commerce	CCT	4	-	4	40	60	100
BCA 403T	Internet Of Things (IOT)	CCT	4	-	4	40	60	100
Core Course Practical (CCP)								
BCA 401P	E-Commerce Lab	CCP	-	2	1	40	60	100
BCA 403P	Internet Of Things (IOT) lab	CCP	-	2	1	40	60	100
Major Project*(PRJ)								
BCA 405	Major Project-1	PRJ	0	12	6	40	60	100
Skills Enhancement Course (SEC)**								
BCA 461**	Vocational Course	SEC	0		2	100	-	100
	Total				18			600

*Major Project :The student shall do the Major project in any emerging technology.

**NUES (Non – University Examination Subject) – Only Internal Assessment by the Institute) i.e. the assessment shall be conducted by the institution for all 100 marks as Teacher’s Continuous Assessment. Evaluation will be based on Summer Training held after fourth semester.

SEMESTER WISE EVALUATION SCHEME

Table 13: EIGHTH SEMESTER

Code No.	Paper	Course Type	L	T/P	Credits	Marks Internal	Marks External	Max Marks
Major Project (PRJ) / Industry Internship (II) (Choose Any One Group) *								
BCA 402	Major Project-2	PRJ	20	0	10	40	60	100
BCA 404	Industry Internship Report	IIR	20	0	10	40	60	100
	Total				10			100

By default, every student shall do the project work Minor Project (BCA 320) during sixth semester. Those students who want to pursue BCA (Hons.) shall do Major Project-1 (BCA-405) during seventh semester and Major Project-2 (BCA-402) during eighth semester. A student shall either be allowed to do Major project-2 (BCA-402) or an internship (BCA-404). The student must apply for approval to do internship before the commencement of the 8th semester to the college, and only after approval of HOD / Director of the college through Training and Placement Officer of the college, shall proceed for internship.

** The student offered minor project work / major project shall be allocated a supervisor / guide for project work at the end of 5th semester by the college and the project shall continue into the 8th semester.

Students may be allowed to do internship in 8th semester in lieu of Major project-2. The students allowed to proceed for internship shall be required to maintain a log-book of activities performed during internship. The same has to be countersigned by the mentor at the organization where internship is completed.

Evaluation shall be conducted of 40 marks (Teachers' continuous evaluation / internal assessment) by the training and placement officer of the college on the basis of the report submitted by the student. And, 60 marks by a bench of the Training and Placement Officer of the college and the external examiner deputed by examinations division (COE), for a total of 100 marks.

In the absence of the supervisor or the Training and placement officer (as the case may be), the HOD/ Director of the college can assign the responsibility of the supervisor or the Training and Placement officer (for purpose of examinations) to any faculty of the college.