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

Guru Gobind Singh Indraprastha University Sector 16C, Dwarka, Delhi – 110 078 [INDIA]

Applicable from Batch Admitted in Academic Session 2024-25 Onwards

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 105**T#**	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 105**P#**	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.

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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)

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.

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**

Applicable from Batch Admitted in Academic Session 2024-25 Onwards

* 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)

FOURTH SEMESTER

Code No.	Paper		Course Type	L	T/P	Credits	Marks Internal	Marks External Th	Max Marks
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

				L	T/P	Credits			
		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
Multidisciplinary (Generic Elective) (Choose any One)									
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

Applicable from Batch Admitted in Academic Session 2024-25 Onwards

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.

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**

Applicable from Batch Admitted in Academic Session 2024-25 Onwards

* 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.

**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.

Applicable from Batch Admitted in Academic Session 2024-25 Onwards

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.

Applicable from Batch Admitted in Academic Session 2024-25 Onwards

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.

Applicable from Batch Admitted in Academic Session 2024-25 Onwards

EIGTH 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 wants to peruse 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.

Applicable from Batch Admitted in Academic Session 2024-25 Onwards