BHARATI VIDYAPEETH

(Deemed to be University), Pune

'A+' Accreditation (Third Cycle) by 'NAAC' in 2017

Category-I Deemed to be University Graded by UGC

'A' Grade University Status by MHRD Govt. of India

Ranked 73rd by NIRF – 2022

FACULTY OF MANAGEMENT STUDIES

BACHELOR OF COMPUTER APPLICATION DEGREE

(THREE YEARS) / HONORS (FOUR YEARS)

FRAMED AS PER NATIONAL EDUCATION POLICY (NEP 2020)

SYLLABUS

Applicable with effect from 2022-23

Contents

Bharati Vidyapeeth (Deemed to be University), Pune
Faculty of Management Studies

Bachelor of Computer Application (Honors) FOUR YEARS

Revised Course Structure (To be effective from 2022-2023)

I. BCA (Honors) Four Years Programme :

The Bachelor of Computer Application (Honors) Programme is a full time four year programme offered by Bharati Vidyapeeth (Deemed to be University), Pune and conducted in Regular mode at its management institutes located in New Delhi, Pune, Navi Mumbai, Kolhapur, Sangli, Karad and Solapur. All the seven institutes have excellent faculty members, computer laboratories, Libraries, and other facilities to provide proper learning environment to the students. The University is accredited by NAAC with 'A+' grade. The expectations and requirements of the Software Industry, immediately and in the near future, are considered while designing the BCA programme. While designing the BCA Programme , the above facts are considered and the requirements for higher studies and immediate employment are visualized. This effort is reflected in the Vision and Mission statements of the BCA programme, the statements also embody the spirit of the vision of Dr. Patangraoji Kadam, the Founder of Bharati Vidyapeeth ― "Social Transformation Through Dynamic Education"

II. Vision:

Preparing the Students to cope with the rigor of Post Graduate Programmes in global and creating high caliber solution architects for software development, who will also be sensitive to societal concerns.

III. Mission:

- We aim to drive transformation, technology and innovation through problem solving approach and research development.
- We aim to provide students with the IT tools to become productive and lifelong learner.

IV. Aims:

- To impart quality computer education to enhance logical computing and programming skills.
- To implement innovative techniques and process in leading-learning and evaluation.
- To further creativity and pursuit of excellence in computer applications.

V. Learning Outcome Based Curriculum Framework -

1. Programme Education Objectives:

The Bachelor of Computer Application (Honors) Four Years degree programme has the following objectives…

I. To prepare the youth to take up positions as system analysts, system engineers, software engineers and programmers.

II. To aim at developing 'systems thinking' 'abstract thinking', 'skills to analyze and synthesize', and 'skills to apply knowledge', through 'extensive problem solving sessions', 'hands on practice under various hardware/software environments' and' projects developed'.

III. To prepare students with 'social interaction skills', 'communication skills', 'life skills', 'entrepreneurial skills', and 'research skills' which are necessary for career growth and for leading quality life are also imparted.

2. Programmme Outcomes (POs) :

On completion of BCA (Honors) Four Year Degree Programme the expected programme outcomes that a student should be able to demonstrate are the following:

PO1. Computational Knowledge: Understand and apply mathematical foundation, computing and domain knowledge for the conceptualization of computing models from defined problems.

PO2. Problem Analysis: Ability to identify, critically analyze and formulate complex computing problems using fundamentals of computer science and application domains.

PO3. Design / Development of Solutions: Ability to transform complex business scenarios and contemporary issues into problems, investigate, understand and propose integrated solutions using emerging technologies.

PO4. Conduct Investigations of Complex Computing Problems: Ability to devise and conduct experiments, interpret data and provide well informed conclusions.

PO5. Modern Tool Usage: Ability to select modern computing tools, skills and techniques necessary for innovative software solutions

PO6. Professional Ethics: Ability to apply and commit professional ethics and cyber regulations in a global economic environment.

PO7. Life-long Learning: Recognize the need for and develop the ability to engage in continuous learning as a Computing professional.

PO8. Project Management: Ability to understand management and computing principles with computing knowledge to manage projects in multidisciplinary environments.

PO9. Communication Efficacy: Communicate effectively with the computing community as well as society by being able to comprehend effective documentations and presentations.

PO10. Societal & Environmental Concern: Ability to recognize economical, environmental, social, health, legal, ethical issues involved in the use of computer technology and other consequential responsibilities relevant to professional practice.

PO11. Individual & Team Work: Ability to work as a member or leader in diverse teams in multidisciplinary environment.

PO12. Innovation and Entrepreneurship: Identify opportunities, entrepreneurship vision and use of innovative ideas to create value and wealth for the betterment of the individual and society.

3. Programmme Specific Outcomes (PSOs) :

After the completion of the course, a student is able to

PSO1: Ability to learn the various programming languages with database concepts along with development environment

PSO2 : Ability to apply theoretical and practical knowledge to solve business problems through data communication technology concepts.

PSO3 : Flourish the innovation and research attitude to develop IT artifact.

PSO4: Foster analytical and critical thinking abilities for efficient programming

PSO5: Demonstrate and apply the programming knowledge to develop effective software solution.

PSO6: Enrich the knowledge in the areas of Advanced technologies and business practices.

PSO7: Maintain the personality with environmental and social concerns

4. Graduate Attributes:

After completing BCA (Honors) Four Year Degree programme the students will be able to acquire following attributes and skills to groom the overall personality.

- **Knowledge of Discipline of Computer Science**: This Graduate will be capable of demonstrating comprehensive and considered knowledge of a discipline. Student enables to evaluate and utilize information and apply their knowledge and professional skills in the field of IT.
- **Creativity**: Graduates will be trained to develop skills needed for creativity to design and implement computer application software. Also able to think and imagine IT solution for real life problems / applications.
- **Intellectual Rigour**: The graduates are expected to have clarity in thinking. Graduates will be involved to develop constructively and methodically, exploring ideas, theories and philosophies. It also relates to the ability to analyse and construct knowledge with depth, insight and intellectual maturity.
- **Problem Solving and Design**: Graduate empower not only within the context of their programmes, but also in their personal and professional lives. Graduate should have ability to identify problems, think creatively to find alternative solutions and evaluate those for selecting effective algorithm to solve the problem efficiently.
- **Ethical Practices**: Graduate should adopt tolerance, responsibility, open-mindedness about cultural diversity, linguistic difference, and the complex nature of our world. Graduate should behave appropriately towards colleagues and the community and being sensitive to local and global social justice issues
- **Communication and Social Skills**: Graduate have the ability to communicate clearly and to work well in a team setting is critical to sustained and successful employment. Good communication and social skills involve the ability to listen to, as well as clearly express information back to others in a variety of ways - oral, written, and visual - using a range of technologies.
- **Life-Long Learning**: Graduate is having open, curious, willing to investigate, and consider new knowledge and ways of thinking. He / She should able to adopt and grasp the new upcoming technologies in IT sector.
- **Self-Management**: Graduates must have capabilities for self-organisation, self-review, personal development and lifelong learning.
- **Critical thinker and problem solver**: Ability to employ critical thinking and efficient problem solving skills for different kinds of problem related to computer science
- **Team player/worker**: Capable of working effectively in diverse teams in both classroom, laboratory, in industry and project-based situations.

VI. Duration:

The duration of the BCA Bachelor's degree Program having six semesters and BCA (Honors) Degree Program is of four years spread across Eight Semesters with multiple entry and exit options. Student should complete the 4 years degree programme within 7 years.

a) Following EXIT options are available with the students:

Exit Option	Minimum Credits Requirements	NSQF Level	Bridge course
Under graduate Certificate - After successful completion of First Year	40	5	10 credits bridge course(s) lasting two months including at least 06 credits job specific internship that would help the learner to acquire job ready competencies to enter the workforce.
Under graduate Diploma - After successful completion of Second Year	80	6	
Bachelor's Degree - After successful completion of Third Year	120	7	
Bachelor's Degree with Honors- After successful completion of Fourth Year OR **Bachelor's Degree with Honors (Research) -** After successful completion of Fourth Year	160	8	

Note : Student is free to complete some interdisciplinary courses from other institutes provided he/she should earn 50% required credits from home HEI.

Student should complete the core disciplinary courses from home University (HEI) to get exit option for UG certificate/ UG diploma/ Bachelor Degree.

b) Following Entry options are available with the students :

- Student who opt Exit option at the end of 1st / 2nd /3rd year, can reenter the same programme within three years from Exit.
- Student with Bachelors Degree can opt for Bachelor degree with Honors
- Student with Bachelors Degree can opt for Bachelor degree with Honors (Research) if the student secure CGPA >= 7.5

National Skills Qualifications Framework (NSQF) Levels :

Option	NSQF Level	Professional Knowledge	Skill
At the end offirst year	**5**	Knowledge of facts, principles, processes, concepts in a field of work or study	The student will have fundamental knowledge of computation, problem solving ability and basic website designing ability.
At the end ofSecond year	**6**	Factual and theoretical knowledge in the broad context within a field of work or study	Additionally the student will have advanced programming skills along with system development ability
At the end ofThird year	**7**	Wide ranging factual and theoretical knowledge in the broad context within a field of work or study	Additionally, student will have skills of Web Application development with Technical Writing and Report Generation.
At the end of Fourth year	**8**	Comprehensive, cognitive theoretical knowledge and practical skills to develop creative solutions to abstract problem	Additionally, student will have skills of solving business application applying advanced technology

VII.Academic Bank Of Credits (ABC) :

As per the National Educational Policy (NEP) 2020, the Academic Bank of Credit offer the flexibility of curriculum framework and interdisciplinary /multidisciplinary academic mobility of students across Higher Educational Institutes (HEIs) with appropriate credit transfer mechanism. In furtherance to these guidelines the Faculty of Management Studies, Bharati Vidyapeeth (Deemed to be University) Pune has designed a four years undergraduate program offered at its constituent units.

As a pre-requisite a student should register in the Bharati Vidyapeeth (Deemed to be University) Academic Bank of Credit. The credits earned by the student/learner will be stored in it. A Student/learner would be required to complete the course as per the ABC (Academic Bank Credit) policy of UGC. The validity of the credits earned for a course is seven years only.

VIII. Eligibility Criteria for admission:

A candidate applying for BCA(Honors) Four years programme should have passed higher secondary (10 + 2) or equivalent examination (10+3) of any recognized Board with satisfying the conditions to pass a common All India Entrance test (BU-MAT) conducted by Bharati Vidyapeeth (Deemed to be University), Pune. The final admission is based solely on the merit at the BU-MAT test.

IX. Grading System for Programmes under Management Studies:

- **Grade Points** : The Faculty of Management Studies, Bharati Vidyapeeth (Deemed to be University) has suggested 10-point grading system for all programmes designed by its various Board of Studies. A grading system is a 10-point system if the maximum grade point is 10. The system is given in Table Ibelow.

Table I: The 10-point Grading System Adapted for Programmes under FMS

Range of Percent Marks	[80,100]	[70,79]	[60,69]	[55,59]	[50,54]	[40,49]	[00,39]
Grade Point	10.0	9.0	8.0	7.0	6.0	5.0	0.0
Grade	**O**	**A+**	**A**	**B+**	**B**	**C**	**D**

Formula to calculate GP is as under:

Set x = Max/10 where Max is the maximum marks assigned for the examination (i.e. 100)

Formula to calculate the individual evaluation

Range of Marks	Formula for the Grade Point
$8x \leq Marks \leq 10x$	10
$5.5x \leq Marks \leq 8x$	Truncate (M/x) +2
$4x \leq Marks \leq 5.5x$	Truncate (M/x) +1

- **Scheme of Examination**

Courses having Internal Assessment (IA) and University Examinations (UE)shall be evaluated by the respective constituent units and the University at the term end for **40** and **60** Marks respectively. The total marks of IA and UE shall be 100 Marks and it will be converted into grade points and grades.

For Comprehensive Continuous Assessment (CCA) The subject teacher may use the following assessment tools:

a) ***Class Tests***
b) ***Presentations***
c) ***Class Assignments***
d) **Case studies**
e) ***Practical Assignments***
f) ***Mini Projects***
g) ***Oral***

h) ***MOOCs*** **-** The Bharati Vidyapeeth (Deemed to be University), Pune offering MOOCS (Massive Open Online Courses Subjects) so as to provide wide access to online learning. The student will complete MOOCS courses as a part of Continuous Evaluation System (CES)

X. Standard of Passing:

For all courses, both UE and IA constitute separate heads of passing. In order to pass in such courses and to earn the assigned credits, the student/learner must obtain a minimum grade point of 5.0 (40% marks) at UE and also a minimum grade point of 5.0 (40% marks) at IA.

If Student fails in IA, the learner passes in the course provided, he/she obtains a minimum 25% marks inIA and GPA for the course is at least 6.0 (50% in aggregate). The GPA for a course will be calculated only if the learner passes at UE.

A student who fails at UE in a course has to reappear only at UE as backlog candidate and clear the Headof Passing. Similarly, a student who fails in a course at IA he has to reappear only at IA as backlog candidate and clear the Head of Passing to secure the GPA required for passing.

The 10 point Grades and Grade Points according to the following table

Range of Marks (%)	Grade	Grade Point
80≤Marks≤100	O	10
70≤Marks<80	A+	9
60≤Marks<70	A	8
55≤Marks<60	B+	7
50≤Marks<55	B	6
40≤Marks<50	C	5
Marks < 40	D	0

The performance at UE and IA will be combined to obtain GPA (Grade Point Average) for the course.The weights for performance at UE and IA shall be 60% and 40% respectively.

GPA is calculated by adding the UE marks out of 60 and IA marks out of 40. The total marks out of 100 are converted to grade point, which will be the GPA.

Formula to calculate Grade Points (GP)

Suppose that "Max" is the maximum marks assigned for an examination or evaluation, based on which GP will be computed. In order to determine the GP, Set x = Max/10 (since we have adopted 10 point system). Then GP is calculated by the following formulas

Range of Marks	Formula for the Grade Point
8x ≤ Marks≤10x	10
5.5x ≤ Marks<8x	Truncate (M/x) +2
4x ≤ Marks<5.5x	Truncate (M/x) +1

Two kinds of performance indicators, namely the Semester Grade Point Average (SGPA) and the Cumulative Grade Point Average (CGPA) shall be computed at the end of each term. The SGPA measures the cumulative performance of a learner in all the courses in a particular semester, while the CGPA measures the cumulative performance in all the courses since his/her enrolment. The CGPA of learner when he /she completes the programme is the final result of the learner.

The SGPA is calculated by the formula

$$SGPA = \frac{\sum Ck * GPk}{\sum Ck}$$

where, Ck is the Credit value assigned to a course and GPk is the GPA obtained by the learner in the course. In the above, the sum is taken over all the courses that the learner has undertaken for the study during the Semester, including those in which he/she might have failed or those for which he/she remained absent. **The SGPA shall be calculated up to two decimal place accuracy.**

The CGPA is calculated by the following formula

$$CGPA = \frac{\Sigma C_k * GP_k}{\Sigma C_k}$$

where, Ck is the Credit value assigned to a course and GPk is the GPA obtained by the learner in the course. In the above, the sum is taken over all the courses that the learner has undertaken for the study from the time of his/her enrolment and also during the semester for which CGPA is calculated.

The CGPA shall be calculated up to two decimal place accuracy.

The formula to compute equivalent percentage marks for specified CGPA: = (Final CGPA-0.5)*10

XI. Award of Honours:

A student who has completed the minimum credits specified for the programme shall be declared to have passed in the programme. The final result will be in terms of letter grade only and is based on the CGPA of all courses studied and passed. The criteria for the award of honours are given below.

Range of CGPA	Final Grade	Performance Descriptor	Equivalent Range of Marks (%)
9.5≤CGPA ≤10	O	Outstanding	80≤Marks≤100
9.0≤CGPA ≤9.49	A+	Excellent	70≤Marks<80
8.0≤CGPA ≤8.99	A	Very Good	60≤Marks<70
7.0≤CGPA ≤7.99	B+	Good	55≤Marks<60
6.0≤CGPA ≤6.99	B	Average	50≤Marks<55
5.0≤CGPA ≤5.99	C	Satisfactory	40≤Marks<50
CGPA below 5.0	F	Fail	Marks below 40

XII. Rules of ATKT:

a) For admission to Semester V of BCA Third year, Students/Learners should pass all the courses under Sem I and II.

ii) For admission to Semester VII of BCA Fourth year, Students/Learners should pass all the courses under Sem,III and IV.

XIII. INTERNSHIP:

At the end of Semester VI, each student shall undertake Internship in an Industry for 50 (Fifty Days). It is mandatory for the students to seek written approval from the Faculty Guide about the Topic & the Organisation before commencing the Internship.

During the Internship students are expected to take necessary guidance from the faculty guide allotted by the Institute. To do it effectively they should be in touch with their guide through e-mail or telecom. Internship Project should be a Computer Application to Real life business activity.

The learning outcomes and the utility to the organization must be highlighted in Internship Project Report.

General chapterization of the report shall be as under;

1) Introduction
2) Theoretical background
3) Company profile
4) Objectives of the study
5) System Requirements
6) System Analysis & Design
7) Implementation & Testing
8) Conclusion & Suggestions

References:

Annexure: -

TECHNICAL DETAILS:

1. The report shall be printed on A-4 size white bond paper.
2. 12 pt. Times New Roman font shall be used with 1.5 line spacing for typing the report.
3. 1" margin shall be left from all the sides.
4. Considering the environmental issues, students are encouraged to print on both sides of the paper.
5. The report shall be hard bound as per the standard format of the cover page given by the Institute and shall be golden embossed.
6. The report should include a Certificate (on company's letter head) from the company duly signed by the competent authority with the stamp.
7. The report shall be signed by the respective guide(s) & the Director of the Institute 10 (Ten) days before the viva-voce examinations.
8. Student should prepare two hard bound copies of the Summer Internship Project Report and submit one copy in the institute. The other copy of the report is to be kept by the student for their record and future references.
9. In addition to this students should prepare two soft copies of their Summer IP reports & submit one each in Training & Placement Department of the Institute & Library

The Internship shall be assessed out 200 Marks. The breakup of these marks is as under;

Viva- voce examination = 120 (One Hundred Twenty) Marks
Internship Report = + 80 (Eighty) Marks
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200 (Two Hundred) Marks

The examiners' panel shall be decided as per the guidelines received from the University.

The viva –voce shall evaluate the project based on

i. Actual work done by the student in the organization

ii. Student's knowledge about the company & Business Environment

iii. Learning outcomes for the student

iv. Utility of the study to the organization

XIV. Specializations:

BCA three year degree programme and BCA(Hons.) four year degree programme 2022 offers specialization to the students/learners in the third year of both the programmes. The students/learner are required to select any one specialization from the list provided below.

Sr. No.	Specialization Course	Course No	Course Name
01	**Data analysis**	505-1-A	Data analysis using Excel
		605-1-B	R Programming
02	**Information Security**	505-2-A	Information Security Concepts
		605-2-B	Information Security Administration
03	**Big Data**	505-3-A	Introduction to Big Data
		605-3-B	HADOOP
04	**Information Systems**	505-4-A	E-Commerce
		605-4-B	Knowledge Management

Prerequisite for offering the specialization –

- There must be minimum 10 (Ten) students for a particular specialization.

XV. Course Structure:

SEMESTER I

Course Number	Course Title	Course Type	Credits	Hours / Week			IA	EoTE	Total Marks
				L	T	P			
101	Fundamentals of Information Technology	DSC	3	3	1	-	40	60	100
102	C Programming	DSC	3	3	1	-	40	60	100
103	Organization of IT Business	MDC	3	3	1	-	40	60	100
104	Discrete Mathematics	MDC	3	3	1	-	40	60	100
105	Lab on MS-Office Suite	DSC	2	-	-	4	40	60	100
106	Lab on C Programming	DSC	2	-	-	4	40	60	100
107	Human Universal Values	VBC	2	2	-		50	-	50
108	Language – I	AEC	2	2	-	-	50	-	50
Total			**20**	**16**	**4**	**8**	**340**	**360**	**700**

SEMESTER II

Course Number	Course Title	Course Type	Credits	Hours / Week			IA	EoTE	Total
				L	T	P			
201	Web Development Technology	DSC	3	3	1	-	40	60	100
202	DBMS I	DSC	3	3	1	-	40	60	100
203	Data Structures using C	DSC	3	3	1	-	40	60	100
204	Financial Accounting	MDC	3	3	1	-	40	60	100
205	Lab on Data Structures using C	DSC	2	-	-	4	40	60	100
206	Lab on Web Development Technology	DSC	2			4	40	60	100
207	Environmental Studies	VBC	2	2	-	-	50	-	50
208	Community Work (Swaccha Bharat Abhiyan)	VBC	2	2	-	-	50	-	50
Total			**20**	**16**	**4**	**8**	**340**	**360**	**700**

SEMESTER III

Course Number	Course Title	Course Type	Credits	Hours / Week			IA	EoTE	Total
				L	T	P			
301	Operating Systems	DSC	3	3	1	-	40	60	100
302	Software Engineering	DSC	3	3	1	-	40	60	100
303	Java Programming	DSC	3	3	1	-	40	60	100
304	Statistics	MDC	3	3	1	-	40	60	100
305	Lab on Oracle	DSC	2	-	-	4	40	60	100
306	Lab on Java	DSC	2	-	-	4	40	60	100
307	Start-up Management	AEC	2	2	-	-	50	-	50
308	Yoga & Meditation	VBC	2	2	-	-	50	-	50
Total			**20**	**16**	**4**	**8**	**340**	**360**	**700**

SEMESTER IV

Course Number	Course Title	Course Type	Credits	Hours / Week			IA	EoTE	Total
				L	T	P			
401	Computer Networks	DSC	3	3	1	-	40	60	100
402	Advanced JAVA	DSC	3	3	1	-	40	60	100
403	Advanced HTML with Javascript and CSS	DSC	3	3	1	-	40	60	100
404	Optimization Techniques	MDC	3	3	1	-	40	60	100
405	Lab on JAVA,	DSC	2	-	-	4	40	60	100
406	Lab on HTML, Javascript and CSS & Minor Project - I	DSC	2	-	-	4	40	60	100
407	Cyber security	SEC	2	2	-	-	50	-	50
408	Mathematical Aptitude	AEC	2	2	-	-	50	-	50
Total			**20**	**16**	**4**	**8**	**340**	**360**	**700**

SEMESTER V

Course Number	Course Title	Course Type	Credits	Hours / Week			IA	EoTE	Total
				L	T	P			
501	Basic Python Programming	DSC	3	3	1	-	40	60	100
502	Dot Net programming using C#	DSC	3	3	1	-	40	60	100
503	Entrepreneurship Development	MDC	3	3	1	-	40	60	100
504	Elective I	DSE	3	3	1	-	40	60	100
505	Lab on Python	DSC	2	-	-	4	40	60	100
506	Lab on Dot Net and C#	DSC	2	-	-	4	40	60	100
507	IT based Aptitude	AEC	2	2	-	-	50	-	50
508	Human Rights	VBC	2	2	-	-	50	-	50
Total			**20**	**16**	**4**	**8**	**340**	**360**	**700**

SEMESTER VI

Course Number	Course Title	Course Type	Credits	Hours / Week			IA	EoTE	Total
				L	T	P			
601	Data warehousing and Data Mining	DSC	3	3	1	-	40	60	100
602	Web Programming (PHP)	DSC	3	3	1	-	40	60	100
603	Software Project Management	DSC	3	3	1	-	40	60	100
604	Elective II	DSE	3	3	1	-	40	60	100
605	Lab on Web programming with Project	DSC	2	-	-	4	40	60	100
606	Lab on Data Visualization	DSC	2	-	-	4	40	60	100
607	Digital marketing	SEC	2	2	-	-	50	-	50
608	Indian Culture	VBC	2	2	-	-	50	-	50
Total			**20**	**16**	**4**	**8**	**340**	**360**	**700**

SEMESTER VII

Course Number	Course Title	Course Type	Credits	Hours / Week			IA	EoTE	Total
				L	T	P			
701	Cloud Computing	DSC	3	3	1	-	40	60	100
702	Mobile Application Development	DSC	3	3	1	-	40	60	100
703	Internet of Things	DSC	3	3	1	-	40	60	100
704	Object Oriented Analysis and Design	DSC	3	3	1	-	40	60	100
705	Research Methodology	RM	3	3	1	-	40	60	100
706	Lab on IOT	DSC	2	-	-	4	40	60	100
707	Lab on Mobile Application Development	DSC	2	-	-	4	40	60	100
708	Technical Writing	SEC	1	2	-	-	50	-	50
Total			**20**	**17**	**5**	**8**	**330**	**420**	**750**

SEMESTER VIII

Course Number	Course Title	Course Type	Credits	Hours / Week			IA	EoTE	Total
				L	T	P			
801	Introduction to AI and ML	DSC	3	3	1	-	40	60	100
802	ERP	DSC	3	3	1		40	60	100
803	Block Chain Technology	DSC	3	3	1	-	40	60	100
804	Internship Project	SEC	6	-	-	8	80	120	200
805	Professional Ethics	MDC	3	3			40	60	100
806	Organisational Behaviour	VBC	1	2			50		50
807	IPR	AEC	1	2			50		50
Total			**20**	13	-	8	**340**	**360**	**700**

Fourth years of BCA Honors Programme with Research

SEMESTER VII

Course Number	Course Title	Course Type	Credits	Hours / Week			IA	EoTE	Total
				L	T	P			
701	Cloud Computing	DSC	3	3	1	-	40	60	100
702	Mobile Application Development	DSC	3	3	1	-	40	60	100
703	Internet of Things	DSC	3	3	1	-	40	60	100
704	Object Oriented Analysis and Design	DSC	3	3	1	-	40	60	100
705	Research Methodology	RM	3	3	1	-	40	60	100
706	Lab on IOT	DSC	2	-	-	4	40	60	100
707	Lab on Mobile Application Development	DSC	2	-	-	4	40	60	100
708	Technical Writing	SEC	1	2	-	-	50	-	50
Total			**20**	**17**	**5**	**8**	**330**	**420**	**750**

SEMESTER VIII

Course Number	Course Title	Course Type	Credits	Hours / Week			IA	EoTE	Total
				L	**T**	**P**			
801	Dissertation	RM	12				100	300	400
802	Seminar on Recent Trends In Computer Science and Information Technology : Literature Review	RM	3				100		100
803	Professional Ethics	MDC	3	3			40	60	100
804	Organisational Behaviour	VBC	1	2			50	-	50
805	IPR	AEC	1	2			50	-	50
Total			**20**	13	-	8	**340**	**360**	**700**

Abbreviations Expanded

- **DSC** - Discipline Specific Course
- **DSE** - Discipline Specific Elective
- **MDC** – Minor Disciplinary Course
- **SEC** - Skill Enhancement Course
- **VBC** - Value Based Course
- **AEC** - Ability Enhancement Course
- **RW** – Research Work

XVI. Question Paper Patterns for University Examination:

*The pattern of **question paper** for the courses having University Examinations will be as follows:*

Title of the Course

Day: **Total Marks: 100**

Date: **Time: 03 Hours**

Instructions:

a. Attempt any FIVE questions from Section I Each question carries 12 Marks.
b. Attempt any TWO questions from Section II Each question carries 20 Marks.

SECTION – I	
It should contain 07 questions covering the syllabus & should test the conceptual knowledge of the students	
Question	**Marks**
Q.1 ……	(12 marks)
Q.2 ……	(12 marks)
Q.3 ……	(12 marks)
Q.4 ……	(12 marks)
Q.5 ……	(12 marks)
Q.6 ……	(12 marks)
Q.7 Write **Short Notes** on ANY TWO	(12 marks)
SECTION – II	
It should contain 03 questions covering the entire syllabus & should be based on application of the Concepts	
Q.8……..	(20 marks)
Q.9……	(20 marks)
Q.10……..	(20 marks)

***Note : 100 marks will be converted to 60 as per BVDU, Pune Examination Section Scaling down**