

Bachelor of Computer Applications (BCA)

Draft CBCS Course Structure to be implemented from June 2020

SYLLABUS

■ **Introduction :**

Bachelor of Computer Application (3 years) program / degree is a specialized program in Computer Applications. It builds the student on studies in applied use of computers and to become competent in the current race and development of new computational era.

The duration of the study is of six semesters, which is completed in three years. The program is based on Choice-based credit system comprising 144 credit points and intake for one batch is not more than 80 students.

■ **Objective :**

BCA offers the prequalification for professionals heading for smart career in the IT field, which measures up to international standards. On completing this course one can do higher studies such as MCA, MBA etc., in any UGC recognized universities or in any other reputed institution in India or abroad.

■ **Eligibility :**

Candidate should have passed standard XII (10+2) in any stream or government approved equivalent diploma in Engineering/Technology from any recognized Board or Vocational stream.

A candidate who has completed qualifying qualification from any Foreign Board/ University must obtain an equivalence certificate from Association of Indian Universities (AIU).

■ **PEO, PO and CO Mappings :**

Program Educational Outcomes : After completion of this program, the graduates/ students would :

PEO I	Technical Expertise	Implement fundamental domain knowledge of core courses for developing effective computing solution by incorporating creativity and logical reasoning
PEO II	Successful Career	Deliver professional services with updated technologies in Computer application based career.
PEO III	Interdisciplinary and Life Long Learning	Develop leadership skills and incorporate ethics, team work with effective communication & time management in the profession. Undergo higher studies, certifications and technology research as per market needs.

Program Outcomes (PO's) : After completion of program Students / graduates will be able to :

PO1 : Apply knowledge of ICT in solving business problems.

PO2 : Learn various programming languages and custom software.

PO3 : Design component, or processes to meet the needs within realistic constraints.

PO4 : Identify, formulate, and solve problems using computational temperaments.

PO5 : Comprehend professional and ethical responsibility in computing profession.

PO6 : Express effective communication skills.

PO7 : Recognize the need for interdisciplinary, and an ability to engage in life-long learning.

PO8 : Knowledge of contemporary issues and emerging developments in computing profession.

PO9 : Utilize the techniques, skills and modern tools, for actual development process.

Course Outcome(s) : Every individual course under this program has course outcomes (CO). The course outcomes rationally match with program educational objectives. The mapping of PEO, PO and CO is as illustrated below :

■ **Workload (Period/Lectures for each Course) :**

For every semester 60 periods (60 minutes per period) are allotted to complete the syllabus of each Course (Subject).

■ **Standard of Passing :**

- I. A candidate must obtain minimum 40% of the marks in each University, internal examination paper, lab course as well as mini and major project.
- II. There shall be a separate head of passing in Theory, Internal, Lab Course and Project examination. However, ATKT rules shall be made applicable in respect of theory and lab courses (University Examination) only.
- III. A candidate who fails in any number of subjects during semester – I & II shall be admitted to B.C.A.-II (appear for semester - III & Semester IV examination).
- IV. However the candidate shall not be admitted to B.C.A.-III (Semester-V) unless he/she passed in all the subjects at B.C.A.-I (Semester-I & Semester-II).
- V. A candidate who fails in any number of subjects during Semester-III & IV shall be admitted for B.C.A.-III & allowed to appear for Semester-V & VI examinations.
- VI. For environmental studies Semester IV the candidate shall have to score 28 marks out of 70 marks theory paper and 12 marks out of 30 for project work.
- VII. CCC 108 is noncredit course as per notification of university i.e. Democracy, Elections and Good Governance (Non Credit).

Gradation Chart :

Marks obtained	Numerical Grade (Grade Point)	CGPA	Letter Grade
Absent	0 (Zero)		
<40	0 to 4	0.0 to 3.99	Fail
40–50	5	4.00 to 4.99	C
51–60	6	5.00 to 5.99	B
61–70	7	6.00 to 6.99	B+
71–80	8	7.00 to 7.99	A
81–90	9	8.00 to 8.99	A+
91–100	10	9.00 to 10.00	O (Outstanding)

Note : i) Marks obtained ≥ 0.5 shall be rounded off to next higher digit.
 ii) The SGPA & CGPA shall be rounded off to 2 decimal points.

Calculation of SGPA & CGPA :

- Semester Grade Point Average (SGPA) $\text{SGPA} = \frac{\text{Course credits} \times \text{Grade Points obtained of a semester}}{\text{Course credits of respective semester}}$
- Cumulative Grade Point Average (CGPA) $\text{CGPA} = \frac{\text{Total credits of a semester} \times \text{SGPA of respective semester}}{\text{Total course credits of all semesters}}$

■ Nature of Theory Question Paper :

Nature of question paper is as follows for University end semester examination

QUESTION PAPER PATTERN FOR ALL SEMESTERS

Duration : 3 Hours

Total Marks : 70

Instructions : i) Que. 1 and Que. 6 are compulsory and attempt any three.

Questions from Que. No. 2 to Que. No. 5

ii) Figures to the right indicate marks.

Qu. 1) A. Multiple Choice Questions (10 questions for 1 mark each.)	10
B. Give Reasons or Short answer questions. (Any two out of three)	10
Qu. 2) Broad answer question.	10
Qu. 3) Broad answer question.	10
Qu. 4) Broad answer question.	10
Qu. 5) Broad answer question.	10
Qu. 6) Write notes on (Any Four out of Six)	20

■ Nature of Practical Question Paper :

There will be three questions of 15 Marks each, out of which student have to attempt any two Questions and 10 marks for journal and 10 marks for oral for 2 credit lab course and time duration is two hours.

For four credit lab course there will be four questions of 25 Marks each, out of which student have to attempt three questions and 10 marks for journal and 15 marks for oral and time duration is three hours.

Practical Examination conducted by the University appointed examiner panel of two members. The panel members have more than five years' experience as full time teacher.

■ **Medium of Instruction :**

The medium of instruction shall be in English.

■ **Teachers Qualification :**

As per rules and regulations of Shivaji University, Kolhapur and Govt. of Maharashtra.

■ **Internal Marks Distribution :**

1. Five Marks for Mid Tests.
2. Ten Marks for presentation or activity based learning or Group exercise (Number of students in Group are not more than six).
3. Five Marks for Assignments.
4. Five Marks for library activity/designing apps or software or workin model/field Work/online learning activity etc.
5. Five Marks for Attendance. (75% to 80% - 02 marks, 81% to 85% - 03 marks, 86% to 90% - 04 marks, 91% to 100% - 5 marks.)

■ **Mini Project :**

The objective of mini project is, to make aware student with current technology to be used in IT industry. The language/platform of the mini-project to be selected from the subject in previous and present semester. The Group size of maximum four students can undertake mini project. Project Viva-Voce Examination will be conducted by the University appointed examiner panel of two members. The panel members have more than five years' experience as full time teacher.

■ **Major Software Development Project :**

The objective of major project is to design and develop the live application with current technology to be used in various industries. The Group size of maximum three students can undertake major project. Project Viva-Voce Examination will be conducted by the University appointed examiner panel of two members. The panel members have more than five years experience as full time teacher. The chairman for viva voce committee will be doctorate or faculty having more than ten years experience as full time faculty.

■ **Fee Structure :**

As per University norms.

■ **Requirements :**

- i) Core faculty :
 - For First Year Sem I & Sem II - 1 Full Time Faculty and 1 Lab Assistant
 - For Second Year Sem III & Sem IV - 1 Full Time Faculty.
 - For Third Year Sem V & Sem VII - 1 Full Time Faculty and 1 Lab Assistant.
 - Total – 3 Full Time Faculties and Two Lab Assistants having qualification BCA/BCS/Diploma in Computer Engineering/PG DCA.
 - In addition there shall be visiting/CHB faculty drawn from academicians / professionals from different fields for AEC/DSE/GE Courses and AEC/DSE based lab courses.
- ii) Non-Teaching Staff : One Clerk and 2 Peons.
- iii) Computer Lab : Well-equipped networked Lab with backup facility, Application and system software's as per syllabi and internet facility.
- iv) Library : The entire library fees collected from the students shall be invested on library.
- v) Class Room : At least 3 classrooms of seating capacity 80 students with LCD in which at least one Digital Classroom.

■ **Structure of Syllabus :**

BCA-I (Sem-I)

Course Code	Title of Paper	Credit	Internal	External	Total
CC 101	Fundamentals of Computer	04	30	70	100
CC 102	Introduction to Programming Using C	4	30	70	100
AEC 103	Principles of Management	04	30	70	100
AEC 104	Business Communication	04	30	70	100
AEC 105	Office Automation	04	30	70	100
CCL 106	Lab Course-I Based on CC 102	02	--	50	50
CCL 107	Lab Course-II Based on AEC 105	02	--	50	50
CCC 108	Compulsory Civic Course (CCC)	--	--	--	--
	Total	24	150	450	600

BCA-I (Sem-II)

Course Code	Title of Paper	Credit	Internal	External	Total
CC 201	DBMS	04	30	70	100
CC 202	Operating System	04	30	70	100
CC 203	Object Oriented Programming Using C++	04	30	70	100
AEC 204	Financial Accounting with Tally	04	30	70	100
AEC 205	Mathematical Foundations for Computer Applications	04	30	70	100
CCL 206	Lab Course-III Based on CC201 AEC 204	02	--	50	50
CCL 207	Lab Course-IV Based on CC203	02	--	50	50
	Total	24	150	450	600

BCA-II (Sem-III)

Course Code	Title of Paper	Credit	Internal	External	Total
CC 301	Web Technology	04	30	70	100
CC 302	Computer Network and Internet	04	30	70	100
CC 303	Data Structure using C	04	30	70	100
AEC 304	Elements of Statistics	04	30	70	100
AEC 305	Human Resource Management and Materials Management	04	30	70	100
CCL 306	Lab Course-V Based on CC 301	02	--	50	50
CCL 307	Lab Course-VI Based on CC 303 & AEC 304	04	--	50	50
	Total	24	150	450	600

BCA-II (Sem-IV)

Course Code	Title of Paper	Credit	Internal	External	Total
CC 401	RDBMS	04	30	70	100
CC 402	Software Engineering	04	30	70	100
CC 403	DOT NET Technology	04	30	70	100
AEC 404	Entrepreneurship Development	04	30	70	100
AEC 405	PHP	02	50	--	50
CCL 406	Lab Course-VII Based on CC 401	02	--	50	50
CCL 407	Lab Course-VIII Based on CC 403	02	--	50	50
CCL 408	Mini Project	02		50	50
	Total	24	170	430	600

BCA-III (Sem-V)

Course Code	Title of Paper	Credit	Internal	External	Total
CC 501	Java Programming	04	30	70	100
CC 502	Data Warehousing & Data Mining	04	30	70	100
CC 503	IT Security	04	30	70	100
DSE 504	Elective-I 1. Python Programming 2. C# Dot Net 3. Ethical Hacking	04	30	70	100
GE 505	Elective-II 1. Digital Marketing 2. Management Information System 3. Knowledge Management	04	30	70	100
CCL 506	Lab Course-IX Based on CC 501	02	--	50	50
CCL 507	Lab Course-X Based on DSE 504	02	--	50	50
	Total	24	150	450	600

BCA-III (Sem-VI)

Course Code	Title of Paper	Credit	Internal	External	Total
CC 601	Cloud Computing	04	30	70	100
DCE 602	Elective-I 1. Internet of Things (IOT) 2. Android Programming 3. R Programming	04	30	70	100
GE 603	Elective-II 1. IT Management 2. ERP 3. M-Commerce	04	30	70	100
AEC 604	Soft Skills & Personality Development	02	50	--	50
AEC 605	Industrial Visit	01	25	--	25
CCL 606	Lab Course-XI Based on DSE 602	04	--	100	100
CCL 607	Major Project	05	25	100	125
	Total	24	190	410	600

- **Note :** Students has to select any one course from the respective electives.
 CC – Compulsory Courses DSE – Domain Specific Elective
 GE – General Electives AEC – Ability Enhancement Compulsory Courses
 CCL – Compulsory Courses Lab.

■ **Credit Distribution Chart for BCA Program :**

Sr. No.	Particulars	Number of Courses	Total Credits	Percentage of Credits
1.	CC - Compulsory Courses	29	93	65
2.	Ge - General Electives	02	08	05
3.	DSE - Domain Specific Electives	02	08	05
4.	AEC - Ability Enhancement Compulsory Courses	10	35	25
	Total	43	144	100

■ **GENERAL INSTRUCTIONS :**

- Candidates are admitted to the course subject to the university rules as to eligibility & grand of terms etc.
- Every candidate must attend the classes regularly and complete his/her class works tutorials and seminars, assignments & periodic tests as may be required time to time.
- Candidate should carefully read before being admitted, the prospectus issued by the institute as well as relevant university publications in respect of course selected by him/her. The rules contain in them as well made by the institute and changes made therein from time to time, shall be binding on the candidate and on his/her guardian.
- The fees prescribed for the course must be paid at the time of admission. Failure to do so shall result in cancellation of admission.
- If a candidate is entitled to any Govt. Scholarship and or free ship, the amount of such scholarship or free ship will be paid him/her only when it is actually received to the institute from the appropriate authority.
- For grant of two terms and for eligibility to fill in the University Examination for of the course a candidate must attend at least 80% of the lectures and all tutorials and seminars.
- No candidate shall be considered to have perused course of study unless he/she is certified by the principal/director to have attended at least 80% of the lectures and all tutorials and seminars.
- The candidates will be exposed to the business expert in the field through regular seminars and guest lectures. Attendance for the same shall be compulsory.
- A very high standard of discipline regularity and punctuality is expected from the candidates. Failure of which will be viewed seriously in judging performance of a candidate.
- No candidate shall be allowed to appear for university examination unless he/she satisfies all the rules and regulations those may be made from time to time.
- Fees is not refundable on any account except the deposit amount for library. Whenever admission of a student is to be cancelled by him/her the student should intimate to the principal/Head in writing, with the written consent of his/her guardian before beginning of the term.