DR. P. A. Inamdar University, Pune

FACULTY OF COMPUTER APPLICATIONS & INFORMATION TECHNOLOGY

Bachelor of Computer Applications (BCA)

SYLLABUS

Three years, (Six Semesters), Full time Program
Under Choice Based Credit System (CBCS)
&
Outcome Based Education (OBE) Pattern
as per UGC and NEP-2020 Guidelines
Syllabus Effective from 2023-24 academic year

1. BCA Three Years Program:

Preamble

The degree shall be titled as Bachelor of Computer Application Program under Faculty of Computer Application and IT. It follows a choice based credit system and NEP2020 policy and is a full time three year program consisting of 6 semesters offered by Dr. P. A. Inamdar University(DRPAIU), Pune.

Colleges under DRPAIU have excellent faculty members, computer laboratories, Libraries, and other facilities to provide a proper learning environment to the students.

The expectations and requirements of the Software Industry, immediately and in the near future, are considered while designing the BCA program. While designing the BCA Program, the above facts are considered and the requirements for higher studies and immediate employment are visualized. This Program consist of different core computer, Open elective subjects, Interdisciplinarity subject and a wide range of value added course helps the students to build an

all-round personality to successfully face the challenges of a IT professional career and good communication skills.

2. Program Objectives:

- Provide a strong foundation in fundamentals of computers.
- *To further creativity and pursuit of excellence in computer applications*
- Facilitate overall understanding of the requirements of the IT subjects.
- Analytical and computational approaches on and face the challenges boldly.
- To apply new designs and solutions to complex real life problems using existing and/or novel technologies.
- To inculcate comprehensive communication ability that is useful during professional communication and leading of teams in future.

3. Program Structure:

The Program is a three years (six semesters) Full Time Degree Program based on a credit system comprising 192 credits and as National Education Policy (NEP) 2020.

4. Duration:

The duration of the BCA degree program shall be of three years divided into six Semesters. i.e. BCA Part – I (Sem-I & II), BCA Part – II (Sem-III & IV), BCA Part – III (Sem V & VI) and [BCA Part – IV (Sem VII & VIII).]

5. Medium of Instruction: English

6. Eligibility Criteria for admission:

- A candidate is eligible for admission to the Degree in Bachelor of Computer Application after passing 12th Std. examination (H.S.C. 10+2) from any stream with English as passing subject and has secured 40% marks at 12th std.
- Three Years Diploma after S.S.C. i.e. 10th Standard of Board of Technical Education conducted by Government of Maharashtra or its equivalent.
- Two Years Diploma in Pharmacy after H.S.C., of the Board of Technical Education conducted by the Government of Maharashtra or its equivalent.
- MCVC

7. SYLLABUS STRUCTURE

Maharashtra Cosmopolitan Education Society's
Dr. P. A. INAMDAR UNIVERSITY, PUNE

BACHELOR OF COMPUTER APPLICATION (BCA)

PROPOSED SYLLABUS STRUCTURE
BCA 1st YEAR (Sem -I)

Semester I					
Sr. No	**Subject Name**	**Course Code**	**Credit**	**IA**	**EA**
1	Computer Fundamentals & Electronics	C101	4	30	70

2	Programming Paradigms & Concepts Using C	C102	4	30	70
3	Computer Network	C103	4	30	70
4	Technical Elective 1 - Principal of Management (Interdisciplinary)	ID1	2	25	25
5	Soft Skill I - English Vocabulary & written abilities (Multi disciplinary)	MD1	2	25	25
6	Practical / Lab - C Language	P102	4	30	70
7	Practical / Lab - Digital Electronics	P101	4	30	70
TOTAL			**24**	**600**	

BCA 1st YEAR (Sem -II)

Semester II					
Sr. No	**Subject Name**	**Course Code**	**Credit**	**IA**	**EA**
1	Data Structure using C	C201	4	30	70
2	Web Technologies HTML, CSS & JS	C202	4	30	70
3	Object Oriented Software Engineering	C203	4	30	70
4	Technical Elective 2 - Mathematic for Computer Science (Interdisciplinary)	ID2	2	25	25
5	Soft Skill II - Spoken English & Verbal Communication (Multi disciplinary)	MD2	2	25	25
6	Practical / Lab - Data Structure	P201	4	30	70
7	Practical / Lab - Web Technologies HTML & CSS	P202	4	30	70
TOTAL			**24**	**600**	

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BACHELOR OF COMPUTER APPLICATION (BCA)

PROPOSED SYLLABUS STRUCTURE
BCA 2nd YEAR (Sem-III)

Semester III					
Sr. No	**Subject Name**	**Course Code**	**Credit**	**IA**	**EA**
1	Web Technologies -JavaScript & Angular	C301	4	30	70
2	DBMS	C302	4	30	70
3	Core Java	C303	4	30	70

4	Technical Elective III - Probability & Combinatorics	ID3	2	25	25
5	Soft Skill -3 Presentations Skills & Time management (Multi disciplinary)	MD3	2	25	25
6	Practical / Lab - Core Java	P303	4	30	70
7	Practical / Lab - Web Technologies - JavaScript & Angular	P301	4	30	70
TOTAL			**24**	**600**	

BCA 2nd YEAR (Sem-IV)

Semester IV					
Sr. No	**Subject Name**	**Course Code**	**Credit**	**IA**	**EA**
1	Advanced Database Management System (ADBMS)	C401	4	30	70
2	Advance Java	C402	4	30	70
3	Discrete Mathematic	C403	4	30	70
4	Technical Elective 4 (Interdisciplinary)	ID4	2	25	25
5	Soft Skill -PI & Group Discussions (Multi disciplinary)	MD4	2	25	25
6	Practical / Lab - Advance Java	P402	4	30	70
7	Practical / Lab - ADBMS	P401	4	30	70
TOTAL			**24**	**600**	

BCA 3rd YEAR (Sem-V)

Semester V					
Sr. No	**Subject Name**	**Course Code**	**Credit**	**IA**	**EA**
1	Advanced Web Technology using PHP	C501	4	30	70
2	Operating System & Introduction to Linux	C502	4	30	70
3	Software Testing	C503	4	30	70
4	Mini project	ITP1	4	30	70

5	Practical / Lab - Advanced Web Technologies using PHP	P501	4	30	70
6	Practical / Lab - Windows, Linux	P502	4	30	70
TOTAL			**24**	**600**	

BCA 3rd YEAR (Sem-VI)

Semester VI					
Sr. No	**Subject Name**	**Course Code**	**Credit**	**IA**	**EA**
1	Data Science using Python	C601	4	30	70
2	Mobile Application Development	C602	4	30	70
3	Major Project I	ITP2	8	100	100
4	Practical / Lab - Data Science using Python	P601	4	30	70
5	Practical / Lab - Mobile Application Development	P602	4	30	70
TOTAL			**24**	**600**	

BCA 4th YEAR (Sem-VII)

Semester VII					
Sr. No	**Subject Name**	**Course Code**	**Credit**	**IA**	**EA**
1	ASP.Net using C#	C701	4	30	70
2	Data warehousing & Data Mining	C702	4	30	70
3	Major Project II	ITP3	8	100	100
4	Practical / Lab - Data Warehousing & Data Mining	P702	4	30	70
5	Practical / Lab - ASP.Net using C#	P701	4	30	70
TOTAL			**24**	**600**	

BCA 4Th YEAR (Sem-VIII)

Semester VIII					
Sr. No	**Subject Name**	**Course Code**	**Credit**	**IA**	**EA**
1	Cyber Security and Ethical Hacking	C801	4	30	70
2	Artificial Intelligence - Machine Learning	C802	4	30	70
3	Practical / Lab - AIML using Python	P802	4	30	70
4	IT Industry Project	ITP4	8	100	100
5	Research Project	ITP5	4	30	70
TOTAL			**24**	**600**	

7.2 List of Open Electives

Open Elective 1	**Open Elective 2**	**Open Elective 3**	**Open Elective 4**
Mathematic for Computer Science	Database Administration	Cloud Computing	DevOps
Internet of Things	C# Programming	Linux Administration	Block Chain
Optimization Techniques	Probability & Graph Theory	Statistical Techniques	Research Methodology
Spreadsheet handling	Digital Marketing	Web Analytics	Visualization Tool (Power BI/ Tableau)
Web scraping Tool (Beautiful soup)			

7.3 List of Value-added Electives.

Value Added Elective 1	**Value Added Elective 2**	**Value Added Elective 3**	**Value Added Elective 4**
Soft Skill - English Vocabulary & written abilities	Soft Skill - Spoken English & Verbal Communication	Presentations Skills	PI & Group Discussions Skills
Time Management Skills	Cupping Therapy	Catering & Hotel Management	Basic Oral Hygiene

8. Grading System for Programs under Management Studies:

8.1. **Grade Points:** The Faculty of Computer Application and IT, Dr. P.A. Inamdar University has suggested a 10-point grading system for all programs 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 I below.

Table I: The 10-point Grading System Adapted for Programs

Range of Percent Marks	[80,100] [00,39]	[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 ≤ Marks≤10x	10
5.5x ≤ Marks≤8x	Truncate (M/x) +2
4x ≤ Marks≤5.5x	Truncate (M/x) +1

8.2. **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

9. Award of Credits:

- Each semester consists of 3 Generic Core Subjects, one interdisciplinary Subject and one multidisciplinary Subject followed by Practical / Mini Project / Major Project.
- Each Generic core subject is of 4 credits shall be evaluated out of100 marks (30 Internal Assessment and 70 Term End Assessment) and students should secure at least 40 marks to earn full credits of that course.

- Each interdisciplinary and multidisciplinary subject is of 2 credits shall be evaluated out of 50 marks (25 Internal Assessment and 25 Term End Assessment) and students should secure at least 28 marks to earn full credits of that course.

10. Evaluation Pattern:

- Each course carrying 100 marks shall be evaluated with Internal Assessment (IA) and University Evaluation (UE) mechanism. Continuous assessment shall be of 30 marks while University Evaluation shall be of 70 marks. To pass the course, a student must secure a minimum 40 marks provided that he should secure a minimum 28 marks in University Evaluation (UE).
- IA shall be based on internal tests (minimum 2 for 20 marks). In addition, for the remaining 10 marks a teacher may assign various activities such as home assignments, 3 tutorials, seminars, presentations, group discussion etc, to the students and evaluate them accordingly.

11. Method of Evaluation and Evaluation Criteria: -

11.1 Internal Assessment 30 marks for all theory related subjects 2. Practical and Project will be evaluated separately University examination will be 50 marks.

Instructions for teachers for internal evaluation for 30 Marks - The purpose of internal evaluation is to assess the depth of knowledge, understanding and awareness. For this purpose a teacher is expected to use different evaluation methods in order to have rational and objective assessment of the learners and available resources.

The class work will carry 30 marks in each course. Internal Evaluation includes continuous evaluation of a student by adopting a variety of techniques such as Assignments, Presentation, Internal examination, Group Discussions, Projects etc.

There shall be two minor projects and one major project for internal and university evaluation as compulsory part of assessment (Semester V, VI, VI & VII).

11.2 Internship and Project Examination

For the course on Practical and Project work as per the regular practice there will be a Written Report and a viva presentation of 100 marks at DRPAIU level.

11.3 External Examination: - There will be a written Examination of 70 marks and 3 hrs duration for every course at the end of each Semester. Setting of Question Papers (Applicable to theory subjects)

a. A candidate shall have to answer the questions in all the subjects in English only.
b. Question papers shall be framed to ensure that no part of the syllabus is left out of study by a candidate.
c. Question papers shall be balanced in respect of various topics outlined in the syllabus.
d. The question papers shall have a combination of long, short answer and MCQ type questions.

12. Completion of Degree Program:

A student who earns 192 credits, shall be considered to have completed the requirements of the B.C.A. degree program and CGPA will be calculated for such students.