BACHELOR OF COMPUTER APPLICATION (B.C.A.):

Duration : Three Years.

Eligibility : 10 + 2 OR its equivalent with Maths as compulsory subject. Medium of Instructions : English.

Students of BCA should be able to:

- **PO1:** Apply advanced level knowledge, techniques, skills and modern tools of computer science for the benefits of the society.
- **PO2:** Manage projects related to computer science in multidisciplinary environments.
- **PO3:** Use a range of programming languages and tools to develop computer programs to solve problems effectively.
- **PO4:** Design, and analyze precise specifications of algorithms, procedures, and interaction behavior.
- **PO5**: To develop the solution for the individual problem/s using the coding and/or logical techniques and skill sets learnt/ acquired in three years.

The computer application sector offers a wide range of specialist jobs that are challenging as the machines become more and more sophisticated, demanding new skills or different combinations of existing ones. The BCA course is an excellent platform for those aiming to enter into the computer profession. After successful completion of BCA one can opt for post graduate course such as MCA or MBA after which they are absorbed by the corporate companies in the following capacities :

JOB PROSPECTS :

- Software Engineer
- Database Administrator
- Programmer

• Software Consultant

- Test Engineer
- Quality Assurance Engineer
- Network Engineer
- System Analyst

FIRST YEAR (SEMESTER-II)

Paper/

Practical

Paper-I

Paper-II

Paper-III

Paper-IV

Paper-V

Paper-VI

Practical-III

• Technical Support Engineer

English

Title of Paper

Marathi/Hindi/Urdu/Gujarati/

Programming in C++

Numerical Methods

E Commerce

System Analysis & Design

Discrete Mathematics-II

Linux Operating System

Sanskrit/Supplementary English

Practical-III based on Paper-V & Paper-VI

FIRST YEAR (SEMESTER-I)

Sr. No.	Paper/ Practical	Title of Paper	Sr. No.
1	-	English	1
2	-	Marathi/Hindi/Urdu/Gujarati/ Sanskrit/Supplementary English	2
3	Paper-I	Computer Fundamental	3
4	Paper-II	'C' Programming	4
5	Paper-III	Statistical Methods	5
6	Paper-IV	Discrete Mathematics-I	6
7	Paper-V	Operating Systems	7
8	Paper-VI	Office Automation	8
9	Practical-I	Practical-I based on Paper-I & Paper-II	9
10	Practical-II	Practical-II based on Paper-II & Paper-IV	10
11	Practical-III	Practical-III based on Paper-V & Paper-VI	11

SECOND YEAR (SEMESTER-III)

9 Practical-I Practical-I based on Paper-I & Paper-II 10 Practical-II Practical-II based on Paper-II & Paper-IV

SECOND	YEAR	(SEMESTER-IV))

Sr. No.	Paper/ Practical	Title of Paper	Sr. No.	Paper/ Practical	Title of Paper
1	Paper-I	Visual Basic Programming	1	Paper-I	Software Engineering-I
2	Paper-II	Data Base Management System	2	Paper-II	Sql. And Pl/Sql/
3	Paper-III	Data Structures	3	Paper-III	Theory of Computation
4	Paper-IV	Operations Research-I	4	Paper-IV	Operations Research-II
5	Paper-V	Web Technology-I	5	Paper-V	Web Technology-II
6	Paper-VI	Digital Electronics-I	6	Paper-VI	Digital Electronics-II
7	Practical-I	Practical-I based on Paper-I & Paper-II	7	Practical-I	Practical-I based on Paper-I & Paper-II
8	Practical-II	Practical-II based on Paper-II & Paper-IV	8	Practical-II	Practical-II based on Paper-II & Paper-IV
9	Practical-III	Practical-III based on Paper-V & Paper-VI	9	Practical-III	Practical-III based on Paper-V & Paper-VI

THIRD YEAR (SEMESTER-V)

THIRD YEAR (SEMESTER-VI)

Sr. No.	Paper/ Practical	Title of Paper	Sr. No.	Paper/ Practical	Title of Paper
1	Paper-I	Computer Graphics-I	1	Paper-I	Computer Graphics-II
2	Paper-II	Compiler Construction	2	Paper-II	Programming in Java
3	Paper-III	VB.Net	3	Paper-III	ASP.Net
4	Paper-IV	Software Engineering-II	4	Paper-IV	Software Testing
5	Paper-V	PHP-I	5	Paper-V	PHP-II
6	Paper-VI	Data Communication and Network-I	6	Paper-VI	Data Communication and Network-II
7	Practical-I	Practical-I based on Paper-I & Paper-II	7	Practical-I	Practical-I based on Paper-I & Paper-II
8	Practical-II	Practical-II based on Paper-II & Paper-IV	8	Practical-II	Practical-II based on Paper-II & Paper-IV
9	Practical-III	Practical-III based on Paper-V & Paper-VI	9	Practical-III	Practical-III based on Paper-V & Paper-VI

Note: 1) Minimum marks for passing will be 40% of the total marks allotted to that paper/practical.2) Candidate has to pass theory paper and practical separately.

3) Changes, if any, in the syllabus will be subject to those made by Rashtrasant Tukadoji Maharaj Nagpur University.

Course Outcomes of Bachelor Of Computer Application (BCA)		
SEMESTER - 1		
Paper-1	Computer Fundamentals	
CO1	Understand the meaning and basic components of computer system.	
CO2	Define and distinguish hardware and software components of computer systems.	
CO3	Gain knowledge about five generations of computer systems.	
CO4	Identify the various input and output units and their purpose.	
Paper-2	C Programming	
CO1	Understand and develop well-structured programs using C language.	
CO2	Understand the concept of problem solving and expression of solution through flowchart and algorithm.	
CO3	Able to use the concept of different memory allocation methods.	
CO4	Classify the various parts of program -data types, variables, operators, conditional & looping statements, functions, Pointers, Arrays, File handling.	
Paper-3	Statistical Methods	
CO1	Understand the concept of data collection, tabulation and classification.	
CO2	Describe various types of averages.	

CO3	Discuss the various methods of measuring dispersion.
CO4	Able to use the concept of correlation and regression.
Paper-4	Discrete Mathematics Structure- I
CO1	Understand the concept and working of propositional calculus with elementary formal logic.
CO2	Explain different types of normal forms.
CO3	Be familiar with constructing proofs.
CO4	Able to apply the knowledge of theory of inference.
Paper-5	Operating System
CO1	Understand the concept of Operating System.
001	enderstand die eoneept of operating System.
CO2	Describe the various memory management techniques.
CO2 CO3	Describe the various memory management techniques. Perform the analysis of performance comparison and understand the concept of deadlock and determine the solution of it.
CO2 CO3 CO4	Describe the various memory management techniques. Perform the analysis of performance comparison and understand the concept of deadlock and determine the solution of it. Discuss various methods of scheduling.
CO2 CO3 CO4 Paper-6	Describe the various memory management techniques. Perform the analysis of performance comparison and understand the concept of deadlock and determine the solution of it. Discuss various methods of scheduling. Office Automation

CO2	Able to use the concept and working of MS Word.				
CO3	Able to apply the knowledge of MS Excel.				
CO4	Able to use the concept of MS Powerpoint.				
	SEMESTER-2				
Paper-1	Programming in C++				
CO1	Understanding of Object Oriented design & program implementation by using OO language feature.				
CO2	Able to use the concept of constructor and destructor, operator overloading.				
CO3	Able to apply the knowledge of Inheritance and its types.				
CO4	Describe the type of Exception handling methods.				
Paper-2	System Analysis & Design				
CO1	Learn about the organizational and business context of systems development.				
CO2	Learn to explain and apply system development methodologies, model, tools and techniques for developing quality software.				
CO3	Learn to describe, organize and structure the components of system, including decisions about the system's hardware, software and network environment.				
CO4	Learn about implementation, software testing, and deployment issues.				
Paper-3	Numerical Methods				

CO1	Determine the solution of algebraic transcendental equations using appropriate Numerical Methods.
CO2	Solve a differential equations using appropriate Numerical methods.
CO3	Solve a linear system of equations using appropriate Numerical methods.
CO4	Calculate a definite integral using an appropriate Numerical methods.
Paper-4	Discrete Mathematics Structure II
CO1	Understand the concept of set and describe the types of sets.
CO2	Able to explain various properties and operations on sets.
CO3	Be familiar with recurrence relations
CO4	Use the concept and apply the knowledge of graphs and trees, relations and functions
Paper-5	Linux Operating Systems
CO1	Understand the concept of Linux Operating System its file structure and shell.
CO2	Discuss the various basic commands.
CO3	Understand the working of vi editor.
CO4	Manage user accounts, changing password and access to the files.

Paper-6	E Commerce
CO1	Understand the concept of E commerce, E market and value chain models.
CO2	Use the concept of business strategies in IT age.
CO3	Understand the working principle of business to business Ecommerce.
CO4	Perform the analysis of Business to consumer E commerce.