

# PROGRAM: BACHELOR OF COMPUTER APPLICATIONS (B. C. A)

## PROGRAM OUTCOMES (POs)

At the end of the Program students will be able to:	
<b>PO 1</b>	<b>Identify, formulate and analyze</b> problems.
<b>PO 2</b>	<b>Analyze and interpret</b> data to draw valid conclusions.
<b>PO 3</b>	<b>Communicate</b> effectively.
<b>PO 4</b>	<b>Develop</b> professional ethics and responsibilities.
<b>PO 5</b>	<b>Apply</b> accounting and management principles.
<b>PO 6</b>	Use software systems to <b>create/solve</b> applications/tasks.
<b>PO 7</b>	<b>Design and implement</b> software systems.

<b>COURSE OUTCOMES (COs)</b>	
<b>SEMESTER-I</b>	
<b>1. CC-101 ( Problem Solving and Programming Concepts ) [4 credits]</b>	
At the end of the course students will be able to:	
<b>CO 1</b>	<b>Classify</b> programming languages.
<b>CO 2</b>	<b>Design</b> solutions to computer problems using algorithms, pseudo-code and flowcharts.
<b>CO 3</b>	<b>Detect and correct</b> programming errors.
<b>2. CC-102 (Computer Organization and Architecture ) [4 credits]</b>	
At the end of the course students will be able to:	
<b>CO 1</b>	<b>Explain</b> computer organization and architecture.
<b>CO 2</b>	<b>Compute</b> arithmetic operations on number systems.
<b>CO 3</b>	<b>Compare</b> different types of processor, memory and Input/Output system.
<b>3. CC-103 (Basic Mathematics) [4 credits]</b>	
At the end of the course students will be able to:	
<b>CO 1</b>	<b>Solve</b> algebraic problems using mathematical techniques.
<b>CO 2</b>	<b>Examine</b> the continuity of the real valued functions.
<b>CO 3</b>	<b>Solve</b> problems on elementary geometry and vectors.
<b>CO 4</b>	<b>Use</b> trigonometric functions to solve related problems.

**4. CC-104 (Problem Solving and Programming Laboratory) [2 credits]**

At the end of the course students will be able to:

<b>CO 1</b>	<b>Implement</b> simple algorithms as executable computer programs using IDE.
<b>CO 2</b>	<b>Generate</b> documentation for programs using C language.
<b>CO 3</b>	<b>Develop</b> programs using advanced programming constructs.

**5. GE-101 (Business Accounting) [4 credits]**

At the end of the course students will be able to:

<b>CO 1</b>	<b>Prepare</b> Final Accounts of a company.
<b>CO 2</b>	<b>Calculate</b> depreciation on assets using different methods.

**6. AECC-101 (Environmental Studies) [2 credits]**

At the end of the course students will be able to:

<b>CO 1</b>	<b>Identity</b> different types of natural resources.
<b>CO 2</b>	<b>Explain</b> the relation between man and environment.
<b>CO 3</b>	<b>Analyze</b> the impact of human activities on environment.
<b>CO 4</b>	<b>Identify and apply</b> various measures to be adopted for sustainable development.
<b>CO 5</b>	<b>Make</b> judicious use of the natural resources.
<b>CO 6</b>	<b>Play</b> an active role in the protection of the environment.

**7. SEC-101 (IT Tools Laboratory) [2 credits]**

At the end of the course students will be able to:

<b>CO 1</b>	<b>Evaluate</b> different PC components.
<b>CO 2</b>	<b>Use</b> various Office Productivity Tools and Internet Applications.
<b>CO 3</b>	<b>Implement</b> Learning Management System.

## SEMESTER-II

### 8. CC-201 (Data Structures) [4 credits]

At the end of the course students will be able to:

CO 1	<b>Construct</b> algorithms for various operations on given data structures.
CO 2	<b>Analyze</b> algorithms for sorting and searching operations.
CO 3	<b>Compute</b> hash tables.
CO 4	<b>Formulate</b> solutions using data structures.

### 9. CC-202 (Operating Systems Concepts ) [4 credits]

At the end of the course students will be able to:

CO 1	<b>Explain</b> structure and functions of operating system.
CO 2	<b>Solve</b> problems on scheduling algorithms for a given scenario.
CO 3	<b>Identify</b> security threats.

### 10. CC-203 (Applied Mathematics) [4 credits]

At the end of the course students will be able to:

CO 1	<b>Use</b> basic discrete structures and algorithms.
CO 2	<b>Prove</b> different properties of relations and functions.
CO 3	<b>Apply</b> Permutation and Combination to determine probabilities.
CO 4	<b>Solve</b> problems using discrete mathematical theorems and principle.

### 11. CC-204 (Data Structures Laboratory) [2 credits]

At the end of the course students will be able to:

CO 1	<b>Demonstrate</b> the working of dynamic memory allocation and recursion.
CO 2	<b>Build</b> libraries for given data structure.
CO 3	<b>Implement</b> sorting and searching methods.
CO 4	<b>Solve</b> problems using data structures.

### 12. GE-201 (Cost Accounting) [4 credits]

At the end of the course students will be able to:

CO 1	<b>Explain</b> different methods and techniques of costing.
CO 2	<b>Prepare</b> Cost Sheet and Wage Sheet.
CO 3	<b>Prepare</b> Contract Account and Process Account.

**13. AECC-201 (Environmental Studies) [2 credits]**

At the end of the course students will be able to:

<b>CO 1</b>	<b>Identity</b> different types of natural resources.
<b>CO 2</b>	<b>Explain</b> the relation between man and environment.
<b>CO 3</b>	<b>Analyse</b> the impact of human activities on environment.
<b>CO 4</b>	<b>Identify and apply</b> various measures to be adopted for sustainable development.
<b>CO 5</b>	<b>Make</b> judicious use of the natural resources.
<b>CO 6</b>	<b>Play</b> an active role in the protection of the environment.

**14. SEC-201 (Operating Systems Laboratory) [2 credits]**

At the end of the course students will be able to:

<b>CO 1</b>	<b>Install</b> and Configure windows and linux operating system.
<b>CO 2</b>	<b>Use</b> DOS and Linux commands.
<b>CO 3</b>	<b>Develop</b> programs using shell script.
<b>CO 4</b>	<b>Use</b> online operating system.
<b>CO 5</b>	<b>Configure</b> TCP/IP.

**SEMESTER-III****15. Object Oriented Concepts**

At the end of the course students will be able to:

<b>CO 1</b>	<b>Explain</b> fundamentals of Object Oriented Programming.
<b>CO 2</b>	<b>Use</b> various OOP concepts to solve programming problems.
<b>CO 3</b>	<b>Analyze</b> new Object oriented technologies.

**16. Database Management Systems**

At the end of the course students will be able to:

<b>CO 1</b>	<b>Explain</b> database management system and its features.
<b>CO 2</b>	<b>Construct</b> E-R diagram for the given problem statement.
<b>CO 3</b>	<b>Design</b> a database for the given problem specification.

### 17. Management Accounting

At the end of the course students will be able to:

CO 1	<b>Differentiate between</b> Management accounting, Financial accounting and Cost accounting.
CO 2	<b>Apply</b> different tools and techniques of management accounting.
CO 3	<b>Explain</b> Management reporting.

### 18. Introduction to Economics

At the end of the course students will be able to:

CO 1	<b>Identify</b> the different market structures.
CO 2	<b>Analyze</b> demand and supply curve.
CO 3	<b>Calculate</b> Price, Income and Cross elasticity of demand.
CO 4	<b>Express</b> the laws related to production function.
CO 5	<b>Explain</b> the theories related to factor pricing.

### 19. Object Oriented Programming Laboratory

At the end of the course students will be able to:

CO 1	<b>Use</b> object oriented programming constructs.
CO 2	<b>Develop</b> applications using OOP concepts in JAVA.

### 20. Database Management Systems Laboratory

At the end of the course students will be able to:

CO 1	<b>Apply</b> relational model principles to create relations adhering to its constraints.
CO 2	<b>Implement</b> a database for the given problem specification.
CO 3	<b>Manage</b> a database.

### 21. Communication and Presentation Skills

At the end of the course students will be able to:

CO 1	<b>Explain</b> the fundamentals of Communication.
CO 2	<b>Execute</b> effective oral presentations.
CO 3	<b>Use</b> various tools of presentation.
CO 4	<b>Demonstrate</b> effective communication skills in an interview.

## SEMESTER-IV

### 22. Software Engineering

At the end of the course students will be able to:

<b>CO 1</b>	<b>Explain</b> the fundamentals of software development.
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<b>CO 2</b>	<b>Differentiate</b> between software development methodologies.
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<b>CO 3</b>	<b>Design</b> UML diagrams.
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<b>CO 4</b>	<b>Construct</b> Gantt chart for software project scheduling.
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### 23. Computer Networks

At the end of the course students will be able to:

<b>CO 1</b>	<b>Explain</b> the origins of the modern-day Internet and data security.
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<b>CO 2</b>	<b>Encode</b> given bit stream and <b>correct</b> transmission errors.
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<b>CO 3</b>	<b>Differentiate</b> between various communication algorithms and protocols.
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<b>CO 4</b>	<b>Design</b> subnets.
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### 24. Management Functions

At the end of the course students will be able to:

<b>CO 1</b>	<b>Explain</b> concept of management along with its functions within an organisational framework.
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### 25. Data Analysis and Statistical Techniques

At the end of the course students will be able to:

<b>CO 1</b>	<b>Calculate</b> probabilities used in probability theory.
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<b>CO 2</b>	<b>Test</b> a statistical hypothesis.
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<b>CO 3</b>	<b>Carry</b> out linear regression analysis.
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<b>CO 4</b>	<b>Interpret</b> the data using descriptive statistics.
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<b>CO 5</b>	<b>Describe</b> basic data mining algorithms and methods.
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### 26. Graphical Interface Design Laboratory

At the end of the course students will be able to:

<b>CO 1</b>	<b>Explain</b> the importance of GUI in software systems.
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<b>CO 2</b>	<b>Develop</b> GUI applications with databases.
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### 27. Data Analysis and E-Accounting Laboratory

At the end of the course students will be able to:

<b>CO 1</b>	<b>Formulate</b> Linear Programming Problems (LPP).
<b>CO 2</b>	<b>Use</b> MS Equation Solver to solve Linear Programming Problems, Transportation Cost Problems and Work Assignment Problems.
<b>CO 3</b>	<b>Perform</b> Data Analysis using MATLAB and statistical package software.
<b>CO 4</b>	<b>Use</b> accounting software for managing accounts.

### 28. Technical Writing Skills

At the end of the course students will be able to:

<b>CO 1</b>	<b>Explain</b> the principles of Correspondence.
<b>CO 2</b>	<b>Develop</b> Letter writing skills of different types.
<b>CO 3</b>	<b>Draft</b> media articles depending on their types.
<b>CO 4</b>	<b>Compose</b> effective advertisements.
<b>CO 5</b>	<b>Draft</b> tender notices.

## SEMESTER-V

### 29. Software Testing

At the end of the course students will be able to:

<b>CO 1</b>	<b>Explain</b> the need and concept of software testing and maintenance.
<b>CO 2</b>	<b>Perform</b> software testing using various techniques.
<b>CO 3</b>	<b>Design</b> Test Cases.

### 30. Web Technology

At the end of the course students will be able to:

<b>CO 1</b>	<b>Explain</b> origins, background and protocols of World Wide Web.
<b>CO 2</b>	<b>Demonstrate</b> working of client server applications.
<b>CO 3</b>	<b>Design and Style</b> static/dynamic web pages using HTML, CSS and PHP.
<b>CO 4</b>	<b>Explain</b> security in web applications.

**31. ERP Systems (CS – Elective)**

At the end of the course students will be able to:

<b>CO 1</b>	<b>Explain</b> the evolution of ERP, related technologies and its implementation.
<b>CO 2</b>	<b>Develop</b> ERP software.

**32. Android Programming (CS – Elective)**

At the end of the course students will be able to:

<b>CO 1</b>	<b>Explain</b> the Android operating system and its architecture.
<b>CO 2</b>	<b>Develop</b> an android application and publish it on various platforms.

**33. Human Resource Management (NCS – Elective)**

At the end of the course students will be able to:

<b>CO 1</b>	<b>Explain</b> Human Resource management Practices.
<b>CO 2</b>	<b>Implement</b> the performance appraisal methods.
<b>CO 3</b>	<b>Evaluate</b> Time Management.
<b>CO 4</b>	<b>Explain</b> Counselling with reference to career development.

**34. Web Technology Laboratory**

At the end of the course students will be able to:

<b>CO 1</b>	<b>Setup</b> a web server.
<b>CO 2</b>	<b>Develop</b> a web based database application.



## SEMESTER-VI

### 35. Management Information Systems

At the end of the course students will be able to:

<b>CO 1</b>	<b>Identify</b> the various Knowledge Management Activities.
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<b>CO 2</b>	<b>Classify</b> different information systems used in organizations.
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<b>CO 3</b>	<b>Analyse</b> some real- world information systems.
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### 36. Multimedia Technology

At the end of the course students will be able to:

<b>CO 1</b>	<b>Explain</b> fundamentals, types and applications of multimedia.
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<b>CO 2</b>	<b>Compare</b> different audio, video and graphics file formats and their editing effects.
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### 37. E-Commerce (CS Elective-II)

At the end of the course students will be able to:

<b>CO 1</b>	<b>Explain</b> business applications of e-commerce.
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<b>CO 2</b>	<b>Construct</b> a website specification/design document.
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<b>CO 3</b>	<b>Evaluate</b> a given website.
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<b>CO 4</b>	<b>Compare</b> EDI and its features, Electronic payment systems and security in E-Commerce.
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### 38. Fundamentals of Marketing (NCS Elective-II)

At the end of the course students will be able to:

<b>CO 1</b>	<b>Explain</b> basic Concepts of Marketing and 4P's of Marketing.
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### 39. Multimedia Laboratory

At the end of the course students will be able to:

<b>CO 1</b>	<b>Create</b> and edit graphics, audio streams and video streams.
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<b>CO 2</b>	<b>Develop</b> animated graphics.
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#### **40. Project Work**

At the end of course students will be able to:

<b>CO 1</b>	<b>Create</b> and document project findings.
<b>CO 2</b>	<b>Work</b> in a team environment.
<b>CO 3</b>	<b>Design</b> and <b>Implement</b> a software system.