

**Unified Syllabus by**  
**Department of Computer Science, University of Lucknow**  
**Bachelors of Computer Application**  
**Semester-wise breakup of course**

**Semester-I<sup>st</sup>**

<b>Course Code</b>	<b>Course Name</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
BCA-S101T	Computer Fundamental & Office Automation	3	0	0	3
BCA-S102T	Programming Principle & Algorithm	3	0	0	3
BCA-S103T	Principle of Management	4	0	0	4
BCA-S104T	Business Communication	3	1	0	4
BCA-S105T	Mathematics –I	4	0	0	4
BCA-S101P	Computer Laboratory and Practical Work of Office	0	0	3	2
	Computer Laboratory and Practical Work of Programming Principle & Algorithm	0	0	3	2
					22

**Semester-II<sup>nd</sup>**

<b>Course Code</b>	<b>Course Name</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
BCA-S106T	C Programming	3	0	0	3
BCA-S107	Digital Electronics & Computer Organization	3	1	0	4
BCA-S108	MIS (Management Information system)	4	0	0	4
BCA-S109	Financial Accounting & Management	3	1	0	4
BCA-S110	Mathematics II	4	0	0	4
BCA-S106P	Computer Laboratory and Practical Work of C Programming	0	0	6	3
					22

=

# Unified Syllabus by

Department of Computer Science, University of Lucknow

## Bachelors of Computer Application

Semester-wise breakup of course

Course Code	Course Name	L	T	P	C
BCA-S101T	Computer Fundamental & Office Automation	3	0	0	3

### UNIT-I

#### Introduction to Computers

Introduction, Characteristics of Computers, Block diagram of computer. Types of computers and features, Mini Computers, Micro Computers, Mainframe Computers, Super Computers. Types of Programming Languages (Machine Languages, Assembly Languages, High Level Languages). Data Organization, Drives, Files, Directories. Types of Memory (Primary And Secondary) RAM, ROM, PROM, EPROM. Secondary Storage Devices (FD, CD, HD, Pen drive) I/O Devices (Scanners, Plotters, LCD, Plasma Display) Number Systems Introduction to Binary, Octal, Hexadecimal system Conversion, Simple Addition, Subtraction, Multiplication.

### UNIT-II

#### Algorithm and Flowcharts

Algorithm: Definition, Characteristics, Advantages and disadvantages, Examples Flowchart: Definition, Define symbols of flowchart, Advantages and disadvantages, Examples.

### UNIT-III

#### Operating System and Services in O.S.

Dos – History, Files and Directories, Internal and External Commands, Batch Files, Types of O.S.

**Windows Operating Environment** Features of MS – Windows, Control Panel, Taskbar, Desktop, Windows Application, Icons, Windows Accessories, Notepad, Paintbrush.

### UNIT-IV

#### Editors and Word Processors

Basic Concepts, Examples: MS-Word, Introduction to desktop publishing. **Spreadsheets and Database packages** Purpose, usage, command, MS-Excel, Creation of files in MS-Access, Switching between application, MS-PowerPoint.

#### Text Books :

1. Fundamental of Computers – By V.Rajaraman B.P.B. Publications
2. Fundamental of Computers – By P.K. Sinha
3. MS-Office 2000(For Windows) – By Steve Sagman

**Unified Syllabus by**  
**Department of Computer Science, University of Lucknow**  
**Bachelors of Computer Application**  
**Semester-wise breakup of course**

Course Code	Course Name	L	T	P	C
BCA-S102T	Programming Principle & Algorithm	3	0	0	4

**UNIT-I**

**Introduction to 'C' Language**

History, Structures of 'C' Programming, Function as building blocks. **Language Fundamentals** Character set, C Tokens, Keywords, Identifiers, Variables, Constant, Data Types, Comments.

**UNIT-II**

**Operators**

Types of operators, Precedence and Associativity, Expression, Statement and types of statements

**Build in Operators and function** Console based I/O and related built in I/O function: printf(), scanf(), getch(), getchar(), putchar(); Concept of header files, Preprocessor directives: #include, #define.

**UNIT-III**

**Control structures**

Decision making structures: If, If-else, Nested If-else, Switch; Loop Control structures: While, Do-while, for, Nested for loop; Other statements: break, continue, goto, exit. **Introduction to problem solving** Concept: problem solving, Problem solving techniques (Trail & Error, Brain Storming, Divide & Conquer) Steps in problem solving (Define Problem, Analyze Problem, Explore Solution) Algorithms and Flowcharts (Definitions, Symbols), Characteristics of an algorithm Conditionals in pseudo-code, Loops in pseudo code. Time complexity: Big-Oh notation, efficiency Simple Examples: Algorithms and flowcharts (Real Life Examples).

**UNIT-IV**

**Simple Arithmetic Problems**

Addition / Multiplication of integers, Determining if a number is +ve / -ve / even / odd, Maximum of 2 numbers, 3 numbers, Sum of first n numbers, given n numbers, Integer division, Digit reversing, Table generation for  $n$ ,  $a^b$ , Factorial, sine series, cosine series,  ${}^nC_r$ , Pascal Triangle, Prime number, Factors of a number, Other problems such as Perfect number, GCD numbers etc (Write algorithms and draw flowchart), Swapping. **Functions** Basic types of function, Declaration and definition, Function call, Types of function, Parameter passing, Call by value, Call by reference, Scope of variable, Storage classes, Recursion.

**Referential Books :**

1. Programming in C-Balguruswamy
2. The C programming Lang., Pearson Ecl - Dennis Ritchie
3. Structured programming approach using C- Forouzah & Ceilber Thomson learning publication.

# Unified Syllabus by

Department of Computer Science, University of Lucknow

## Bachelors of Computer Application

### Semester-wise breakup of course

Course Code	Course Name	L	T	P	C
BCA-S103	Principle of Management	4	0	0	4

#### UNIT-I

**Nature of Management:** Meaning, Definition, its nature purpose, importance & Functions, Management as Art, Science & Profession- Management as social System Concepts of management-Administration-Organization, Management Skills, Levels of Management. **Evolution of Management Thought:** Contribution of F.W.Taylor, Henri Fayol, Elton Mayo, Chester Barhard & Peter Drucker to the management thought. Business Ethics & Social Responsibility: Concept, Shift to Ethics, Tools of Ethics.

#### UNIT-II

**Functions of Management: Part-I** Planning – Meaning- Need & Importance, types, Process of Planning, Barriers to Effective Planning, levels – advantages & limitations. Forecasting- Need & Techniques Decision making-Types - Process of rational decision making & techniques of decision making Organizing – Elements of organizing & processes: Types of organizations, Delegation of authority – Need, difficulties Delegation – Decentralization Staffing – Meaning & Importance Direction – Nature – Principles Communication – Types & Importance. **Functions of Management: Part-II** Motivation – Importance – theories Leadership – Meaning – styles, qualities & function of leader Controlling - Need, Nature, importance, Process & Techniques, Total Quality Management Coordination – Need – Importance. Management of Change: Models for Change, Force for Change, Need for Change, Alternative Change Techniques, New Trends in Organization Change, Stress Management. **Strategic Management** Definition, Classes of Decisions, Levels of Decision, Strategy, Role of different Strategist, Relevance of Strategic Management and its Benefits, Strategic Management in India

#### UNIT-III

**Fundamentals of Organizational Behaviour** Nature, Scope, Definition and Goals of Organizational Behaviour; Fundamental Concepts of Organizational Behavior; Models of Organizational Behaviour; Emerging aspects of Organizational Behaviour: Meaning Cultural Diversity, Managing the Perception Process. **Perception, Attitude, Values and Motivation** Concept, Nature, Process, Importance, Management Behavioural aspect of Perception. Effects of employee attitudes; Personal and Organizational Values; Job Satisfaction; Nature and Importance of Motivation; Achievement Motive; Theories of Work Motivation: Maslow's Need Hierarchy Theory McGregers's Theory 'X' and Theory 'Y'.

#### UNIT-IV

**Personality** Definition of Personality, Determinants of Personality; Theories of Personality- Trait and Type Theories, The Big Five Traits, Mytes-Briggs Indicator; Locus of Control, SType A and Type B Assessment of Personality. **Work Stress** Meaning and definition of Stress, Symptoms of Stress; Sources of Stress: Individual Level, Group Level, Organizational Level; Stressors, Extra Organizational Stressors; Effect of Stress – Burnouts; Stress Management – Individual Strategies, Organizational Strategies; Employee Counselling **Group Behavior and Leadership** Nature of Group, Types of Groups; Nature and Characteristics of team; Team Building, Effective Teamwork; Nature of Leadership, Leadership Styles; Traits of Effective Leaders. **Conflict in Organizations** Nature of Conflict, Process of Conflict; Levels of Conflict – Intrapersonal, Interpersonal; Sources of Conflict; Effect of Conflict; Conflict Resolution, Meaning and types of Grievances & Process of Grievances Handling.

#### Text Books :

1. Essential of Management – Horold Koontz and Iteinz Weibrich- McGrawhills International
2. Management Theory & Practice – J.N.Chandan
3. Organizational Behavior Text, Cases and Games- By K.Aswathappa, Himalaya Publishing House, Mumbai, Sixth Edition (2005)
4. Organizational Behavior – Anjali Ghanekar

**Unified Syllabus by**  
**Department of Computer Science, University of Lucknow**  
**Bachelors of Computer Application**  
**Semester-wise breakup of course**

Course Code	Course Name	L	T	P	C
BCA-S104	Business Communication	3	1	0	4

**UNIT-I**

**Means of Communication:**

Meaning and Definition – Process – Functions – Objectives – Importance – Essentials of good communication – Communication barriers, 7C's of Communication.

**UNIT-II**

**Types of Communication:**

**Oral Communication:**

Meaning, nature and scope – Principle of effective oral communication – Techniques of effective speech – Media of oral communication (Face-to-face conversation – Teleconferences – Press Conference – Demonstration – Radio Recording – Dictaphone – Meetings – Rumour – Demonstration and Dramatisation – Public address system – Grapevine – Group Discussion – Oral report – Closed circuit TV). The art of listening – Principles of good listening.

**UNIT-III**

**Written Communication**

Purpose of writing, Clarity in Writing, Principle of Effective writing, Writing Techniques, Electronic Writing Process. **Business Letters & Reports:**

Need and functions of business letters – Planning & layout of business letter – Kinds of business letters – Essentials of effective correspondence, Purpose, Kind and Objective of Reports, Writing Reports. **Drafting of business letters:** Enquiries and replies – Placing and fulfilling orders – Complaints and follow-up Sales letters –Circular letters Application for employment and resume

**UNIT-IV**

**Information Technology for Communication:**

Word Processor – Telex – Facsimile(Fax) – E-mail – Voice mail –Internet – Multimedia – Teleconferencing – Mobile Phone Conversation – Video Conferencing –SMS – Telephone Answering Machine – Advantages and limitations of these types. **Topics Prescribed for workshop/skill lab** Group Discussion, Mock Interview, Decision Making in a Group

**Text Books :**

- 1) Business Communication – K.K.Sinha – Galgotia Publishing Company, New Delhi.
- 2) Media and Communication Management – C.S. Rayudu – Hikalaya Publishing House, Bombay.
- 3) Essentials of Business Communication – Rajendra Pal and J.S. Korlhalli- Sultan Chand & Sons, New Delhi.

# Unified Syllabus by

Department of Computer Science, University of Lucknow

## Bachelors of Computer Application

Semester-wise breakup of course

Course Code	Course Name	L	T	P	C
BCA-S105	Mathematics -I	4	0	0	4

### UNIT-I

#### **DETERMINANTS:**

Definition, Minors, Cofactors, Properties of Determinants MATRICES: Definition, Types of Matrices, Addition, Subtraction, Scalar Multiplication and Multiplication of Matrices, Adjoint, Inverse, Cramers Rule, Rank of Matrix Dependence of Vectors, Eigen Vectors of a Matrix, Caley-Hamilton Theorem (without proof).

### UNIT-II

#### **LIMITS & CONTINUITY:**

Limit at a Point, Properties of Limit, Computation of Limits of Various Types of Functions, Continuity at a Point, Continuity Over an Interval, Intermediate Value Theorem, Type of Discontinuities

### UNIT-III

#### **DIFFERENTIATION:**

Derivative, Derivatives of Sum, Differences, Product & Quotients, Chain Rule, Derivatives of Composite Functions, Logarithmic Differentiation, Rolle's Theorem, Mean Value Theorem, Expansion of Functions (Maclaurin's & Taylor's), Indeterminate Forms, L' Hospitals Rule, Maxima & Minima, Curve Tracing, Successive Differentiation & Liebnitz Theorem. **INTEGRATION:** Integral as Limit of Sum, Fundamental Theorem of Calculus( without proof.), Indefinite Integrals, Methods of Integration Substitution, By Parts, Partial Fractions, Reduction Formulae for Trigonometric Functions, Gamma and Beta Functions(definition).

### UNIT-IV

#### **VECTOR ALGEBRA:**

Definition of a vector in 2 and 3 Dimensions; Double and Triple Scalar and Vector Product and physical interpretation of area and volume.

#### **Text Books :**

1. B.S. Grewal, "Elementary Engineering Mathematics", 34th Ed., 1998.
2. Shanti Narayan, "Integral Calculus", S. Chand & Company, 1999
3. H.K. Dass, "Advanced Engineering Mathematics", S. Chand & Company, 9th Revised Edition, 2001.

## Unified Syllabus by

Department of Computer Science, University of Lucknow

### Bachelors of Computer Application

Semester-wise breakup of course

<b>Course Code</b>	<b>Course Name</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>BCA-S101P</b>	<b>Computer Laboratory and Practical Work of Office Automation</b> Practical will be based on Paper Office Automation: Covers UNIT-III, UNIT-IV, UNIT-V, UNIT-VI of Syllabus.	<b>0</b>	<b>0</b>	<b>3</b>	<b>2</b>
	<b>Computer Laboratory and Practical Work of Programming Principle &amp; Algorithm</b> Practical will be based on Paper Programming Principle & Algorithm: Covers UNIT-III, UNIT-IV, UNIT-V, UNIT-VI of Syllabus	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
		<b>0</b>	<b>0</b>	<b>3</b>	<b>2</b>

# Unified Syllabus by

Department of Computer Science, University of Lucknow

## Bachelors of Computer Application

Semester-wise breakup of course

Course Code	Course Name	L	T	P	C
BCA-S106T	C Programming	3	0	0	3

### UNIT-I

#### Arrays

Definition, declaration and initialization of one dimensional array; Accessing array elements; Displaying array elements; Sorting arrays; Arrays and function; Two-Dimensional array: Declaration and Initialization, Accessing and Displaying, Memory representation of array [Row Major, Column Major]; Multidimensional array

### UNIT-II

#### Pointers

Definition and declaration, Initialization; Indirection operator, address of operator; pointer arithmetic; dynamic memory allocation; arrays and pointers; function and pointers

### UNIT-III

#### Strings

Definition, declaration and initialization of strings; standard library function: strlen(), strcpy(), strcat(), strcmp(); Implementation without using standard library functions. **Structures** Definition and declaration; Variables initialization; Accessing fields and structure operations; Nested structures; Union: Definition and declaration; Differentiate between Union and structure.

### UNIT-IV

#### Introduction C Preprocessor

Definition of Preprocessor; Macro substitution directives; File inclusion directives; Conditional compilation. **Bitwise Operators** Bitwise operators; Shift operators; Masks; Bit field. **File handling** Definition of Files, Opening modes of files; Standard function: fopen(), fclose(), feof(), fseek(), rewind(); Using text files: fgetc(), fputc(), fscanf() **Command line arguments.**

#### Text Books:

1. Programming in C-Balguruswamy
2. The C programming Lang., Person Ecl – Dennis Ritchie
3. Structured programming approach using C-Forouzah & Ceilberg Thomson learning publication.



# Unified Syllabus by

Department of Computer Science, University of Lucknow

## Bachelors of Computer Application

Semester-wise breakup of course

Course Code	Course Name	L	T	P	C
BCA-S107	Digital Electronics & Computer Organization	3	1	0	4

### UNIT-I

#### Logic gates and circuit

Gates (OR, AND, NOR, NAND, XOR & XNOR); Demorgan's laws; Boolean laws, Circuit designing techniques (SOP, POS, K-Map).

### UNIT-II

#### Combinational Building Blocks

Multiplexes; Decoder; Encoder; Adder and Subtractor.

### UNIT-III

#### Memories

ROMs, PROMs, EPROMs, RAMs, Hard Disk, Floppy Disk and CD-ROM.

### UNIT-IV

#### Sequential Building Blocks

Flip-Flop (RS, D, JK, Master-slave & T flip-flops); Registers & Shift registers; Counters; Synchronous and Asynchronous Designing method. **Memory Organization:** Basic cell of static and dynamic RAM; Building large memories using chips; Associative memory; Cache memory organization and Virtual memory organization.

#### Text Books:

1. Computer Architecture (PHI) 1998 : M.M. Mano
2. Digital Electronics (TMH) 1998 : Malvino and Leach
3. Computer Organization and Architecture : William Stallings

**Unified Syllabus by**  
**Department of Computer Science, University of Lucknow**  
**Bachelors of Computer Application**  
**Semester-wise breakup of course**

<b>Course Code</b>	<b>Course Name</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>BCA-S108</b>	<b>Management Information Systems</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

**UNIT I**

Introduction, Meaning and role of MIS, Definition of MIS, and System approach to MIS, MIS Organization, Development of Organizational Theory, Management and Organizational Behavior.

**UNIT II**

Evolution of Information system/ Basic Information Systems/ Decision Making and MIS, MIS as a technique for making Programmed Decisions, Appropriate MIS response, MIS planning, General Business planning, Derivation of MIS plan, Prioritization and development strategies.

**UNIT III**

Conceptual design of MIS, Definition of problem, System Objective and constraints, Analysis of info source, alternate system designs and selection, conceptual system design and document.

**UNIT IV**

Detailed system design and implementation, application of basic system design concept to MIS, Involvement of ND user and role of MIS department and system analyst, role of top management during design and implementation, system evaluation, review and update, Pit falls in MIS development

**Text Books:**

**Unified Syllabus by**  
**Department of Computer Science, University of Lucknow**  
**Bachelors of Computer Application**  
**Semester-wise breakup of course**

Course Code	Course Name	L	T	P	C
BCA-S109	Financial Accounting & Management	3	1	0	4

**UNIT-I**

Overview - Meaning and Nature of Financial Accounting, Scope of Financial Accounting, Financial Accounting & Management Accounting, Accounting concepts & convention, Accounting standards in India.

**UNIT-II**

Basics of accounting – Capital & Revenue items, Application of Computer in Accounting Double Entry System, Introduction to Journal, Ledger and Procedure for Recording and Posting, Introduction to Trail Balance, Preparation of Final Account, Profit & Loss Account and related concepts, Balance Sheet and related concept.

**UNIT-III**

Financial statement analysis: Ratio analysis, Funds flow analysis, concepts, uses, Preparation of funds flow statement, simple problem, Cash flow analysis, Concepts, uses, preparation of cash flow statement, simple problem, Break – even analysis. Definition nature and Objective of Financial Management, Long Term Sources of Finance, Introductory idea about capitalization, Capital Structure, Concept of Cost of Capital, introduction, importance, explicit & implicit cost, Measurement of cost of capital, cost of debt.

**UNIT-IV**

Concept & Components of working Capital. Factors Influencing the Composition of working Capital, Objectives of working Capital Management – Liquidity Vs. Profitability and working capital policies. Theory of working capital: Nature and concepts. Cash Management, Inventory Management and Receivables Management.

**Text Books:**

1. Maheshwari & Maheshwari, “An Introduction to Accountancy”, 8<sup>th</sup> Edition, Vikas Publishing House, 2003
2. Gupta R.L., Gupta V.K., “Principles & Practice of Accountancy”, Sultan Chand & Sons, 1999.
3. Khan & Jain, “Financial Accounting”

**Unified Syllabus by**  
**Department of Computer Science, University of Lucknow**  
**Bachelors of Computer Application**  
**Semester-wise breakup of course**

Course Code	Course Name	L	T	P	C
BCA-S110	Mathematics II	4	0	0	4

**UNIT-I**

**SETS**

Sets, Subsets, Equal Sets Universal Sets, Finite and Infinite Sets, Operation on Sets, Union, Intersection and Complements of Sets, Cartesian Product, Cardinality of Set, Simple Applications.

**UNIT-II**

**RELATIONS AND FUNCTIONS**

Properties of Relations, Equivalence Relation, Partial Order Relation Function: Domain and Range, Onto, Into and One to One Functions, Composite and Inverse Functions, Introduction of Trigonometric, Logarithmic and Exponential Functions.

**UNIT-III**

**PARTIAL ORDER RELATIONS AND LATTICES**

Partial Order Sets, Representation of POSETS using Hasse diagram, Chains, Maximal and Minimal Point, Glb, lub, Lattices & Algebraic Systems, Principle of Duality, Basic Properties, Sublattices, Distributed & Complemented Lattices.

**UNIT-IV**

**FUNCTIONS OF SEVERAL VARIABLES** Partial Differentiation, Change of Variables, Chain Rule, Extrema of Functions of 2 Variables, Euler's Theorem.

**Text Books:**

1. Kolman, Busby and Ross, "Discrete Mathematical Structure", PHI, 1996.
2. S.K. Sarkar, "Discrete Maths"; S. Chand & Co., 2000

# Unified Syllabus by

Department of Computer Science, University of Lucknow

## Bachelors of Computer Application

Semester-wise breakup of course

<b>Course Code</b>	<b>Course Name</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>BCA-S106P</b>	<b>Computer Laboratory and Practical Work of C Programming</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>3</b>
	Practical will be based on Paper Programming Principle & Algorithm: Covers UNIT-III, UNIT-IV, UNIT-V, UNIT-VI of Syllabus.				