

# Vikram University, Ujjain

## Bachelor of Computer Application (BCA)

### BCA (Annual System) Scheme & Syllabus w.e.f. Session 2017-18

Group	Paper Code	Paper Name	Internal (Theory)	External (Theory)	Total	Practical	Practical Total	
Group-I	BCA-11	Fundamentals of Computer & PC Packages	10	40	50			
	BCA-12	Digital Electronics	10	40	50			
Group-II	BCA-13	Programming	10	40	50			
	BCA-14	Operating System	10	40	50			
Group-III	BCA-15	Foundation of Computer Science	10	40	50			
	BCA-16	Financial Accounting and Principles of Management	10	40	50			
Group-IV	BCA-17	Business Law	10	40	50			
	BCA-18	Business Mathematics	10	40	50			
Group-V	BCA-19	Practical on BCA I			50	50		
	BCA-20	Practical on BCA II			50	50		
							TOTAL	1000

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NOTE: General BCA Examinations fees are same as B.Sc. (Computer Science)

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**Vikram University, Ujjain**  
**Bachelor of Computer Application (BCA)**  
 BCA – I/ First Year (Annual System)  
 (Examination Scheme)

Group	Paper Code	Paper Name	Internal	External (Theory)	Total	Practical	Grand Total
Group-I	BCA-11	Fundamental of computer & PC-Packages	10	40	50	--	100
	BCA-12	Digital Electronics	10	40	50	--	
Group-II	BCA-13	Programming and Problem Solving in C	10	40	50	--	100
	BCA-14	Operating System and System Software	10	40	50	--	
Group-III	BCA-15	Mathematical Foundation of computer Science	10	40	50	--	100
	BCA-16	Financial Accounting and Principle of Management	10	40	50	--	
Group-IV	BCA-17.1	Hindi Language and Moral Values	5	30	100	--	100
	BCA-17.2	English Language	5	30			
	BCA-17.3	Entrepreneurship Development	5	25			
Group-V	BCA-P18	Practical based on BCA11	--	--	--	50	100
	BCA-P19	Practical based on BCA13	--	--	--	50	
TOTAL					400	100	500

NOTE: General BCA Examinations rules are same as B. Sc. (Computer Sc.)/(IT).

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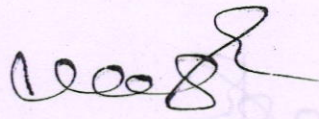
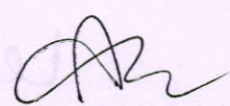
**Vikram University, Ujjain**  
**Bachelor of Computer Application (BCA)**  
w.e.f. July 2018 Onwards

**BCA – II/ Second Year (Annual System)**

**(Examination Scheme)**

Group	Paper Code	Paper Name	Internal	External (Theory)	Total	Practical	Grand Total
Group-I	BCA-21	Data Structure using C++	10	40	50	--	100
	BCA-22	DBMS & RDBMS	10	40	50	--	
Group-II	BCA-23	Internet & E-Commerce	10	40	50	--	100
	BCA-24	Data Communication & Computer network	10	40	50	--	
Group-III	BCA-25	System analysis Design & Software Engineering	10	40	50	--	100
	BCA-26	Managerial Economics & Management Information System	10	40	50	--	
Group-IV	BCA-27.1	Hindi Language and Moral Values	5	30	100	--	100
	BCA-27.2	English Language	5	30			
	BCA-27.3	Environmental Studies	5	25			
Group-V	BCA-P28	Practical based on BCA-21 & BCA-22	--	--	--	50	100
	BCA-P28	Minor Project	--	--	--	50	
TOTAL					400	100	500

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# Vikram University, Ujjain

## Bachelor of Computer Application (BCA)

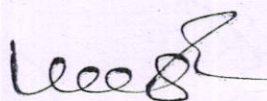
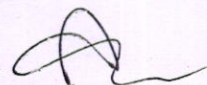
w.e.f. July 2019 Onwards

BCA – III/ Third Year (Annual System)

(Examination Scheme)

Group	Paper Code	Paper Name	Internal	External (Theory)	Total	Practical	Grand Total
Group-I	BCA-31	Programming With JAVA	10	40	50	--	100
	BCA-32	Artificial Intellegance & Expert System	10	40	50	--	
Group-II	BCA-33	Internet Technology with ASP.NET and C#	10	40	50	--	100
	BCA-34	Computer graphics and Multimedia	10	40	50	--	
Group-III	BCA-35	Microprocessor and Interfacing	10	40	50	--	100
	BCA-36	Enterprise Resource Planning & organizational Behaviour	10	40	50	--	
Group-IV	BCA-37.1	Hindi Language and Moral Values	5	30	100	--	100
	BCA-37.2	English Language	5	30			
	BCA-37.3	Basic of Computer & Information Technology	5	25			
Group-V	BCA-P38	Practical based on BCA-31 & BCA-33	--	--	--	50	100
	BCA-P38	Major Project	--	--	--	50	
TOTAL					400	100	500

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# Vikram University, Ujjain

## Bachelor of Computer Application (BCA)

# Detailed Syllabus

# BCA

(2017-18 Onwards)



MS Word Basics - Introduction to MS-Word; Features & uses of MS-Word; Menus & Commands; Toolbars & Buttons; Shortcut Menus; Working with MS-Word; Document: Different Page Views and Layouts; Wizards & Templates; creating a New Document; Page Views and Layouts; Applying various Text Enhancements; Working with - Styles, Text Attributes, Paragraph and Page Formatting; Text Editing using various features; Bullets, Numbering, Auto formatting, Printing & various print options.



# Vikram University, Ujjain

## Bachelor of Computer Application (BCA)

### BCA - 11 Fundamental of Computers and PC-Packages

#### UNIT I

**Computer Fundamental:** Characteristics of Computers, History of Computer, Evolution of Computers, Computer Generations, Types of Computer, Components of a Computer: Registers, Instruction Set, Bus Architecture, Computer Hardware: Input Devices, Output Devices, Storage Devices: Primary Storage capacity, Memory Types, Memory Measuring Units, Secondary Storage Device

**Software and Computer Applications:** Software & Software Types, Computer Languages, Compiler, Interpreter, Editor, Computer Ethics, Computer applications, Introduction of Programming: Procedure Oriented Programming, Object oriented programming, Concepts used in OOP, Benefits of OOP, Main advantages and disadvantage of OOP, Applications of OOP, OOP vs. POP.

#### UNIT II

**Operating System Overview:** Computer System Startup, Computer System Structure, Computer System Components, Operating System Classifications, Operating System Services, Major Functions of Operating system, Process Management, CPU Scheduling, Scheduling Criteria. Memory and File Management: Memory Management Requirements, Swapping, Memory Management Techniques, Virtual Memory, File Management, File Access Methods, Protection.

**Introduction to DBMS:** File System, Traditional File Oriented Approach, DBMS-Advantages and Disadvantages, Role of DBMS, Three views of data, DBMS Architecture, Data Models, Data Independence, Major components of DBMS, Data Dictionary, Types of Users, DBMS applications, Keys in Databases, Database Languages.

#### UNIT III

**Introduction to Computer Networks:** Computer Network Definition, Importance of Networking, Types of Networks, Network Topology, Advantages and Disadvantage of Computer Networks, Applications of computer networks, Reference Model, Internet, Introduction to Internet Technology, Electronic Mail, World Wide Web.

**MS Windows:** Introduction to MS Windows; Features of windows; Working with Windows; My computer & Recycle bin; Desktop, Icons and Windows Explorer; Screen description & working styles of Windows; Dialog Boxes & Toolbar; Working with files & Folders; Simple operations like copy, delete, moving of files and folders from one drive to another; Accessories and Windows Settings using Control Panel-setting common devices using control panel, modem, printers, audio, network, fonts, creating users, internet settings, Start button & Program lists ;Installing and Uninstalling new Hardware & Software program on your computer.

#### Unit-IV

**MS Word Basics** – Introduction to MS Office; Introduction to MS- Word; Features & area of use, working with MS- word; Menus & Commands; Toolbars & Buttons; Shortcut Menus, Wizards & Templates, creating a New Document; Different Page Views and Layouts; Applying various Text Enhancements; Working with – Styles, Text Attributes; Paragraph and Page Formatting; Text Editing using various features; Bullets, Numbering, Auto formatting, Printing & various print options.

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## Bachelor of Computer Application (BCA)

**Advanced Features of MS- word-** Spell check, Thesaurus, Find & Replace; Headers & Footers: Inserting- Page Number, Pictures, Files, Autotexts, Symbols etc.; working with columns, Tab& Indents; Creation and working with Tables including conversion to and from text; Margins and Space management in Documents; Adding references and Graphics; Mail Merge, Envelops & mailing Labels. Importing and Exporting to and from various formats.

### Unit- V

**MS Excel:** Introduction and area of use; working with MS Excel: concept of workbook and worksheet; Using Wizards; Various Data Types; Using different features with Data, Cell and Texts; Inserting, Removing & Resizing of Columns & Rows; Working with Data & Ranges; Different views of Worksheet; Column Freezing, Labels, Hiding, Splitting etc.; Using different features of Data and Text; Use of Formulas, Calculation & Functions; Cell formatting including Borders and Shading; Working with Different Chart Types; Printing of Workbook & Worksheets with Various options.

**MS PowerPoint:** Introduction and area of use; Working with MS PowerPoint; Creating a New Presentation; Working with Presentation; Using Wizards; Slides & its Different Views; Inserting, Deleting and Copying of Slides; Working with Notes, Handouts; Columns and Lists; Adding Graphics, Sounds and Movies to a slide; Working with PowerPoint Objects; Designing and Presentation of a Slide Show; Printing Presentations; Notes, Handouts with print options.

### Reference Books:

1. Operating Systems Concepts, A. Silberschatz, P.Galvin, G.Gagne, John Wiley & Sons
2. Object Oriented Programming in C++, Robert Lafore, Galgotia Publication.
3. Data base management systems vol. 1., Date C.J.
4. Fundamental of Computer Science & IT, Singh Umesh Kumar, Jain S., Maheshwari A., SSDN Publications New Delhi,
5. Data Communications and Networks, Godbole A, Tata McGraw-Hill Publications.
6. Windows XP Complete Reference. BPB Publications
7. MS Office XP complete BPB Publication

# Vikram University, Ujjain

## Bachelor of Computer Application (BCA)

### BCA - 12 Digital Electronics

#### Unit- I

Data types and Number systems, Binary number system, Octal & Hexa-decimal number system, 1's & 2's complement, Binary Fixed-Point Representation, Arithmetic operation on Binary numbers, Overflow & underflow, Floating Point Representation, Codes, ASCII, EBCDIC codes, Gray code, Excess-3 & BCD, Error detection & correcting codes.

#### Unit — II

Logic Gates, AND, OR, NOT GATES and their Truth tables, NOR, (NAND) & XOR gates, Boolean Algebra, Basic Boolean Law's, DeMorgan's theorem, MAP Simplification. Minimization techniques, K-Map, Sum of Product & Product of Sum.

#### Unit-III

Combinational & Sequential circuits, Half Adder & Full Adder, Full subtractor, Flip -flops- RS, D, JK & T Flip-flops, Shift Registers, RAM and ROM, Multiplexer, Demultiplexer, Encoder, Decoder, Idea about Arithmetic Circuits, Program Control, Instruction Sequencing.

#### Unit — IV

I/O Interface, Properties of simple I/O devices and their controller, isolated versus memory-mapped I/O, Modes of Data transfer, Synchronous & Asynchronous Data transfer, Handshaking, Asynchronous serial transfer, I/O Processor.

#### Unit—V

Auxiliary memory, Magnetic Drum, Disk & Tape, Semi-conductor memories, Memory Hierarchy, Associative Memory, Virtual Memory, Address space & Memory Space, Address Mapping, Page table, Page Replacement, Cache Memory, Hit Ratio, Mapping Techniques, Writing into Cache.

#### Reference Books:

1. BARTEE, "Digital Computer Fundamentals " TMH Publication
2. MALVINO, " Digital Computer Electronics " TMH Publication
3. MORRIS MANO, "Computer System Architecture PHI Publication

# Vikram University, Ujjain

## Bachelor of Computer Application (BCA)

### BCA-13 Programming and Problem Solving in C

#### Unit – I

Problem identification, analysis, design, coding, testing & debugging, implementation, modification & maintenance, algorithms & flowcharts, Characteristics of a good program – accuracy, simplicity, robustness, portability, minimum resource & time requirement, modularization; Rules/conventions of coding, documentation, naming variables; Top down design; Bottom-up design.

#### Unit II

History of C, Structure of a C program, Data types, Constant & Variable, Operators & expressions, Control Constructs – if-else, for, while, do-while, Case statement, Arrays, Formatted & unformatted I/O, Type modifiers & Storage classes, Ternary operator, Type conversion & type casting, Priority & associativity of operators.

#### Unit –III

Functions, Arguments, return value, Parameter passing – call by value, call by reference, return statement, Scope, visibility and life time rules for various types of variable, static variable, calling a function, Recursion – basics, comparison with iteration, tail recursion, when to avoid recursion examples.

#### Unit IV

Special constructs – break, continue, exit(), goto & labels; Pointers - & and \* operators, pointer expression, pointer arithmetic, dynamic memory management functions like malloc(), calloc(), free(), String, Pointer to function, Function to parameter, Structure – basic, declaration, membership operator, pointer to structure, referential operator, self-referential structures, structure within structure, array in structure, array of structures, Union – basic, declaration; Enumerated data type, Typedef, Command line arguments.

#### Unit V

**File handling and related functions:** printf & scanf family, C preprocessor – basics, # Include, # define, # undef, conditional compilation directive like #if, #else, #endif, #ifdef and #ifndef, Variable argument list functions.

**File system basics,** The file pointer, Opening a file, Closing a file, Writing a character, Reading a character, Using fopen(), getc(), putc(), and fclose(), Using feof(), Working with string fputs() and fgets(), Standard streams in C, Flushing a stream, Using fread() and fwrite(), Direct access file, fseek() and random access fprintf() and fscanf().

#### Reference Books:

1. Kerninghan & Richie: The C Programming language, PHI
2. Cooper Mullish: The Spirit of C, Jaico Publishing House, Delhi
3. Kanetkar Y: Let us C
4. Kanetkar Y: Pointers in C.

**Vikram University, Ujjain**  
**Bachelor of Computer Application (BCA)**  
**BCA-14 Operating Systems and System Software**

**Unit I**

**Introduction to Operating Systems:** Operating system services, multiprogramming, time-sharing system, storage structures, system calls, multiprocessor system. Basic concepts of CPU scheduling, Scheduling criteria, Scheduling algorithms, algorithm evaluation, multiple processor scheduling, real time scheduling, I/O devices organization, I/O devices organization, I/O devices organization, I/O buffering.

**Unit II**

**Process concept:** process scheduling, operations on processes, threads, inter-process communication, precedence graphs, critical section problem, semaphores, problems of synchronization. Deadlock problem: deadlock characterization, deadlock prevention. deadlock avoidance, deadlock detection, recovery from deadlock, Methods for deadlock handling.

**Unit III**

**Concepts of memory management:** logical and physical address space, swapping, contiguous and Non- contiguous allocation, paging, segmentation, and paging combined with segmentation.

**Unit IV**

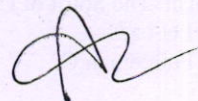
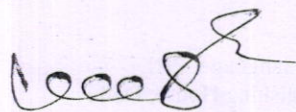
Concepts of virtual memory, demand paging, page replacement algorithms. allocation of frames, thrashing, demand segmentation, Security threads protection, Intruders- Viruses- trusted system,

**Unit V**

Disk scheduling, file concepts, file access methods, allocation methods, directory systems, file protection, introduction to distributed systems and parallel processing case study.

**Reference Books:**

1. Operating System by Silberschatz
2. Operating System by Deitel
3. Modern operating system by annebacem.



# Vikram University, Ujjain

## Bachelor of Computer Application (BCA)

### BCA-15 Mathematical Foundation of Computer Science

#### UNIT-I

Types of errors, Error approximation, truncation error, rounding error. Solution of transcendental equation by: Bisection, false position, Newton-Raphson Methods.

#### UNIT-II

**Introduction and Approximation:** Polynomial interpolation, Newton and Languages interpolation. Approximation of function by Taylor series, Numerical integration: Simpson's one third rule, Gauss quadrature formula.

#### UNIT -III

**Sets and Relation:**Combinations of sets, finite and infinite sets, countable and uncountable infinite sets, Order sets. Properties of Binary Relations. Partial Ordering relations and Lattice.

#### UNIT-IV

**Formal Languages and Finite Automata:** Regular expressions, finite Automata from Regular Expression to finite Automata, Minimizing the number of States of DFA. Phrase structure Grammers, Types of Grammer and Languages.

#### UNIT-V

**Graphs, Trees and Cut-Sets:**Basic Terminology, Multigraphs and weighted graphs, Paths and Circuits, Shortest Paths, Eulerian Paths and circuits, Hamiltonian paths and circuits. Rooted trees, Path length in rooted trees, Binary search trees,Spanning trees, Minimum spanning trees.

#### Reference Books:

1. Hogg,R.V.Craig,A.L.: Introduction to mathematical statistics,American Publishing co.pvt.ltd.
2. SeymourLipschutz: Linear Albera.
3. Computer oriented numerical analysis by S.S.Shastri

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## Bachelor of Computer Application (BCA)

### BCA -16 – Financial Accounting and Principle of Management

#### Unit –I

The basic Financial Accounts, types of accounts, Rules of Entries of transactions, Journals. Cash Book – Types, Format of Cash Book, Balancing of Cash Book, Subsidiary books – Purchase, Sales. Purchase return and sales return. Ledger, posting of entries.

#### Unit II

Trial Balance, Rectification of errors, adjustment entries. Depreciation and Inflation. Principles of Cost Accounting, Valuation of Stocks, Allocation of Overheads, Methods of material issues.

#### Unit III

Pay roll department, preparation of pay roll, Preparation of wage record, Methods of payments of wages, overview of computerized method for payroll preparation. Inventory account and store record, inventory or stock control and cost accounting, Department demand and supply method of stock control. Classification and condition of material Report on material handling. Overview of computerized accounting process – Introduction to accounting system software, their features and some basic operations.

#### Unit IV

**Management Concept:** Managements, Administration, Organization Management and Administration, Difference and Relationship between Organizations, importance of Management, characteristics of Management.

Scientific Management, Principles of Management, Process of Management, Functions of Management, Levels of Management, Project Management

#### Unit V

**Decision Making:** Introduction and Definition, Types of Decision, Techniques of Decision Making, Decision making under uncertainty, Decision Making under risk.

#### Reference Books:

1. Mazda, Engineering Management, Addisen Wesley
2. S P Gupta, Management Accounting
3. I.M.Pandey, Financial Management, Vikas Publication.
4. The Practice of Management : Peter Drucker, Harper and Row
5. Essentials of Management :Koontz Prentice Hall of India
6. Management : Staner Prentice Hall of India
7. Principle & Practice of Management :T.N. Chhabra ; Dhanpat Rai New Delhi

