



बिलासपुर विश्वविद्यालय, बिलासपुर (छत्तीसगढ़)  
SYLLABUS (NEW COURSE)  
B.C.A. PART-I

**Structure & Syllabi for 3 Year Degree Programme of  
Bachelor of Computer Applications (B.C.A.)**

1. The title of the programme is Bachelor of Computer Application (B.C.A.) and introduced from the academic year 2014-15.
2. **Objectives:** The objectives of the Programme shall be to provide sound academic base from which an advanced career in Computer Application can be developed. Conceptual grounding in computer usage as well as its practical software application will be provided.
3. **Eligibility for admission :** In order to be eligible for admission to Bachelor of Computer Applications a candidate must have passed
  - a. HSC (10+2) from any stream with English as passing Subject with minimum 40% marks in aggregate.
  - b. Three years Diploma Course of Board of Technical Education, conducted by Government of CG or its equivalent.
  - c. Three Year Diploma Course (after S.S.C. i.e. 10th Standard), of Board of Technical Education conducted by Government of CG or its equivalent.
4. **Duration:** The duration of the B.C.A. Degree Program shall be three years.
5. **The scheme of Examinations:** The BCA Examination will be of 2400 marks as given Below:
  - I) Basic and Compulsory papers: 550 marks
  - II) For Theory Papers and Practical Papers: 1850 marks
6. **The Standard of Passing and Award of Class**

In order to pass in the examination the candidate has to obtain 33% marks out of 100. (Min 33% marks must be obtained in theoretical papers as well as practical papers of University Examination).

The class will be awarded on the basis of aggregate marks obtained by the candidate for all three years examinations.
7. **RULES OF Promotion**

**As per section 14 of promotion rule.**
8. The Medium of Instruction and Examination (Written and Viva) shall be English/Hindi.
9. **Instructions to Paper Setters:**
  - a. In each theory paper, six questions are to be set and paper has maximum 100 marks. Question paper should be in English as well as Hindi.



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- b. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
- c. Apart from Question No. 1, rest of the paper shall consist of five units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 15 marks.
10. The Year wise Structure & plan of the programme shall be as follows :

**SCHEME OF EXAMINATION BCA PART-I**

Paper no.	Title of Paper/s	Maximum Marks		Maximum Marks	Minimum Passing Marks
		Theory	Practical		
1.	आधार पाठ्यक्रम-हिन्दी भाषा	75	--	75	26
2.	Foundation Course- English Language	75	--	75	26
3.	Environmental Studies & Human Rights <b>(Additional &amp; Compulsory)</b>	75	25	100	33
4.	Discrete Mathematics	100	--	100	33
5.	Computer Fundamental and Concepts of Software	100	--	100	33
6.	PC Software Packages and Programming in C	100	--	100	33
7.	Data Structure	100	--	100	33
8.	Lab-1 Software Packages Lab	--	75	75	25
9.	Lab-2 Programming lab in C	--	75	75	25
	<b>Total Marks</b>	<b>650</b>	<b>150</b>	<b>800</b>	



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**SCHEME OF EXAMINATION BCA PART-II**

Paper no.	Title of Paper/s	Maximum Marks		Maximum Marks	Minimum Passing Marks
		Theory	Practical		
1.	आधार पाठ्यक्रम-हिन्दी भाषा	75	--	75	26
2.	Foundation Course- English Language	75	--	75	26
3.	Operating System	100	--	100	33
4.	Digital Electronics and Microprocessor	100	--	100	33
5.	Computer Networks and Cyber Technology	100	--	100	33
6.	Object Oriented Programming Using C++	100	--	100	33
7.	Computer Graphics and Multimedia	100	--	100	33
8.	Lab-1 Programming Lab Using C++	--	75	75	25
9.	Lab- 2 Multimedia Lab	--	75	75	25
<b>Total Marks</b>		<b>650</b>	<b>150</b>	<b>800</b>	

**SCHEME OF EXAMINATION BCA PART-III**

Paper no.	Title of Paper/s	Maximum Marks		Maximum Marks	Minimum Passing Marks
		Theory	Practical		
1.	आधार पाठ्यक्रम-हिन्दी भाषा	75	--	75	26
2.	Foundation Course- English Language	75	--	75	26
3.	Computer Organization and Architecture	100	--	100	33
4.	Software Engineering	100	--	100	33
5.	Database Design and RDBMS (Oracle)	100	--	100	33
6.	Web Technology	100	--	100	33
7.	Numerical Analysis	100	--	100	33
8.	Lab-1 RDBMS & Web Technology	--	75	75	25
9.	Lab-2 Minor Project	--	75	75	25
<b>Total Marks</b>		<b>650</b>	<b>150</b>	<b>800</b>	
<b>Grand Total Marks of BCA- I, II &amp; III</b>				<b>2400</b>	



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आधार पाठ्यक्रम  
प्रश्न पत्र—प्रथम  
हिन्दी भाषा

पूर्णांक – 75

नोट :

1. प्रश्न पत्र 75 अंक का होगा।
2. प्रश्न पत्र अनिवार्य होगा।
3. इसके अंक श्रेणी निर्धारण के लिए जोड़े जावेंगे।
4. प्रत्येक इकाई के अंक समान होंगे।

पाठ्य विषय –

- इकाई-1 पल्लवन, पत्राचार तथा अनुवाद एवं पारिभाषिक शब्दावली।  
इकाई-2 मुहावरे – लोकोक्तियाँ, शब्दशुद्धि, वाक्य शुद्धि, शब्द ज्ञान – पर्यावाची, विलोम, अनेकार्थी, समश्रुत (समानोचरित) अनेक शब्दों के लिए एक शब्द।  
इकाई-3 देवनागरी लिपि की विशेषता, देवनागरी लिपि एवं वर्तनी का मानक रूप।  
इकाई-4 कम्प्यूटर में हिन्दी का अनुप्रयोग, हिन्दी में पदनाम।  
इकाई-5 हिन्दी अपठित, संक्षेपण, हिन्दी में संक्षिप्तीकरण।

पाठ्य क्रम के लिए पुस्तकें –

1. भारतीयता के स्वर साधन धनंजय वर्मा – म. प्र. ग्रंथ अकादमी।
2. नागरी लिपि और हिन्दी – अनंत चौधरी – ग्रंथ अकादमी पटना।
3. कम्प्यूटर और हिन्दी – हरिमोहन – तक्षशिला प्रकाशन, दिल्ली।



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FOUNDATION COURSE  
PAPER – II  
ENGLISH LANGUAGE

M.M 75

**UNIT -1**

**Basic Language skills: Grammar and Usage.**

Grammar and Vocabulary based on the prescribed text. To be assessed by objective / multiple choice tests.

(Grammar – 20 Marks  
Vocabulary – 15 Marks)

**UNIT -2**

**Comprehension of an unseen passage.**

05

This should simply not only (a) an understanding of the passage in question, but also (b) a grasp of general language skills and issues with reference to words and usage within the passage and (c) the Power of short independent composition based on themes and issues raised in the passage.

To be assessed by both objective multiple choice and short answer type tests.

**UNIT – 3**

**Composition:** Paragraph writing

10

**UNIT – 4**

**Letter writing**

10

Two letters to be attempted of 5 marks each. One formal and one informal.

**UNIT - 5**

**Texts:**

15

Short prose pieces (Fiction and not fiction) short poems' the pieces should cover a range of authors, subjects and contexts' With poetry if may sometimes be advisable to include pieces from earlier periods, which are often simpler than modern examples In all cases, the language should be accessible (with a minimum of explanation and reference to standard dictionaries) to the general body of students schooled in the medium of an Indian language.

Students should be able to grasp the contents of such place; explain specific words, phrases and allusions; and comment on general points of narrative or argument Formal Principles of Literary criticism should not be taken up at this stage. To be assessed by live short answers of three marks each.

**BOOKS PRESCRIBED –**

English Language and Indian Culture – Published by M.P. Hindi Granth Academy Bhopal.



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BCA PART- I/II/III  
ENVIRONMENTAL STUDIES & HUMAN RIGHTS  
(Additional & Compulsory)  
SYLLABUS FOR "ENVIRONMENTAL STUDIES" FOR UNDER GRADUATE

M.M. 75

**UNIT- I**

THE MULTI DISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES:

Definition, scope and importance

Need for public awareness.

Natural Resources:

**Renewable and non-renewable resources:**

Natural resources and associated problems.

- (a) Forest resources: Use and over-exploitation, deforestation, case studies, Timber extraction, mining, dams and their effects on forests and tribal people.
  - (b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dam's benefits and problems.
  - (c) Mineral resources: Use and exploitation, Environmental effects of extracting and using mineral resources case studies.
  - (d) Food resources: World food problems, changes caused by agriculture a Dover grazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
  - (e) Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies.
  - (f) Land resources: Land as resources, land degradation, man induced landslides, soil erosion and desertification.
- Role of an individual in conservation of natural resources.
  - Equitable use of resources tor sustainable life-styles.

**UNIT- II**

**ECOSYSTEMS**

**Concept of ecosystems.**

**Structure and function of an ecosystem.**

- Producers, consumers and decomposers.
- Energy flow in the ecosystem.
- Ecological succession.
- Food chains, food webs and ecological pyramids.
- Introduction, types, characteristic features, structure and function of the following ecosystem:
  - a. Forest ecosystem
  - b. Grassland ecosystem
  - c. Desert ecosystem
  - d. Aquatic ecosystems (Ponds, streams, lakes, rivers, oceans, estuaries)



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### UNIT-III

#### Biodiversity and its Conservation

- Introduction - Definition: genetic, species and ecosystem diversity.
- Bio geographical classification of India.
- Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values.
- Biodiversity at global, National and local levels.
- India as mega - diversity nation.
- Hot-spots of biodiversity
- Threats to biodiversity: habitat loss, poaching of wildlife, man wild if conflicts.
- Endangered and endemic species of India.
- Conservation of biodiversity: In situ and Ex-situ conservation of biodiversity

### UNIT-IV

#### Environmental Pollution

##### Definition

##### Causes, effects and control measures of -

- a. Air Pollution
  - b. Water Pollution
  - c. Soil pollution
  - d. Marine pollution
  - e. Noise pollution
  - g. Nuclear hazards.
- Solid waste management: Causes, effects and control measures of urban and industrial wastes.
  - Role of an individual in prevention of pollution.
  - Pollution case studies
  - Disaster management: floods, earthquake, cyclone and landslides.

#### Human population and the Environment

- Population growth, variation among nations,
- Population explosion – Family Welfare programme.
- Environment and human health.
- Human Rights.

### UNIT-V

#### Social issues and the Environment

- From Unsustainable to Sustainable development.
- Urban problems related to energy.
- Water conservation. Rain water harvesting, watershed management.
- Resettlement and rehabilitation of people, its problems and concerns. Case studies.
- Environmental ethics: Issues and possible solutions.
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.



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- Wasteland reclamation.
- Consumerism and waste products.
- Environment protection Act.
- Air (Prevention and Control of Pollution) Act.
- Water (Prevention and Control of Pollution) Act.
- Wildlife Protection Act.
- Forest Conservation Act.
- Issues involved in enforcement of environmental legislation.
- Public awareness.
- Value Education.
- HIV/AIDS
- Women and Child Welfare.
- Role of Information Technology in Environment and Human Health.
- Case Studies.

**FIELD WORK**

- Visit to a local area to document environmental assets- river/forest/ grassland/hill/mountain.
- Visit to local polluted site: Urban/Rural/Industrial/Agriculture.
- Study of common plants, insects, birds.
- Study of simple ecosystems-pond, river, hill slopes' etc' (Field work Equal to 5 lecture hours)

**REFERENCES:**

1. K.C 2001 Environmental Biology, Nidi Publ. Ltd Bikaner.
2. Bharucha Erach, the Biodiversity of India, Mapin Publishing Pvt. Ltd. Ahmedabad 380 013, India. Email : mapin@icenet net(R)
3. Bruinner R.C., 1989, Hazardous Waste Incineration, Mc Graw Hill Inc, 480p.
4. Clark R.S., Marine Pollution, Clanderson Press oxford (TB).
5. Cuningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 200.
6. Dr. A.K. Environmental chemistry, Wiley Estern Ltd.
7. Down to Earth, Centre for science and Environment (R)
8. Gloick, H.P. 1993 Water in crisis, Pacific Institute for studies in Deve, Environment & Security. stockholm Eng. Institute, oxford Univ, Press 473p.
9. Hawkins B.E., Encyclopedia of Indian Natural History, Bombay Natural History Society, Mumbai (R)
10. Heywood, V.H. & Watson, R.T. 1995 Global Biodiversity assessment, Cabridge Univ. Press 1140p.
11. Jadhav H. & Bhosale, V.H. 1995, Environmental Protection and Laws, Himalaya Pub. House. Delhi 284p.
12. Mckinney M.L. & School R.M. 1996, Environmental Science systems & Solution Pub. Web enhanced edition, 639p.
13. Mhaskar A.K., Matter Hazardous, Techno-Science Publication (TB).





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14. Miller T.G. Jr., Environmental Science, Wadsworth Publishing Co. (TB).
15. Odum, E.P. 1971, Fundamentals of Ecology, W.B. Saunders Co. USA, 574p.
16. Rao M. N. & Datta, A.K. 1987, Waste Water treatment. Oxford & IBH Publ. Co. Pvt. Ltd. 345p.
17. Sharma B.K., 2001, Environmental Chemistry, Goel Publ. House, Meerut.
18. Survey of the Environment, The Hidu (M).
19. Townsend C., Harper J., and Michael Begon, Essentials of Ecology, Blackwell Science (TB).
20. Trivedi R.K. Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol. I and II, Environment Media (R).
21. Trivedi R.K., and P.K. Goel, Introduction to air pollution, Techno – Science Publications (TB).
22. Wagner K.D., 1998, Environmental Management, W.B. Saunders Co. Philadelphia, USA 499p.
23. Magazine
24. Reference
25. Textbook.



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PAPER-III  
DISCRETE MATHEMATICS

**Unit – I**

Recall of statements and logical connectives, tautologies and contradictions, logical equivalence, algebra of propositions quantifiers, existential quantifiers and universal quantifiers.

**Unit –II**

Boolean algebra and its properties, algebra of propositions as an example, De Morgan's Laws, partial order relations g.l.b., l.u.b. Algebra of electric circuits and its applications. Design of simple automatic control system.

**Unit –III**

Boolean functions - disjunctive and conjugative normal forms. Boolean's expansion theorem, fundamental forms. Many terminal Networks.

**Unit –IV**

Arbitrary Cartesian product of sets. Equivalence relations, partition of sets, injective, subjective, objective maps, binary operations, countable, uncountable sets.

**Unit – V**

Basic Concept of Graph Theory, Sub graphs, Trees and their properties, Binary Trees, Spanning Trees, Directed Trees, Planar graphs, Euler Circuit, Hamiltonian Graph. Chromatic number.

**Text Books:**

1. Boolean algebra and Its Applications, J. Eldon Whitesitt, Addison-Wesley.
2. A Textbook of Discrete Mathematics, Swapan Kumar Sarkar, S. Chand.
3. Discrete Math with Proof, Eric Gossett, Pearson.
4. Discrete Math Workbook: Interactive Exercises, James R Bush, Pearson.

**Reference Books:**

1. Discrete Mathematics, Prof. H K Pathak, Shiksha Sahitya Prakashan.
2. Discrete Maths, C.L.Liu, T McGraw Hill.



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PAPER-IV

COMPUTER FUNDAMENTAL AND CONCEPTS OF SOFTWARE

Unit – I

Basics of Computer

*types of computer*

What is Computer?, Introduction to Computing, History of Computers, Application and Issues of Computer, Components of Computer: Input Devices, Output Devices, System Unit, Storage Devices, Communication Devices; Computer Building Blocks: CPU, Hardware Devices: External Connectivity, Video Port, USB Port, all other Ports.

Unit – II

Processing Unit

Processor Building Blocks: Control Unit, Arithmetic Logic Unit, Register Unit, Comparison of Personal Computer Processors, Processor for Mini, Mainframe, Large and Super Computers, Examples of Various Processor and their families, Category of Processor on basis of Word length, Working of Processor and Execution Process, Machine Cycle, System Clock.

Unit – III

Memory and I/O Devices

Types of Memory: RAM, Cache, ROM, Flash Memory, CMOS, Cloud Storage, Optical Discs: CDs, DVDs. Memory Hierarchy, Input Devices: Keyboard, Mouse, Trackball, Touchpad, Pointing Stick, and others; Output Devices: LCD & Plasma Monitors, other Monitors, Printers: Nonimpact, Ink-Jet, Photo, Laser Printers, Plotters, Speakers, Headphones, and Ear-buds, Data Projectors, Interactive Whiteboards.

Unit – IV

Category of Software with example and brief features

Introduction to Software (s/w), Types of s/w: Application Software & System Software, Various Application Software s/w and their examples, System Programming and System Programs, Needs of System Software, BIOS, POST sequence, Concept & introduction to various system s/w such as: Assemblers, Loaders, linkers, macro processors, Macros, Compilers, Interpreters, Operating system and formula system, Translators and its types, Editor, Simulator, Emulator, Debugger, Device Drivers, Firmware etc. Assemblers: Structure of assembler, Overview of the assembly process, Basic function, Machine dependent and machine independent features of assembler, Types of assemblers – single pass, multi-pass, cross assembler, Macros & Macro processors.

Unit – V

Loaders and Compilers

Basic Loader Functions, Linking and Concept of Static & Dynamic Relocation, Various loader schemes with their advantages and disadvantages, Compilers, Phases of a Compiler, Comparison of Compilers & Interpreters, Machine dependent & Machine Independent Compiler Features, Aspects of Compilation, Lexical Analysis, Syntax Analysis, Memory Allocation, Compilation of Expressions; Code optimization – local and global optimization.

Text Books:

1. Computer science: an overview, Brookshear, J.G., Pearson Education
2. Fundamental of Computers, Raja Raman V., Prentice Hall of India, New Delhi.
3. System Programming- J. J. Donovan, Tata McGraw-Hill Education.
4. System Programming and Operating systems- D. M. Dhamdhare, Tata McGraw-Hill
5. System Software: An introduction to systems programming- Leland L. Beck, Pearson Education
6. Principles of Compiler Design-Aho and Ullman, Pearson Education.
7. Linkers and Loaders, John R. Levine; Morgan Kaufman

Reference Books: 1. PC Upgrade & Repair Black Book by Ron Gilster.

2. Compiling Techniques, J P Bennett, TMH .
3. Modern Compiler Design, Dick Grune, Koen G.L, Henri Bal, Wiley India.
4. Compiler Construction, Principles and Practice, Kenneth C. Loudon; Cengage Learning
5. Fundamentals of Computers & Information Technology, A. Jaiswal, Dreamtech Press.



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PAPER-V  
PC SOFTWARE PACKAGES AND PROGRAMMING IN C

Unit – I

**MS WINDOWS 7 and MS Word**

Installing WINDOWS, Basic Elements of WINDOWS, Working with Windows, Connecting to the Internet: Dial-Up Connections, Broadband Connections, Installing New Hardware & Printer, Installing & Removing Software, Power Settings, MS Word: Menus, Shortcuts, Document types; Working with Documents: Function of tool bar and menu bar. MS Power Point: Creating new Presentation, Different presentation templates, Setting backgrounds, Function of Tool Bar and Menu Bar, Inserting pictures, movies, tables, etc into the presentation, Setting Animation & transition effect, Adding audio and video, Printing Handouts, Generating standalone presentation viewer.

Unit – II

**MS Excel and MS Access**

Introduction: Spreadsheet & its Applications, Menus & Toolbars & icons, Shortcuts, Working with Spreadsheets, Computing data: Formula, Formatting Spreadsheets, Worksheet: Sheet Formatting & style background, Graphs, Printing worksheet. MS Access: Database concepts: Tables, Queries, Forms, Reports, Opening & Saving database files: Creating Tables, Table Design, Indexing, Entering data, Importing data, Creating Queries: SQL statements, Setting relationship, Creating Forms: GUI, Form, Creating & printing reports.

Unit-III

**C Programming Concepts**

History of C language, C Language Character set, Tokens, Constant, Keywords and Identifiers, Variables Data Types and operators, Loop and Branch statements, .

Unit-IV

**Arrays, String, Structures and Unions in C**

Arrays, Arrays and Strings, Structures and Unions: Definitions, Initialization and Assigning Values to Members, Arrays of Structures and Arrays Within Structures, Structure with in Structure, Unions- Size of Structures, Functions and Pointers: Recursion - Functions with Arrays, Pointers: Declaration and Initialisation of Pointers, Pointer Expression, Operation on Pointers, Pointer and Arrays, Arrays of Pointers, Pointer and Character Strings, Pointers and Functions, Pointers and Structures, Pointer on Pointers.

Unit-V

**File Maintenance in C**

File Input/Output: Introduction, Defining, Opening and closing a file, Study of file I/O Operations: fopen (), fclose (), fputs ( ), fgets ( ), fread ( ), fwrite(), Input / Output Operations on a file, Random access to file, Command line arguments, Time, Date and Localization Functions, Dynamic Allocation Functions, Utility Functions, Wide-Character Functions.

**Text Books:**

1. Comdex Computer Course Kit ( windows 7 with office 2010), Gupta Vikas, Dreamtech Publication
2. Mastering MS Office 2000, Professional Edition by Courter, BPB Publication.
3. MS Office 2000 Training Guide by Maria, BPB Publications.
4. MS Office complete by SYBEX.
5. LET US C, Yashwant Kanetkar, BPB PUBLICATIONS
6. The Complete Reference C, Herbert Schildt, Tata McGraw HILL
7. PROGRAMMING IN ANSI C - by E. Balgurusamy – Tata McGraw HILL
8. PROGRAMMINGWITH C, Byron Govtfred, Tata McGraw HILL

**Reference Books:**

1. The “C” Programming Language, Brian W. Kenigham & Dennis Ritchie, Pearson
2. The Spirit of “C”- Henry Mulish, Herbert L. Cooper.
3. Mastering “C”- Crain Bolon.



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PAPER-VI  
DATA STRUCTURE

**Unit – I**

**Introduction and Array**

Data Types, Data Structure and its Classification, **Arrays**: Array concept (one dimension, two dimension), **Operations for one dimension array** (insertion, deletion, traversal), Examples.

**Unit –II**

**Linked Lists**

Concept of a linked list, **Circular & Doubly linked list**, Operations on linked lists, List Manipulation with Pointers, **Insertion & Deletion of elements**, Applications of linked lists.

**Unit –III**

**Stacks-Queues and Binary Tree**

Definitions and Structure, Representation using Array & Linked List, Application of Stack and Queues, **Postfix and Prefix Conversion**, Evolution of Arithmetic Expressions, **Binary Trees**: Definition, Memory Representation, **Trees traversal algorithms** (recursive and non-recursive), threaded trees, BFS, DFS.

**Unit –IV**

**Searching and Sorting**

Linear and Binary Search Algorithms, Complexity, Binary Search Trees (construction, insertion, deletion & search), Sorting Algorithms: Bubble Sort, Insertion Sort, **Selection Sort**, Tree sort, **Heap Sort**, Quick Sort, **Merge Sort** & Radix sort, External Sorting.

**Unit –V**

**Analysis of Algorithm**

Time and Space **Complexity of Algorithms**, **Average Case & Worst Case Analysis**, **Asymptotic Notation**, Big O notations, Analysis of sorting algorithms -Selection sort, Bubble sort, **Insertion sort**, Heap sort, **Quick sort and** Analysis of searching algorithms –Linear Search & Binary Search.

**Text Book:**

1. Data Structures using C, A. M. Tenenbaum, Langsam, Moshe J. Augentem, PHI Pub.
2. Data Structures using C by A. K. Sharma, Pearson Education
3. Data Structures and Algorithms, A.V. Aho, J.E. Hopcroft and T.D. Ullman, Addison-Wesley, Low Priced Edition.
4. Fundamentals of Data structures, Ellis Horowitz & Sartaj Sahni, AW Pub.
5. Fundamentals of computer algorithms, Horowitz Sahni and Rajasekaran, Pearson Edu.
6. Data Structures and Program Design in C, Robert Kruse, PHI.

**Reference Books:**

1. Theory & Problems of Data Structures, Jr. Seymour Lipschetz, Schaum's outline by TMH
2. Introduction to Computers Science -An algorithms approach , Jean Paul Tremblay, Richard B. Bunt, 2002, T.M.H.
3. Data Structure and the Standard Template library – Willam J. Collins, 2003, T.M.H



बिलासपुर विश्वविद्यालय, बिलासपुर (छत्तीसगढ़)  
SYLLABUS (NEW COURSE)  
B.C.A. PART-I

LAB-I  
SOFTWARE PACKAGES LAB

The lab exercise should be based on MS Windows 7 or higher version and MS Office 2007 or higher version and comprises the theoretical paper as well as practical paper.

**Section-A**

**WINDOWS 7** : Basic Elements of WINDOWS, My Computer, Sharing Devices, Windows Explorer, Accessories: Entertainment, Communication, System Tools, Paint Brush, Calculator, Calendar, Clock, Note Pad, Word Pad Etc., Control Panel, Changing Color and Theme, Changing the Desktop Background, Screen Saver, Adjusting Display Settings, Adjusting Sound, Adjusting the Mouse, Changing the Date and Time.

**Section-B**

**Introduction to MS Word:** Menus, Shortcuts, Document types; Working with Documents: Opening Files – New & Existing, Saving Files, Formatting page and Setting Margins, Converting files to different formats- Importing, Exporting, Sending files to others, Editing text documents- Inserting, Deleting, Cut, Copy, paste, Undo, Redo, Find, Search, Replace, Using Tool bars, Ruler- Using Icons, Using help; Formatting Documents: Setting Font Styles, Setting Paragraph style, Setting Page Style, Setting Document Styles, Creating Tables, Drawing, Tools, Printing Documents.

**Section-C**

**Introduction to MS Power Point:** Opening new Presentation, Different presentation templates, Setting backgrounds, Selecting presentation layouts, Creating a presentation, Formatting a presentation-Adding style, Color, gradient fills, Arranging objects, Adding Header & Footer, Slide Background, Slide layout, Inserting pictures, movies, tables.

**Section-D**

**Introduction to MS Excel:** Introduction: Spreadsheet & its Applications, Opening spreadsheet, Menus & Toolbars & icons, Shortcuts, Working with Spreadsheets-Opening a File, Saving Files, Setting Margins, Converting files to different formats- Importing, Exporting and Sending files to others, Spreadsheet addressing, Entering and Editing Data, Computing data- Setting Formula, Finding total in a column or row, Mathematical operations, Formulas, Formatting Spreadsheets & Printing worksheet.

**Section-E:**

**Introduction MS Access:** Database concepts: Tables, Queries, Forms, Reports, Opening & Saving database files: Creating Tables, Table Design, Indexing, Entering data, Importing data, Creating Queries: SQL statements, Setting relationship, Creating Forms: GUI, Form, Creating & printing reports.



बिलासपुर विश्वविद्यालय, बिलासपुर (छत्तीसगढ़)  
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B.C.A. PART-I

**LAB-II**  
**PROGRAMMING LAB IN C**

1. Program to find area and circumference of circle.
2. Program to find the simple interest.
3. Program to convert temperature from degree centigrade to Fahrenheit.
4. Program to calculate sum of 5 subjects & find percentage.
5. Program to show swap of two no's without using third variable.
6. Program to reverse a given number.
7. Program to print a table of any number.
8. Program to find greatest in 3 numbers.
9. Program to show the use of conditional operator.
10. Program to find that entered year is leap year or not.
11. Program to find whether given no is even or odd.
12. Program to shift inputted data by two bits to the left.
13. Program to use switch statement. Display Monday to Sunday.
14. Program to display arithmetic operator using switch case.
15. Program to display first 10 natural no & their sum.
16. Program to print Fibonacci series up to 100.
17. Program to find GCD & HCF of given Numbers using Recursion.
18. Program to find whether given no is a prime no or not.
19. Program to display sum of series  $1+1/2+1/3+\dots+1/n$ .
20. Program to display series and find sum of  $1+3+5+\dots+n$ .
21. Program to use bitwise AND operator between the two integers.
22. Program to add two number using pointer.
23. Program to find sum, subtraction, multiplication & transpose of matrices.
24. Program to reverse a number using pointer.
25. Program to show input and output of a string.
26. Program to find square of a number using functions.
27. Program to swap two numbers using functions.
28. Program to find factorial of a number using functions.
29. Program to show table of a number using functions.
30. Program to show call by value.
31. Program to show call by reference.
32. Program to find largest of two numbers using functions.
33. Program to find factorial of a number using recursion.
34. Program to find whether a string is palindrome or not.

The break-up of marks for second Year's Practical will be as under :			
Sr. No.	Argument	Maximum Marks	Minimum Passing Marks
1.	Lab Record	15	
2.	Viva-voce	20	
3.	Program Development and Execution	40	
Total Marks		75	25