



BACHELOR OF SCIENCE

B.Sc.

Computer Science Syllabus

(SIX - SEMESTER PROGRAM)

Effective from session (2018-19)



Ap 15/4/2019
Udit 15/04/2019

DEPARTMENT OF COMPUTER SCIENCE
UNIVERSITY OF LUCKNOW
LUCKNOW

Adh 15/4/2019
Adh 15/4/2019



Department of Computer Science
University of Lucknow, Lucknow

B.Sc (Computer Science) Semester-wise Syllabus 2018-19



B.Sc. (Semester-I)			
S.N	Paper Code	Paper Name	Marks
1.	B.Sc.-101	Computer Fundamentals	80
2.	B.Sc.-102	System Analysis and Design	80
B.Sc. (Semester-II)			
S.N	Paper Code	Paper Name	Marks
1.	B.Sc.-201	Programming in C	80
2.	B.Sc.-202	Practical (C Language, Ms-Office)	100
B.Sc. (Semester-III)			
S.N	Paper Code	Paper Name	Marks
1.	B.Sc.-301	Data Structure Using C++	80
2.	B.Sc.-302	Practical (Data Structure using C++, Python)	100
B.Sc. (Semester-IV)			
S.N	Paper Code	Paper Name	Marks
1.	B.Sc.-401	Operating System	80
2.	B.Sc.-402	Management Information system	80
B.Sc. (Semester-V)			
S.N	Paper Code	Paper Name	Marks
1.	B.Sc.-501	Database and Software Engineering	80
2.	B.Sc.-502	Computer Architecture and Microprocessor	80
3.	B.Sc.-503	Advanced Computing Technologies	80
B.Sc. (Semester-VI)			
S.N	Paper Code	Paper Name	Marks
1.	B.Sc.-601	Application Development With java and .NET framework	80
2.	B.Sc.-602	Data Communication and Computer Network	80
3.	B.Sc.-603	Practical (Java, .NET framework, Microprocessor 8086, Database)	100
Total Marks			1400



Department of Computer Science
University of Lucknow, Lucknow
B.Sc (Computer Science) First Semester Syllabus

Paper Title: Computer Fundamentals	Paper Number: First
Paper Code: B.Sc.-101	Maximum Marks: 80
Unit -I	
Computer Definition, Evolution of Computers, Generation of Computers, Classification of Computers, Hardware and Software, Analog Digital and Hybrid Computers, Classification of Computers according to size, Super Computers, Mainframe Computers, Personal Computers, Different Terminals, Characteristics and Limitations of Computers, Basic Organization & Block Diagram of a Digital Computer, Difference between Computer and Calculator, Input devices, Output Devices, Optical Devices, Optical Character Recognition (OCR), Optical Mark Recognition (OMR), Magnetic Ink Character Reader (MICR), Printers and plotters, Basic Input/ Output System (BIOS)	
Unit -II	
Definition and Purpose of Different Programming Languages, Compiler, Interpreter, Assembler, Classification of software, Flowchart, Pseudo code, Algorithm, Number system (Decimal, Binary, Octal and Hexadecimal) and their Conversion, Binary addition, Binary Subtraction, Binary Multiplication, 1's Complement, 2's Complement, 9's Complement and 10's Complement, BCD codes, ASCII Code.	
Unit -III	
Logic Gates and its application, Universal Gates, Boolean Algebra, Boolean Laws, De-Morgan's theorem based expression Problems, Simplification of expression using Boolean Laws, Karnaugh Map, SOP & POS techniques, Simplification of expression using Karnaugh Map (2 variables, 3 variables and 4 variables)	
Unit -IV	
Computer Memory, Memory Hierarchy, classification of memory, Semiconductor memory, Magnetic Memory, Optical Memory, Cache Memory, Different types of secondary Memory, virtual memory, Graphical User Based operating system, Command line Based operating system, Disk Operating System, External and Internal Command in DOS.	

Referenced Books:

- [1] Pradeep K. Sinha and Priti Sinha, "Computer Fundamentals", BPB Publication, Sixth Edition.
- [2] M. Morris Mano, "Digital Logic and Computer Design", PHI publication.
- [3] M. Morris Mano, "Computer System Architecture", PHI publication.

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Department of Computer Science
University of Lucknow, Lucknow
B.Sc (Computer Science) First Semester Syllabus



Paper Title: System Analysis and Design

Paper Number: Second

Paper Code: B.Sc.-102

Maximum Marks: 80

Unit –I

System concept, Definition, System study, system analysis, System approach, Characteristics and Types of system, Elements of system analysis, System models and types of models, system environment and boundaries, system analyst, role of system analyst, qualification and responsibilities, System analyst as an agent of change, Open and Closed System, Formal and Informal Information Systems, Computer based Information Systems, Management Information System, Decision Support System, General Business Knowledge, Interpersonal Communicational System.

Unit –II

System Development Life Cycle and its various phases, Preliminary investigation, Determination of system requirements, Development of software, System testing, Implementation, evaluation and maintenance, system documentation and consideration, Data flow diagram (DFD) and its various levels, system requirement specification (SRS).

Unit –III

System Planning, Feasibility study and its report and importance, various tools and technique, Software Crisis: From programmer's point of view, from users point of view.

Unit –IV

System design and modeling, state of system design, process modeling, logical and physical design, system flow chart and structured charts, data flow diagrams, file organization and data base design, system testing and quantity assurance implementation and software maintenance.

Referenced Books:

- [1] Brijendra Singh, "System Analysis and Design", New Age International Publishers.
[2] Elias M. Awad, "System Analysis and Design", Galgotia Publications.

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Department of Computer Science
University of Lucknow, Lucknow
B.Sc (Computer Science) Second Semester Syllabus

Paper Title: Programming in C

Paper Number: First

Paper Code: B.Sc.-201

Maximum Marks: 80

Unit –I

History of C, Structure of a C program, The C character set, Constants, Variables, keywords, Data types, arithmetic instructions, Integer and float conversions, Type conversion, Operators in C, Hierarchy of operators, control instructions, Input-Output statements in C (Formatted and Unformatted), Comment statements.

Unit –II

Decision control structures, Logical operators, conditional operator and relational operators, Loop control structures –while, do-while, for loop, Break statement, Continue statement, switch-case control structure, goto statement Bitwise operators, Bitwise AND, OR, exclusive OR, compliment, right shift and left shift operators.

Unit –III

One dimensional and multidimensional array, declaration, initialization and array Manipulations, sorting (Bubble sort) Strings – Basic Concepts, Library Functions, Definition, function definition and prototyping, types of functions, type of arguments, Recursion, passing arrays to functions, storage class in C-automatic, register, external and static variables.

Unit –IV

Pointers Definition, notation, pointers of arrays, array of pointers and functions – call by value and Call by reference, Pointers to pointers. Definition, declaration, accessing structure elements, Array of structure, Pointers and structures, Unions – definition, declaration, accessing union elements, typedef, Enum Bit fields, Types of C preprocessor directives, Macros, data file handling, file opening modes, Text and Binary files.

Referenced Books:

- [1] Brian W. Kernighan, Dennis M. Ritchie, "The C Programming Language", Prentice Hall software series, Second Edition.
- [2] S.K. Srivastava and Deepali Srivastava, "C in Depth", BPB Publications.
- [3] Yashavant Kanetkar, "Let us C", BPB publication, 15th edition.

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**Department of Computer Science
University of Lucknow, Lucknow**

B.Sc (Computer Science) Semester-wise Syllabus 2018-2019

BSC-202

Practical (C Programming & MS-Office)

MM-100

List of Exercise based on C Programming & MS-Office:

C Programming:

1. Exercise on different operators used in C Language-Arithmetic/Logical/ Relational/Bit wise/Increment-Decrement/Ternary/ Special operators.
2. Data types/variable implementation.
3. Formatted and unformatted I/O function implementation.
4. Branching Statement-if, if-else, nested if-else, Else if ladder, Switch-case.
5. Looping Statement-while, do while, for.
6. Array implementation-single and multidimensional.
7. Structure & Union implementation.
8. Pointer implementation, types-void pointer.
9. Enum and storage classes implementation.
10. Pre-processor Directive, file handling through various functions.

MS Office:

1. Creating, Opening, Saving a Document. (Shortcut keys)
2. Formatting a document — setting paragraph, headings, font size and colour, line spacing, indentation, alignment of Document.
3. Mail-merge- envelops labels and documents.
4. Protection of document- Adding Password and Digital Signature. Inspecting and managing a document.
5. Table operations in MS Word.
6. Hyperlinking and linking documents internally and externally.
7. Formatting operations in MS-Word.
8. Spread Sheet formatting.
9. Referencing cell in spreadsheet.
10. Preparing Charts on data fields.
11. Use of functions and formulas in single and multiple spreadsheets.
12. Preparing graph and charts in spreadsheets.
13. PPT-introduction slides & formatting slides, Sound-videos insertion in slide.
14. Animation & graphics implementation in slides.
15. Slide show (Manual/Rehearse Timing).

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