

DEPARTMENT OF COMPUTER SCIENCE AND APPLICATIONS
SCHEME AND SYLLABUS OF EXAMINATION FOR
Bachelor of Science (Honours/Honours with Research) in Computer Science
Duration 4 Years (8 Semesters) w.e.f. Academic Session 2023-24

Semester – I										
Course Code	Course Title	Credit	L : T :P: CH	Internal Marks		External Marks		Total Marks		
				Th	Pr	Th	Pr	Min	Max	
Major/Core Courses										
B23-CSE-101	Problem Solving through C	4	3 : 0 : 1 : 5	20	10	50	20	40	100	
B23-CSE-102	Computer Fundamentals	4	3 : 0 : 1 : 5	20	10	50	20	40	100	
Minor/Vocational Courses										
B23-CSE-103	Basics of Computer Science	4	3 : 0 : 1 : 5	20	10	50	20	40	100	
Multidisciplinary Courses										
B23-CSE-104	Fundamentals of Computer Science	3	2 : 0 : 1 : 4	15	05	35	20	30	75	
Ability Enhancement Courses										
	To be opted by student from the Central Pool	2	2 : 0 : 0 : 2	15	-	35	-	20	50	
Skill Enhancement Courses										
	To be opted by student from the Central Pool	3	2 : 0 : 1 : 4	15	05	35	20	30	75	
Value Added Courses										
B23-VAC-101	Human Values and Ethics	2	2 : 0 : 0 : 2	15	-	35	-	20	50	
Total		22		27					550	



B23-CSE-101 Problem Solving through C

Max. Marks: 100

Min. Pass Marks: 40

Internal Assessment Marks : 30 [Theory (20) + Practical (10)]

External End Term Exam Marks : 70 [Theory (50) + Practical (20)]

Time : Theory (3 Hours), Practical (3 Hours)

Credit: 4

Course Objectives:

1. To learn the basics of C program, data types and input/output statements.
2. To understand different types of operators, their hierarchies and also control statements of C.
3. To implement programs using arrays and strings.
4. To get familiar with advanced concepts like structures, union etc. in C language.

Examiner Note: Examiner will set a total of NINE questions. Out of which FIRST question will be compulsory and the remaining EIGHT questions will be set from four units selecting two questions from each unit. All questions will carry equal marks. First question will comprise of short answer type questions covering entire syllabus. Candidate will have to attempt FIVE questions in all, selecting one question from each unit. Examination will be of three-hour duration.

Practicum will be evaluated by an external and an internal examiner. Examination will be of three-hour duration.

UNIT-I

Overview of C: History, Importance, Structure of C Program, Character Set, Constants and Variables, Identifiers and Keywords, Data Types, Assignment Statement, Symbolic Constant.

Input/output: Formatted I/O Function-, Input Functions viz. scanf(), getch(), getche(), getchar(), gets(), output functions viz. printf(), putchar(), puts().

UNIT-II

Operators & Expression: Arithmetic, Relational, Logical, Bitwise, Unary, Assignment, Conditional Operators and Special Operators Operator Hierarchy;. Arithmetic Expressions, Evaluation of Arithmetic Expression, Type Casting and Conversion. Decision making with if statement, if-else statement, nested if statement, else-if ladder, switch and break statement, goto statement, Looping Statements: for, while, and do-while loop, jumps in loops.

UNIT-III

Arrays: One Dimensional arrays - Declaration, Initialization and Memory representation; Two Dimensional arrays -Declaration, Initialization and Memory representation.

Functions: definition, prototype, function call, passing arguments to a function: call by value; call by reference, recursive functions.

Strings: Declaration and Initialization, String I/O, Array of Strings, String Manipulation Functions: String Length, Copy, Compare, Concatenate etc., Search for a Substring.

UNIT-IV

Pointers in C: Declaring and initializing pointers, accessing address and value of variables using pointers; Pointers and Arrays.

User defined data types: Structures - Definition, Advantages of Structure, declaring structure variables, accessing structure members, Structure members initialization, Array of Structures; Unions - Union definition; difference between Structure and Union.

UNIT-V (PRACTICUM)

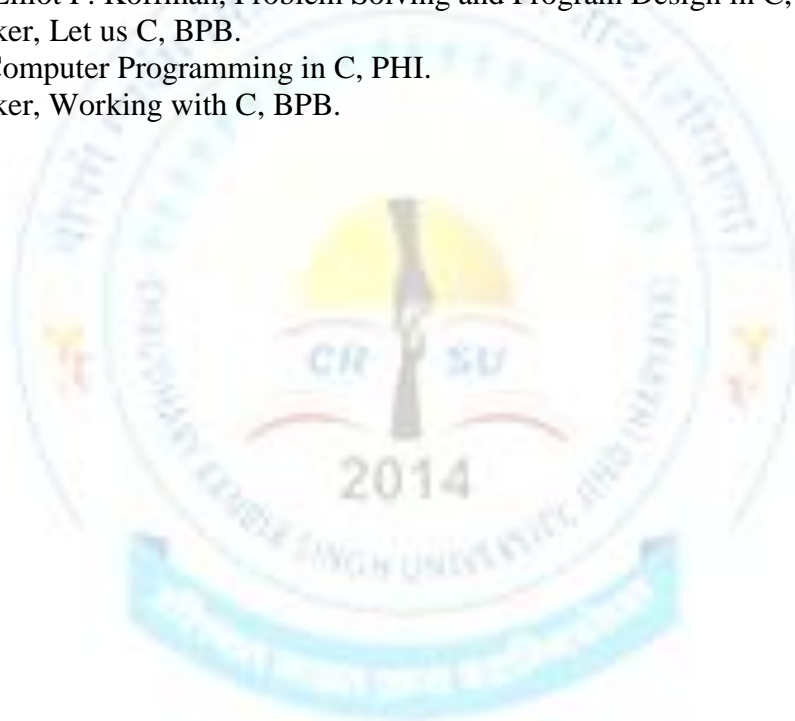
In practical component the teacher concerned / instructor will ensure minimum 15 programs / case studies execution based on C Language during the laboratory work.

Suggested EvaluationMethods:

InternalAssessment:	Theory	Practicum	End Term Examination:
Class Participation	5	5	A three hour exam for both Theory and Practicum
Seminar/presentation/assignment/quiz/class test etc	5	-	
Seminar/Demonstration/Viva-voce/Lab records etc.:	-	5	
Mid-Term Exam	10	-	
Total	20	10	

Suggested Readings:

1. Gottfried, Byron S., Programming with C, Tata McGraw Hill.
2. Balagurusamy, E., Programming in ANSI C, Tata McGraw-Hill.
3. Jeri R. Hanly & Elliot P. Koffman, Problem Solving and Program Design in C, Addison Wesley.
4. Yashwant Kanetker, Let us C, BPB.
5. Rajaraman, V., Computer Programming in C, PHI.
6. Yashwant Kanetker, Working with C, BPB.



B23-CSE-102 Computer Fundamentals

Max. Marks: 100
Min. Pass Marks: 40

Internal Assessment Marks : 30 [Theory (20) + Practical (10)]
External End Term Exam Marks : 70 [Theory (50) + Practical (20)]

Time : Theory (3 Hours), Practical (3 Hours)

Credit: 4

Course Objectives:

1. *To understand the basics of computer*
2. *To learn about I/O devices and operating systems*
3. *To understand internet and its services*
4. *To learn about the threats and security concepts on computers*

Examiner Note: Examiner will set a total of NINE questions. Out of which FIRST question will be compulsory and the remaining EIGHT questions will be set from four units selecting two questions from each unit. All questions will carry equal marks. First question will comprise of short answer type questions covering entire syllabus. Candidate will have to attempt FIVE questions in all, selecting one question from each unit. Examination will be of three-hour duration.

Practicum will be evaluated by an external and an internal examiner. Examination will be of three-hour duration.

UNIT-I

Computer Fundamentals: Evolution of Computers through generations, Characteristics of Computers, Strengths and Limitations of Computers, Classification of Computers, Functional Components of a Computer System, Applications of computers in Various Fields. Types of Software: System software, Application software, Utility Software, Shareware, Freeware, Firmware, Free Software.

Memory Systems: Concept of bit, byte, word, nibble, storage locations and addresses, measuring units of storage capacity, access time, concept of memory hierarchy. Primary Memory - RAM, ROM, PROM, EPROM. Secondary Memory - Types of storage devices, Magnetic Tape, Hard Disk, Optical Disk, Flash Memory.

UNIT-II

I/O Devices: I/O Ports of a Desk Top Computer, Device Controller, Device Driver. Input Devices: classification and use, keyboard, pointing devices - mouse, touch pad and track ball, joystick, magnetic stripes, scanner, digital camera, and microphone Output Devices: speaker, monitor, printers: classification, laser, ink jet, dot-matrix. Plotter.

Introduction to Operating System: Definition, Functions, Features of Operating System, Icon, Folder, File, Start Button, Task Bar, Status Buttons, Folders, Shortcuts, Recycle Bin, Desktop, My Computer, My Documents, Windows Explorer, Control Panel.

UNIT-III

The Internet: Introduction to networks and internet, history, Internet, Intranet & Extranet, Working of Internet, Modes of Connecting to Internet.

Electronic Mail: Introduction, advantages and disadvantages, User Ids, Passwords, e-mail addresses, message components, message composition, mailer features. Browsers and search engines.

UNIT-IV

Threats: Physical & non-physical threats, Virus, Worm, Trojan, Spyware, Keyloggers, Rootkits, Adware, Cookies, Phishing, Hacking, Cracking.

Computer Security Fundamentals: Confidentiality, Integrity, Authentication, Non-Repudiation, Security Mechanisms, Security Awareness, Security Policy, anti-virus software & Firewalls, backup & recovery.

UNIT-V (PRACTICUM)

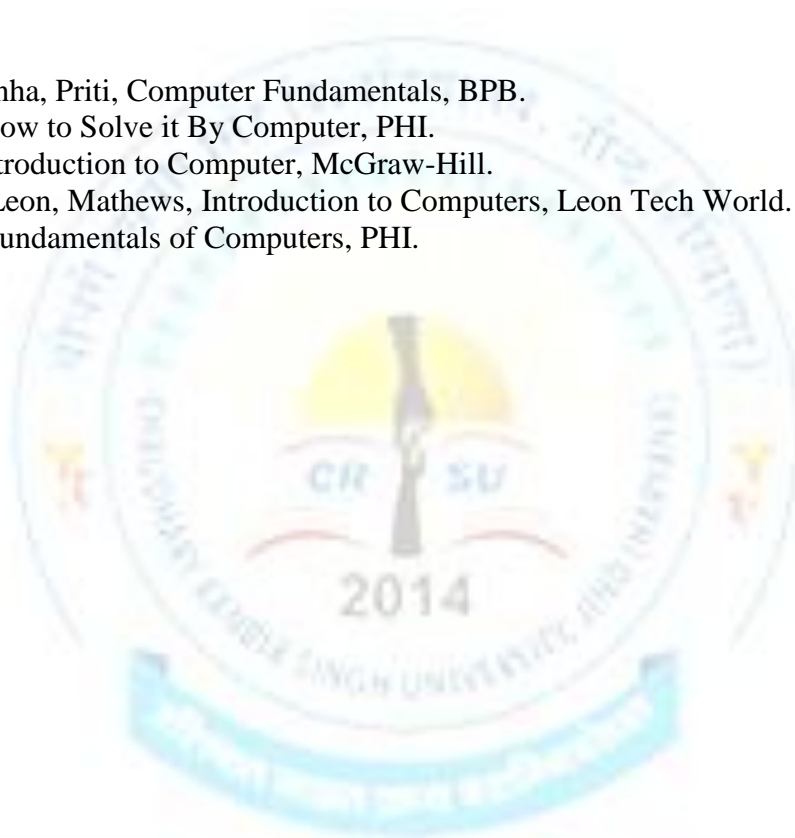
In practical component the teacher concerned / instructor will ensure minimum 15 programs / case studies during the laboratory work.

Suggested Evaluation Methods:

Internal Assessment:	Theory	Practicum	End Term Examination:
Class Participation	5	5	A three hour exam for both Theory and Practicum
Seminar/presentation/assignment/quiz/class test etc	5	-	
Seminar/Demonstration/Viva-voce/Lab records etc.:	-	5	
Mid-Term Exam	10	-	
Total	20	10	

Suggested Readings:

1. Sinha, P.K. & Sinha, Priti, Computer Fundamentals, BPB.
2. Dromey, R.G., How to Solve it By Computer, PHI.
3. Norton, Peter, Introduction to Computer, McGraw-Hill.
4. Leon, Alexis & Leon, Mathews, Introduction to Computers, Leon Tech World.
5. Rajaraman, V., Fundamentals of Computers, PHI.



B23-CSE-103 Basics of Computer Science

Max. Marks: 100
Min. Pass Marks: 40

Internal Assessment Marks : 30 [Theory (20) + Practical (10)]
External End Term Exam Marks : 70 [Theory (50) + Practical (20)]

Time : Theory (3 Hours), Practical (3 Hours)

Credit: 4

Course Objectives:

1. To introduce to the students, the basic understanding of the working of a computer system.
2. To familiarize the students with the concept of algorithms and flowchart.
3. To familiarize the students with the various types of software.
4. To make the students familiar with the basic internet technology and concepts.

Examiner Note: Examiner will set a total of NINE questions. Out of which FIRST question will be compulsory and the remaining EIGHT questions will be set from four units selecting two questions from each unit. All questions will carry equal marks. First question will comprise of short answer type questions covering entire syllabus. Candidate will have to attempt FIVE questions in all, selecting one question from each unit. Examination will be of three-hour duration.

Practicum will be evaluated by an external and an internal examiner. Examination will be of three-hour duration.

UNIT-I

Introduction to Computers: Definition of Computers, History and Generations of Computers, Characteristics of computer, Classification of Computers. Fundamental Block diagram of Computer: CPU, Input & Output Unit.

UNIT-II

Software: Definition of Software, Types of Software-System software, Application software and Utility software. Types of Computer Languages, Assemblers, Interpreters, Compiler.

UNIT-III

Introduction to Operating Systems: Types of Operating System, Functions of Operating System.

Windows: Introduction to Windows, Starting Windows, Desk Top, Task Bar, Opening and closing applications, icons- creating, renaming and removing. Date and Time setting, Working with files and folders-creating, deleting, opening, finding, copying, moving, and renaming.

UNIT-IV

Networking: Concept, Basic Elements of a Communication System, Data Transmission Media, LAN, MAN, WAN.

Introduction of Internet and WWW, Basic working of a Web Browser, Introduction to popular web browsers.

UNIT-V (PRACTICUM)

In practical component the teacher concerned / instructor will ensure minimum 15 programs / case studies execution during the laboratory work.

Suggested Evaluation Methods:

Internal Assessment:	Theory	Practicum	End Term Examination:
Class Participation	5	5	A three hour exam for both Theory and Practicum
Seminar/presentation/assignment/quiz/class test etc	5	-	
Seminar/Demonstration/Viva-voce/Lab records etc.:	-	5	

Mid-Term Exam	10	-	
Total	20	10	

Suggested Readings:

1. Fundamentals of Computers, VRajaraman 6th edition PHI Learning Private Limited 2014
2. Peter Norton: Computing Fundamentals. 6th Edition, McGraw Hill-Osborne, 2007
3. Alexis Leon and Marthews Leon: Introduction to Computers, Leon Vikas, 1999.
4. Internet Basics. E.Douglas Commer PHI.



B23-CSE-104 Fundamentals of Computer Science

Max. Marks: 75
Min. Pass Marks: 30

Internal Assessment Marks : 20 [Theory (15) + Practical (05)]
External End Term Exam Marks : 55 [Theory (35) + Practical (20)]

Time : Theory (3 Hours), Practical (3 Hours)

Credit: 3

Course Objectives:

1. *To understand the basic concepts of operating systems*
2. *To do the basic editing and formatting in a document*
3. *To create basic spread-sheets for different purposes*
4. *To create basic presentations for different applications*

Examiner Note: Examiner will set a total of NINE questions. Out of which FIRST question will be compulsory and the remaining EIGHT questions will be set from four units selecting two questions from each unit. All questions will carry equal marks. First question will comprise of short answer type questions covering entire syllabus. Candidate will have to attempt FIVE questions in all, selecting one question from each unit. Examination will be of three-hour duration.

Practicum will be evaluated by an external and an internal examiner. Examination will be of three-hour duration.

UNIT-I

Computer Fundamentals: Evolution of Computers through generations, Characteristics of Computers, Strengths and Limitations of Computers, Classification of Computers, Functional Components of a Computer System, Applications of computers in Various Fields. Types of Software: System software, Application software, Utility Software.

UNIT-II

Memory Systems: Concept of bit, byte, word, nibble, storage locations and addresses, measuring units of storage capacity, access time, concept of memory hierarchy. Primary Memory - RAM, ROM, PROM, EPROM. Secondary Memory - Types of storage devices, Magnetic Tape, Hard Disk, Optical Disk, Flash Memory.

I/O Devices: I/O Ports of a Desk Top Computer, Device Controller, Device Driver. Input Devices: classification and use, keyboard, pointing devices - mouse, touch pad and track ball, joystick, magnetic stripes, scanner, digital camera, and microphone Output Devices: speaker, monitor, printers: classification, laser, ink jet, dot-matrix. Plotter.

UNIT-III

Introduction to Operating System: Definition, Functions, Features of Operating System, Icon, Folder, File, Start Button, Task Bar, Status Buttons, Folders, Shortcuts, Recycle Bin, Desktop, My Computer, My Documents, Windows Explorer, Control Panel.

UNIT-IV

The Internet: Introduction to networks and internet, history, Internet, Working of the Internet, Modes of Connecting to Internet.

Electronic Mail: Introduction, advantages and disadvantages, User Ids, Passwords, e-mail addresses, message components, message composition, mailer features. Browsers and search engines.

UNIT-V (PRACTICUM)

In practical component the teacher concerned / instructor will ensure minimum 15 programs / case studies during the laboratory work.

Suggested Evaluation Methods:

Internal Assessment:	Theory	Practicum	End Term Examination:
Class Participation	4	2	A three hour exam for both Theory and Practicum
Seminar/presentation/assignment/quiz/class test etc	4	-	
Seminar/Demonstration/Viva-voce/Lab records etc.:	-	3	
Mid-Term Exam	7	-	
Total	15	5	

Suggested Readings:

1. Sinha, P.K. & Sinha, Priti, Computer Fundamentals, BPB.
2. Dromey, R.G., How to Solve it By Computer, PHI.
3. Norton, Peter, Introduction to Computer, McGraw-Hill.
4. Leon, Alexis & Leon, Mathews, Introduction to Computers, Leon Tech World.
5. Rajaraman, V., Fundamentals of Computers, PHI.

