**Government College for Girls, Sec-14, Gurugram**

**Course Lesson Plan 2023-24 (Even Semester)**

**Class:** MSc (CS) II Semester

**Course Title**: Object Oriented Programming Using C++

**Paper Code:** 16MCS22C2

**Objectives-**

To enable the student to:

* Understand the concept of object oriented programming and differentiate it from procedure oriented programming.
* Apply C++ features such as class, objects, constructors, destructors, inheritance and templates in program design and implementation.
* Analyze the characteristics of OOPS and build object oriented software using C++.
* Assess the OOPs features like Virtual Functions, Polymorphism and Exception Handling with other programming languages.

**Internal Assessment: 20 Marks External Assessment: 80**

**Continuous Assessment:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S. No.** | **Component** | **Duration** | **Max. Marks** | **Date** | **Coverage** |
| 1. | Assignment-II | 1 Week | 05 | Third Week of February | Based on Unit –I,II |
| 2. | Test-I | 45Minutes  | 10 | First week of April | Based on Unit –I, II, III |

**Text Books:**

T1. Balaguruswamy : Object Oriented Programming and C++, TMH

**Reference Books:**

R1 Herbert Schildts : C++ - The Complete Reference, Tata McGraw Hill Publications.

R2 Balaguru Swamy : C++, Tata McGraw Hill Publications.

R3 Shah & Thakker : Programming in C++, ISTE/EXCEL.

|  |  |  |
| --- | --- | --- |
| **Month** | **Week** | **Topics** |
| Jan, 2024 | 1st week |  **Unit-I** Object Oriented Programming Concepts: Procedural Language and Object Oriented approach.  |
| 2nd week | Characteristics of OOP: Objects, classes, Encapsulation, Data Abstraction, Inheritance, Polymorphism, Dynamic Binding, Message Passing.  |
| 3rd week | Structure of C++ program: Data-types, Variables, Static Variables, Operators in C++, Arrays,  |
| 4th week | Strings, Structure, Functions, Recursion, Control Statements |
| Feb, 2024 | 1st week | **Unit-II** Classes: Class, object, Memory Allocation for Objects, memory layout of objects, private, public, protected member functions, static members.  |
| 2nd week | Constructors: Features, types, dynamic constructor, Parameterized constructors; destructors.  |
| 3rd week | Memory management: Dynamic Memory allocation: new, delete, Object Creation at Run Time; This Pointer. |
| 4th week | **Unit-III** Inheritance: Derived Class and Base Class, Different types of Inheritance, Overriding member  |
| March, 2024 | 1st week | function, Public and Private Inheritance, Ambiguity in Multiple inheritance, Virtual Inheritance,  |
| 2nd week | Abstract Class, Polymorphism: Definition, operator overloading, Overloading Unary and Binary Operators, Function overloading, Virtual function, Friend function, Static function. |
| 3rd week | **Unit-IV** Exception handling: Throwing, Catching, Re-throwing an exception, specifying exceptions; processing unexpected exceptions; |
| April, 2024 | 1st week | Exceptions when handling exceptions, resource capture and release. Templates: Introduction; Class templates; Function templates; Overloading of template function,  |
| 2nd week | namespaces. Introduction to STL: Standard Template Library: benefits of STL; containers, adapters, iterators, vector, lists. |
| 3rd week | Presentations |
| 4th week | Revision and doubt clearing sessions. |

Ms. Sarita Sheera

Associate Professor, Computer Science

**Govt College for Girls, Sec-14, Gurugram**

**Course Lesson Plan 2023-24 (Even Sem)**

**Class: M.Sc (Computer Science) 4th Sem**

**Course Title: Internet And Web Designing** **(Paper Code:** 17MCS24DB1)

**Instructor:**  Ms. Kiran Yadav

**Course Outcomes:**

By the end of the course the students will be able to:

CO1 Review the current topics in Web & Internet technologies and describe the basic concepts for website and internet implementation.

CO2 Learn the basic working scheme of the Internet and World Wide Web and understand fundamental tools and technologies for web design.

CO3 Comprehend the technologies for Hypertext Mark-up Language (HTML), XML and specify design rules in constructing web pages and sites. Effectively deal with programming issues relating to VB Script, JavaScript, Java, ASP, Front Page and Flash. Create and Design websites.

CO4 Figure out the various security hazards on the Internet and need of security measures.

CO5 Create and use Cascading Style Sheet (CSS) and Information architecture document for a web site and construct a web site that conforms to the web standards of today and includes e-commerce and web marketing

**Reference Books:**

1.Fundamentals of the Internet and the World Wide Web, Raymond Greenlaw and Ellen Hepp.TMH.

2.Internet & World Wide Programming, Deitel, Deitel & Nieto. Pearson Education.

3.Complete reference guide to java script, Aron Weiss, QUIE.

4.Dick Oliver: Tech Yourself HTML 4 in 24 Hours, Techmedia.

**Evaluation Scheme:**

**External Assessment: 80**

**Internal assessment: 20**

**Continuous Assessment:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S. No.** | **Component** | **Duration** | **Max. Marks** | **Date** | **Coverage** |
| 1. | Assignment-I | 1 Week | 05\* | Fourth Week of January | Based on Unit –I |
| 2. | Class Test | 45 Minutes | 10 | 1st week of March  |  |
| 3. | Assignment-II | 1 Week | 05\* | 1st Week of April | Based on Unit –III |
| 4. | Attendance | Throughout the Semester | 05 |  |  |

* Best of two assignments

|  |  |
| --- | --- |
| **Month** | **Syllabus to be covered** |
| Jan 2024 | **Unit-I** Introduction: Internet, Evolution of Internet, Types of Computer Network: LAN, WAN, MAN Internet Protocol, Internet Services, WWW, Working of Internet, Introduction to Intranet, DNS working,. **Unit-I Contd.** Configuring Internet Connection, Internet Connection Concepts, Connecting LAN to Internet; Client-Server environment: Single User, Multi User, Server, Workstation, Computer Network; Network Topologies; Network Protocols, E-Mail Concepts – Configuring E-Mail Program, Sending and Receiving Files through E-Mail, Fighting Spam, Sorting Mail, E-Mail mailing lists and avoiding E-Mail viruses.Assignment-1 |
| Feb 2024 | **Unit-II** Searching and Web Casting Technique: Popular web servers, Web Browsers; basic features of browsers: bookmarks, cookies, progress indicators, customization of browsers, browsing tricks, next generation web browsing, search engines; Hypertext Transfer Protocol (HTTP), URL. Internet Tools: Online Chatting, Messaging, and Conferencing Concepts, Usenet newsgroup concepts: Reading usenet newsgroups, Instant messaging, Web-Based chat rooms and discussion boards, Voice and Video conferencing. Streamlining Browsing, Keeping track of Favorite Web Sites, Web Security, Privacy, and Site-Blocking. Test based on Unit 1  |
| March 2024 | **Unit-3:** Web Designing using HTML: Understanding HTML, XHTML Syntax and Semantics, HTML Elements: Paragraph, Lists, Tables, Images, Frames, Forms, Linking to other Web Pages: External and Internal linking, E-mail Links; Working with Background colors and Images; Marquee; Text Alignment and Text Formatting, Advanced Layout with Tables; Publishing HTML Pages. Assignment 2 |
| April 2024 | **Unit-4 :** Cascading Style Sheets: Introduction, Inline, Internal, External CSS, Linking CSS to Web Page. Client–Side Programming: Introduction to JavaScript, Basic Syntax, Variables and Data types, Statements, Operators, Literals, Functions, Objects, Arrays. XML: Relation between XML and HTML, Goals of XML, Structure and Syntax of XML, Well Formed XML, DTD and its Structure, tree structures in data organization, Searching with XPath. Test Based on Unit 4 |

 **(Kiran Yadav)**

**Govt College for Girls, Sec-14, Gurugram**

Course Lesson Plan 2023-24 (Even Sem)

Class**: BCA 2ND Semester**

Course Title**: Basics of Computer-II 2.06**

Instructor**: POONAM**

**Course Outcomes**:

By the end of the course the students will be able to:

CO1 : handle a computer system for day-to-day use.

CO2 : enumerate different types of input/ output devices and types of memory.

CO3 : differentiate between system and application software.

CO4 : study windows operating system

CO5 : prepare documents / spreadsheets

**Reference Books**:

1 . Introduction of Information System ALEXISLEON Introduction to essential tools or Sushila Madan

**Evaluation Scheme:**

Internal Assessment: NA External Assessment: 50

Continuous Assessment:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S. No. | Component | Duration | Max. Marks | Date | Coverage |
| 1. | Assignment-I | 1 Week | NA | Third Week of Feb | Based on Unit –I |
| 2. | Test-I | 45 Minutes | NA | First week of March | Based on Unit – II |
| 3. | Assignment-II | 1 Week | NA | First Week of April | Based on Unit –III |
| 4. | Test-II | 45Minutes  | NA | Second week of April | Based on Unit – IV |

 Contact Hours: 3 Lectures (45 Minutes each)/Week

|  |  |  |  |
| --- | --- | --- | --- |
| S.No. | Lectures  | Topic to be covered | Text book  |
| 1. | Jan 1-6, 2024 | Fundamental of computers: Model of a digital computer; Functioning of a digital computer; |  R1 |
| 2. | Jan 8-13, 2024 | Types of a digital computer; Advantages of computers. Difference between digital computer and analog computer, | R1 |
| 3 | Jan 15-20, 2024 | Applications of computers: Computers in Commerce, Marketing, Education and Management. | R1 |
| 4. | Jan 22-27, 2024 | Software concepts: Types of Software and their role, Different System Software types Operating systems, | R1 |
| 5. | Jan 29-31, 2024Feb 1-3, 2024 | Translators, System Utilities; Concept of Application Packages; Types of an Operating system- | R1 |
| 6. | Feb 5-10, 2024 | Multi-user O.S., Multi-tasking O.S., Multi-Processing O.S; Time – sharing O.S., | R1 |
| 7. | Feb 12-17, 2024 | Multi-Programming O.S.Operating System as a resource Manager, concept of GUI and CUI. | R1 |
| 8. | Feb 19-24, 2024 | Introduction to Windows: Components of a Application Window; Types of Windows | R1 |
| 9. | Feb 26-29, 2024 | Windows as an Operating System, Windows explorer, Using Paintbrush, Control Panel, | R1 |
| 10. | Mar 1-9, 2024 | Installing a printer. User interfaces- CUI and GUI; Concept of a Desktop and Taskbar, | R1 |
| 11. | Mar 11-16, 2024 | My Computer, Recycle Bin, My Documents and Internet Explorer icons. | R1 |
| 12. | Mar 18-22, 2024 | MS-Excel: Applications of a Spreadsheet; Advantages of an Spreadsheet; Features of Excel; | R1 |
| 13. | April 1-6, 2024 | Rows, Columns, Cell, Menus, Creating worksheet, Formatting, Printing, establishing | R1 |
| 14. | April 8-13, 2024 | worksheet links, Table creating and printing graphs, Macros, Using Built-in-functions. | R1 |
| 15 | April 15-20, 2024 | Revision and Doubts Discussion |  |

(POONAM)

**Govt College for Girls, Sec-14, Gurugram**

Course Lesson Plan 2023-24 (Even Sem)

Class**: BCA 4TH Semester**

Course Title**:** Object Oriented Programming Using C++ Room No :26

Instructor**: Mrs. POONAM SECTION :A & B**

**Course Outcomes**:

By the end of the course the students will be able to:

* **CS01** : Understand and use the basic programming constructs of C/C++
* **CS02**: Manipulate various C/C++ datatypes, such as arrays, strings, and pointers
* **CS03**: Isolate and fix common errors in C++ programs
* **CS04**: Use memory appropriately, including proper allocation/deallocation procedures
* **CS05**: Apply object-oriented approaches to software problems in C++
* **CS06**: Write small-scale C++ programs using the above skills

 **Reference Books**:

1. Balaguru Swamy : C++, Tata McGraw Hill Publications.

 2. Balaguruswamy : Object Oriented Programming and C++, TMH

3. Herbert Schildts : C++ - The Complete Reference, Tata McGraw Hill Publications.

Evaluation Scheme:

Internal Assessment: 20 Marks External Assessment: 80

Continuous Assessment:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S. No. | Component | Duration | Max. Marks | Date | Coverage |
| 1. | Assignment-I | 1 Week | 10 | Third Week of Feb | Based on Unit –I |
| 2. | Test-I | 45 Minutes | 10 | First week of March | Based on Unit – II |
| 3. | Assignment-II | 1 Week | 10 | First Week of April | Based on Unit –III |
| 4. | Test-II | 45Minutes  | 10 | Second week of April | Based on Unit – IV |

Contact Hours: 6 Lectures (45 Minutes each)/Week

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| --- | --- | --- | --- |
| S.No. | Lectures  | Topic to be covered | Text book  |
| 1. | Jan 1-6, 2024 | Procedural Language and Object Oriented approach, Characteristics of OOP, user defined types |  R1 |
| 2. | Jan 8-13, 2024 | polymorphism and encapsulation. Getting started with C++: syntax, data types | R1 |
| 3 | Jan 15-20, 2024 | variables, string, function, namespace and exception, operators | R1 |
| 4. | Jan 22-27, 2024 | flow control, recursion, array and pointer, structure, iterators, hashes, iostreams and other types. | R1 |
| 5. | Jan 29-31, 2024Feb 1-3, 2024 | classes, private and public, Constructor and Destructor , member function, static members | R1 |
| 6. | Feb 5-10, 2024 | references; Memory Management: new, delete, object copying | R1 |
| 7. | Feb 12-17, 2024 | copy constructer, assignment operator, resource capture and release. | R1 |
| 8. | Feb 19-24, 2024 | this input , Friend function, Static function. | R1 |
| 9. | Feb 26-29, 2024 | this OUTPUT and Inheritance and Polymorphism | R1 |
| 10. | Mar 1-9, 2024 | Derived Class and Base Class, Different types of Inheritance | R1 |
| 11. | Mar 11-16, 2024 | Overriding member function, Abstract Class, Public and Private Inheritance | R1 |
| 12. | Mar 18-22, 2024 | Ambiguity in Multiple inheritance , Virtual function | R1 |
| 13. | April 1-6, 2024 | Exception and derived class, function exception declaration, unexpected exception, exception when handling exception | R1 |
| 14. | April 8-13, 2024 | Template classes, declaration, template functions, namespace, string | R1 |
| 15 | April 15-20, 2024 | Revision and Doubts Discussion |  |

 (POONAM)

**Govt College for Girls, Sec-14, Gurugram**

Course Lesson Plan 2023-24 (Even Sem)

Class**:** B.COM-(HONS) 2ND SEM

Course Title**:** Introduction to Computers Room No :104

Instructor**: Mrs. POONAM**

**Course Outcomes**:

By the end of the course the students will be able to:

* **CS01** . handle a computer system for day to day use.
* **CS02** . enumerate different types of input/ output devices and types of memory.
* **CS03**. perform basic arithmatic operations using different number systems including binary arithmetic.
* **CS04**. differentiate between system and application software.
* **CS05**. prepare documents / spreadsheets

**Reference Books**:

1. SATENDER BAL GUPTA
2. . Introduction to Information Technology, ITL ,Pearson education, delhi. 3
3. Introduction to Information Systems, Alexis Leon.
4. 4 . Date, C.J: An Introduction to Database Systems, Addison Wesley, Massachusetts

Evaluation Scheme:

External Assessment: 60

Continuous Assessment

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| --- | --- | --- | --- | --- | --- |
| S. No. | Component | Duration | Max. Marks | Date | Coverage |
| 1. | Assignment-I | 1 Week | 10 | Third Week of Feb | Based on Unit –I |
| 2. | Test-I | 45 Minutes | 10 | First week of March | Based on Unit – II |
| 3. | Assignment-II | 1 Week | 10 | First Week of April | Based on Unit –III |
| 4. | Test-II | 45Minutes  | 10 | Second week of April | Based on Unit – IV |

Contact Hours: 6 Lectures (45 Minutes each)/Week

|  |  |  |  |
| --- | --- | --- | --- |
| S.No. | Lectures  | Topic to be covered | Text book  |
| 1. | Jan 1-6, 2024 | Computer basic concepts: Definition and characteristics of a computer, Advantages of computer, Components of computer, Human-being Vs computer, Difference between Computer and Calculator |  R1 |
| 2. | Jan 8-13, 2024 | Applications of computer, Generations of Computer, Types of computer: Analog, Digital and Hybrid computers | R1 |
| 3 | Jan 15-20, 2024 | Micro, Mini, Mainframe and Super Computers, Input devices and Output devices, Introduction to Computer memories: Primary storage, Secondary storage. Introduction to Software: Software Types, Systems Software, Types of Operating System, Application Software | R1 |
| 4. | Jan 22-27, 2024 | Introduction to Programming Language: Types of Programming Language, Language Translators. | R1 |
| 5. | Jan 29-31, 2024Feb 1-3, 2024 | Computer Network: Introduction, Network Elements, Advantages of Networking, Network Topologies, Communication Channels, Types of Computer Networks- LAN, MAN and WAN , Public and Private Network., Communication devices, Introduction to MS Word: Features of MS Word, Components of Word document window | R1 |
| 6. | Feb 5-10, 2024 | Menu Bars, Creating own document-, Formatting text and document, Mail Merge, Creating a Macro, Working with auto shapes | R1 |
| 7. | Feb 12-17, 2024 | Finding and replacing text, Spell Check and Grammar Check, , Export and Import File | R1 |
| 8. | Feb 19-24, 2024 | Working within tables- Adding, deleting, modifying rows and columns, Printing documents | R1 |
| 9. | Feb 26-29, 2024 | Unit-III Internet: Introduction, History of Internet, Benefits of the Internet, Hardware and Software requirement for Internet, Internet Applications or services of Internet, Types of Internet Connection, Internet Addressing | R1 |
| 10. | Mar 1-9, 2024 | Extranet and E-Mail, Mobile Computing.MS Excel: Features of MS Excel, Components of Worksheet, Menu Bars, Working with worksheets-cells-Entering ,editing, moving, copying, cutting, pasting | R1 |
| 11. | Mar 11-16, 2024 | Inserting and deleting of cells, rows and columns, Formatting a worksheet, Formatting textual data | R1 |
| 12. | Mar 18-22, 2024 | Creating and editing charts, Types of Chart, Excel Functions, Goal Seek, validation, Pivot Table and Pivot Chart, Sort, Filter, Print the worksheet, Introduction to Database Systems: Basic concepts, Components of database, Advantages of database, DBMS, Components of DBMS, Database Models | R1 |
| 13. | April 1-6, 2024 | Microsoft Access: Create a database, Database Objects, Creating tables, Data Types, Sorting, Filtering and 16 Creating a relationships, Format a table, Creating and modifying a Form | R1 |
| 14. | April 8-13, 2024 | Operators in Access, Designing Queries and Reports | R1 |
| 15 | April 15-20, 2024 | Revision and Doubts Discussion |  |

 **Govt College for Girls, Sec-14, Gurugram**

Course Lesson Plan 2023-24 (Even Sem)

Class**: BSc. 4th Semester**

Course Title**:** 4.1: Data Structures with C /C++

Room No 24

Instructor**: Ms. Namita Khurana**

**Course Outcomes**:

By the end of the course the students will be able to:

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| --- | --- |
| CO1: | Choose the appropriate data structure and algorithm design method for a specified application. |
| CO2: | Solve problems implementing appropriate data structures |
| CO3: | Implement linear and non-linear data structure operations using C programs. |
| CO4: | Implement sorting and searching algorithms using relevant data structures |
| CO5: | Analyze the asymptotic performance of algorithms |
|  |  |

**Reference Books**:

1. Data structure through c in depth “by Deepali srivastava,s.k srivastava
2. Tannenbaum: Data Structure Using C, Tata McGraw-Hill.
3. Lipschutz: Data Structures (Schaum’s Outline Series), Tata McGraw-Hill

Evaluation Scheme:

Internal Assessment: 20 Marks External Assessment: 80

Continuous Assessment:

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| --- | --- | --- | --- | --- | --- |
| S. No. | Component | Duration | Max. Marks | Date | Coverage |
| 1. | Assignment-I | 1 Week | 10 | Third Week of Feb | Based on Unit –I |
| 2. | Test-I | 45 Minutes | 10 | First week of March | Based on Unit – II |
| 3. | Assignment-II | 1 Week | 10 | First Week of April | Based on Unit –III |
| 4. | Test-II | 45Minutes  | 10 | Second week of April | Based on Unit – IV |

 Contact Hours: 6 Lectures (45 Minutes each)/Week

|  |  |  |  |
| --- | --- | --- | --- |
| S.No. | Lectures  | Topic to be covered | Text book  |
| 1. | Jan 1-6, 2024 | Data-Structure: Data-Structure operations, Algorithm, Complexity, Data structure and its essence |  R1 |
| 2. | Jan 8-13, 2024 | Introduction to Arrays, Array operations, Multi- dimensional arrays, | R1 |
| 3 | Jan 15-20, 2024 | sequential allocation, address calculations, sparse arrays,  | R1 |
| 4. | Jan 22-27, 2024 | Stacks-Introduction to Stacks, primitive operations on stacks, representation of stacks as an array and stack-applications | R1 |
| 5. | Jan 29-31, 2024Feb 1-3, 2024 | Queues:-Introduction to queues, operations on queue, circular queue, priority queue, Applications of queue. | R1 |
| 6. | Feb 5-10, 2024 | Linked List-introduction and basic operations, Header nodes, doubly linked list, circular linked list, | R1 |
| 7. | Feb 12-17, 2024 | Applications of linked list, Representation of linked list as an array, stacks and queues. | R1 |
| 8. | Feb 19-24, 2024 | Tree structures: Basic terminology, binary trees and binary search trees, implementing binary trees, Tree traversal algorithms, | R1 |
| 9. | Feb 26-29, 2024 | threaded trees, trees in search algorithms, AVL Trees | R1 |
| 10. | Mar 1-9, 2024 | Polish notation and expression trees, applications of binary trees. | R2 |
| 11. | Mar 11-16, 2024 | Graph data structure and their applications ,Graph traversals | R2 |
| 12. | Mar 18-22, 2024 | shortest paths,.spanning trees and related algorithms | R2 |
| 13. | April 1-6, 2024 | Sorting: Internal and external sorting. Various sorting algorithms, | R2 |
| 14. | April 8-13, 2024 | Time and Space complexity of algorithms. | R2 |
| 15 | April 15-20, 2024 | Searching techniques. Applications of Sorting and Searching in computer science | R2 |
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(Namita)

**Govt College for Girls, Sec-14, Gurugram**

Course Lesson Plan 2023-24 (Even Sem)

Class**: BSc.(M.H) 4th Semester**

Course Title**:** BHM 246: Data Structures with C

Room No 38

Instructor**: Ms. Namita Khurana**

**Course Outcomes**:

By the end of the course the students will be able to:

|  |  |
| --- | --- |
| CO1: | Choose the appropriate data structure and algorithm design method for a specified application. |
| CO2: | Solve problems implementing appropriate data structures |
| CO3: | Implement linear and non-linear data structure operations using C programs. |
| CO4: | Implement sorting and searching algorithms using relevant data structures |
| CO5: | Analyze the asymptotic performance of algorithms |
|  |  |

**Reference Books**:

1. Data structure through c in depth “by Deepali srivastava,s.k srivastava
2. Tannenbaum: Data Structure Using C, Tata McGraw-Hill.
3. Lipschutz: Data Structures (Schaum’s Outline Series), Tata McGraw-Hill

Evaluation Scheme:

Internal Assessment: 20 Marks External Assessment: 80

Continuous Assessment:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S. No. | Component | Duration | Max. Marks | Date | Coverage |
| 1. | Assignment-I | 1 Week | 10 | Third Week of Feb | Based on Unit –I |
| 2. | Test-I | 45 Minutes | 10 | First week of March | Based on Unit – II |
| 3. | Assignment-II | 1 Week | 10 | First Week of April | Based on Unit –III |
| 4. | Test-II | 45Minutes  | 10 | Second week of April | Based on Unit – IV |

 Contact Hours: 6 Lectures (45 Minutes each)/Week

|  |  |  |  |
| --- | --- | --- | --- |
| S.No. | Lectures  | Topic to be covered | Text book  |
| 1. | Jan 1-6, 2024 | Data structure and its essence, Data structure types. |  R1 |
| 2. | Jan 8-13, 2024 | Linear and list structures: Arrays, stacks, queues and lists; | R1 |
| 3 | Jan 15-20, 2024 | Sequential and linked structures; Simple lists, circular lists, doubly linked lists. | R1 |
| 4. | Jan 22-27, 2024 | Inverted lists, threaded lists, Operations on all these structures and applications. | R1 |
| 5. | Jan 29-31, 2024Feb 1-3, 2024 | Arrays, Multidimensional arrays, sequential allocation, address calculations, | R1 |
| 6. | Feb 5-10, 2024 | sparse arrays. Tree structures: Trees, binary trees and binary search trees. | R1 |
| 7. | Feb 12-17, 2024 | Implementing binary trees, Tree traversal algorithms,  | R1 |
| 8. | Feb 19-24, 2024 | threaded trees, trees in search algorithms, AVL Trees. | R1 |
| 9. | Feb 26-29, 2024 | Graph data structure and their applications. Graph traversals, shortest paths, | R1 |
| 10. | Mar 1-9, 2024 | spanning trees and related algorithms. | R1 |
| 11. | Mar 11-16, 2024 | Family of B-Trees: B-tree, B\*-Trees, B+ Trees | R2 |
| 12. | Mar 18-22, 2024 | Sorting: Internal and External sorting. Various sorting algorithms, | R2 |
| 13. | April 1-6, 2024 | Time and Space complexity of algorithms. | R2 |
| 14. | April 8-13, 2024 | Searching techniques and Merging algorithms. | R2 |
| 15 | April 15-20, 2024 | Applications of sorting and searching in computer science. | R2 |
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(Namita)

**Govt College for Girls, Sec-14, Gurugram**

Course Lesson Plan 2023-24 (Even Sem)

Class**: BCA 2nd Semester**

Course Title**: MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE** (BCA-108)

Room No 26

Instructor**: Ms. Namita Khurana**

**Course Outcomes**:

By the end of the course the students will be able to:

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| CO1: | Evaluate Logical Arguments and Construct Mathematical Proofs |
| CO2: | Analyze Graph Isomorphism and Shortest Path Algorithms: |
| CO3: | Understand Sets, Relations, and Functions |
| CO4: | Students will be able to formulate and solve recurrence relations |
| CO5: | Model and Solve Real-World Problems Using Graphs and Trees: |
|  |  |

**Reference Books**:

1. Elements of Mathematical Foundations of Computer Science, Jeavonsons Publication
2. Gupta S.P. and Kapoor, V.K., Fundamentals of Applied statistics, Sultan Chand & Sons, 1996.
3. Gupta S.P. and Kapoor, V.K., Fundamentals of Mathematical statistics, Sultan Chand and Sons, 1995.
4. Graybill, Introduction to Statistics, McGraw
5. Anderson, Statistical Modelling, McGraw.
6. Babu Ram : Discrete Mathematics

Evaluation Scheme:

Internal Assessment: 20 Marks External Assessment: 80

Continuous Assessment:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S. No. | Component | Duration | Max. Marks | Date | Coverage |
| 1. | Assignment-I | 1 Week | 10 | Third Week of Feb | Based on Unit –I |
| 2. | Test-I | 45 Minutes | 10 | First week of March | Based on Unit – II |
| 3. | Assignment-II | 1 Week | 10 | First Week of April | Based on Unit –III |
| 4. | Test-II | 45Minutes  | 10 | Second week of April | Based on Unit – IV |

 Contact Hours: 6 Lectures (45 Minutes each)/Week

|  |  |  |  |
| --- | --- | --- | --- |
| S.No. | Lectures  | Topic to be covered | Text book  |
| 1. | Jan 1-6, 2024 | Basic Statistics: Measure of Central Tendency, Preparing frequency distribution table, Mean |  R1 |
| 2. | Jan 8-13, 2024 | Mode, Median | R1 |
| 3 | Jan 15-20, 2024 | Measure of Dispersion: Range, Variance  | R1 |
| 4. | Jan 22-27, 2024 | Standard Deviations, Correlation and Regression | R1 |
| 5. | Jan 29-31, 2024Feb 1-3, 2024 | Algorithm: Algorithms, merits and demerits, Exponentiation, How to compute fast exponentiation | R1 |
| 6. | Feb 5-10, 2024 | Linear Search, Binary Search,  | R1 |
| 7. | Feb 12-17, 2024 | "Big Oh" notation, Worst case, Advantage of logarithmic algorithms over linear algorithms, complexity. | R1 |
| 8. | Feb 19-24, 2024 | Graphs, Types of graphs, degree of vertex, sub graph,  | R1 |
| 9. | Feb 26-29, 2024 | Isomorphic and homeomorphic graphs | R1 |
| 10. | Mar 1-9, 2024 | Adjacent and incidence matrices, Path Circuit , Eulerian, Hamiltonian path circuit. | R6 |
| 11. | Mar 11-16, 2024 | Tree: Trees, Minimum distance trees, Minimum weight and Minimum distance spanning trees. | R6 |
| 12. | Mar 18-22, 2024 | Recursion: Recursively defined function. Merge sort, Insertion sort, Bubble sort, and Decimal to Binary | R6 |
| 13. | April 1-6, 2024 | Recurrence Relations: LHRR, LHRRWCCs, DCRR. Recursive procedures. | R6 |
| 14. | April 8-13, 2024 | Number Theory: Principle of Mathematical induction, GCD, Euclidean algorithm, | R6 |
| 15 | April 15-20, 2024 | Fibonacci numbers, congruence’s and equivalence relations, public key encryption schemes | R6 |

(Namita)

**Govt College for Girls, Sec-14, Gurugram**

**Course Lesson Plan 2023-24 (Even Sem)**

**Class:** MSc (CS) IVth Semester

**Course Title:** Java Programming **Room No - 81**

**Instructor:**  Dr. Shweta Sharma

**Course Outcomes:**

By the end of the course the students will be able to:

CO1: Use the characteristics of Java language in a program, variables and data types in program development.

CO2:Identify and implement arrays, String and Selection Statements.

CO3:Write Java programs using object-oriented programming techniques including classes, objects, methods, instance variables, and interface. Apply Java features to design and implementation of Packages

CO4: Design and implementation programs of Exception handling, Packages.

CO5: Design and implementation programs of Multithreading Programming, Window based programs.

**Text Books:**

T1. Patrick Naughton & Herbert Schildt.: Java 2.0 : The Complete Reference, TMH..

**Reference Books:**

R1. Jackson, J. : Java by Example, Sunsoft Press.

R2. Wiber, J. : Using Java 2 Platform, PHI.

R3. Harold, E. : Java Secrets, Comdex.

R4. Zolli, A.: Mastering Java, BPB.

R5. E Balagurusamy: Programming with Java, 6e, McGraw Hill

**Evaluation Scheme:**

**Internal Assessment: 20 Marks External Assessment: 80**

**Continuous Assessment:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S. No.** | **Component** | **Duration** | **Max. Marks** | **Date** | **Coverage** |
| 1. | Assignment-I | 1 Week | 10 | Fourth Week of Jan | Based on Unit –I |
| 2. | Test-I | 45 Minutes | 10 | Third week of February | Based on – II |
| 3. | Assignment-II | 1 Week | 10 | Second Week of March | Based on Unit –III |
| 4. | Test-II | 45 Minutes  | 10 | Third week of April | Based on Unit – IV |

 **Contact Hours: 6 Lectures (45 Minutes each)/Week**

|  |  |  |  |
| --- | --- | --- | --- |
| **S.No.** | **Lectures**  | **Topic to be covered** | **Text book**  |
| 1. | Jan 1-6, 2024 | Introduction: Java History, Java features  | T1, R5 |
| 2. | Jan 8-13, 2024 | Java and Internet, Java and World Wide Web,  | T1, R5 |
| 3 | Jan 15-20, 2024 | Java Program Structure, Java Tokens, Java Virtual Machine, Data Types,  | T1, R5 |
| 4. | Jan 22-27, 2024 | Operators and Expressions, Decision Making and Branching, looping Classes  | T1, R5 |
| 5. | Jan 29-31, 2024Feb 1-3, 2024 | Methods. Inheritance: Using Existing Classes, Class Inheritance, Choosing Base Class, Access Attributes, types of Inheritance,  | T1, R5 |
| 6. | Feb5-10, 2024 | Abstract Classes, Using Final Modifiers. Polymorphism: Types of polymorphism.  | T1, R5 |
| 7. | Feb 12-17, 2024 | Packages & Interfaces: Understanding Packages, Defining a Package, Packaging up Your Classes, Adding Classes from a Package to Your Program, Understanding CLASSPATH, Access Protection in Packages,  | T1, R5 |
| 8. | Feb 19-24, 2024 | Concept of Interface. Exception Handling: Types of Exceptions, Dealing with Exceptions, Exception Objects. | T1, R5 |
| 9. | Feb 26-29, 2024, March 1-2, 2024 | Multithreading Programming: Creating Multiple Threads, Communication Input/Output in Java: I/O Basic, Byte and Character Structures, I/O Classes, Reading Console.  | T1, R5 |
| 10. | March 4-9, 2024 | Creating Applets in Java: Applet Basics, Applet Architecture, Applet Life Cycle, Simple Applet Display Methods, Requesting Repainting,  | T1, R5 |
| 11. | March 11-16, 2024 | Using The Status Window, The HTML APPLET Tag Passing Parameters to Applets. | T1, R5 |
| 12. | March 18-22, 2024 | AWT: Working with AWT Controls, AWT Classes, Window Fundamentals, Working with Frame, Creating a Frame Window in an Applet, Displaying Information Within a Window.  | T1, R5 |
| 13. | April 1-6, 2024 | Working with Graph: Working with Graphics, Working with Color, Setting the Paint Mode, Working with Fonts, Exploring Text and Graphics,  | T1, R5 |
| 14. | April 8-13, 2024 | Layout Managers and Menus. | T1, R5 |
| 15 | April 15-20, 2024 | Revision, Doubt Sessions and Test | T1, R5 |

**(Dr. Shweta Sharma)**

 Govt. College for Girls, Sec-14, Gurugram

**Course Lesson Plan 2023-24 (Even Sem)**

**Class:** BCA 2nd Semester **Section -A**

**Course Title:** LOGICAL ORGANIZATION OF COMPUTER-II **Room No - 25**

**Instructor:**  Ms. Monika

**Course Outcomes:**

By the end of the course the students will be able to:

|  |  |
| --- | --- |
| CO1: | Understand working of different types of flip-flops and design different types of registers. |
| CO2: | Identify various components of computer and their interconnection |
| CO3: | To understand the practical aspects of logical organization of computer |
| CO4: | Understand working of various Memory devices and input/ output devices |

**Text Books:**

T1. Gill, Nasib Singh and Dixit J.B.: Digital Design and Computer Organisation, University

 Science Press (Laxmi Publications), New Delhi.

**Reference Books:**

R1. M. Morris Mano, Digital Logic and Computer Design, Prentice Hall of India Pvt. Ltd.

R2. V. Rajaraman, T. Radhakrishnan, An Introduction to Digital Computer Design, Prentice Hall

 of India Pvt. Ltd.

R3. Andrew S. Tanenbaum, Structured Computer Organization, Prentice Hall of India Pvt. Ltd.

**Evaluation Scheme:**

**Internal Assessment: 20 Marks External Assessment: 80**

**Continuous Assessment:**

| **S. No.** | **Component** | **Duration** | **Max. Marks** | **Date** | **Coverage** |
| --- | --- | --- | --- | --- | --- |
| 1. | Assignment-I | 1 Week | 10 | Fourth Week of Jan | Based on Unit –I |
| 2. | Test-I | 45 Minutes | 10 | Third week of February | Based on – II |
| 3. | Assignment-II | 1 Week | 10 | Second Week of March | Based on Unit –III |
| 4. | Test-II | 45 Minutes  | 10 | Second week of April | Based on Unit – IV |

 **Contact Hours: 6 Lectures (45 Minutes each)/Week**

| **S. No.** | **Lectures**  | **Topic to be covered** | **Text book**  |
| --- | --- | --- | --- |
| 1. | Jan 1-6, 2024 | Revision of gates, Sequential Logic: Characteristics, ,  | T1, R2 |
| 2. | Jan 8-13, 2024 | Flip-Flops, Types of flip flops- S-R Flip Flop, Clocked RS, D Flip Flop | T1, R2 |
| 3 | Jan 15-20, 2024 | JK Flip Flop, JK Master slave Flip Flop, T Flip flop | T1, R2 |
| 4. | Jan 22-27, 2024 | Excitatation table, state table of flip flops | T1, R2 |
| 5. | Jan 29-31, 2024Feb 1-3, 2024 | state diagram and state equations with examples, Revision of all flip flops and doubt class ,Assignment 1 | T1, R2 |
| 6. | Feb5-10, 2024 | Sequential Circuits: Definition of registers, their working Designing registers –Designing counters – Asynchronous and Synchronous Binary Counters, Modulo-N Counters and Up-Down Counters | T1, R2 |
| 7. | Feb 12-17, 2024 | Serial Input Serial Output (SISO), Serial Input Parallel Output (SIPO), Parallel Input Serial Output (PISO), Parallel Input Parallel Output (PIPO) and shift registers. | T1, R2 |
| 8. | Feb 19-24, 2024 | Designing counters – Asynchronous Binary Counters, Modulo-N Counters , steps of designing a counter | T1, R2 |
| 9. | Feb 26-29, 2024, March 1-2, 2024 | Designing counters –Synchronous Binary Counters, Modulo-N Counters and Up-Down Counters , Test 1 | T1, R2 |
| 10. | March 4-9, 2024 | Memory & I/O Devices: Memory Parameters, Types of memory, Main Memory | T1, R2 |
| 11. | March 11-16, 2024 | Semiconductor RAM, ROM, Magnetic and Optical Storage devices, Hard Disk , Floppy Disk, Flash memory, Assignment 2 | T1, R2 |
| 12. | March 18-22, 2024 |  I/O Devices and their controllers. All types of input devices, Pronters and plotters  | T1, R2 |
| 13. | April 1-6, 2024 | Instruction Design & I/O Organization: Machine instruction, Instruction set selection, Instruction cycle, Instruction Format and Addressing Modes | T1, R1 |
| 14. | April 8-13, 2024 | I/O Interface, Interrupt structure, Program-controlled, Interrupt-controlled & DMA transfer, I/O Channels, IOP., Test 2 | T1, R1 |
| 15 | April 15-20, 2024 | Revision |  |

**(MONIKA)**

Govt. College for Girls, Sec-14, Gurugram

**Course Lesson Plan 2023-24 (Even Sem)**

**Class:** BCA 4th Semester **Section -A &B**

**Course Title:** DATA STRUCTURES – II **Room No – 25 & 26**

**Instructor:**  Ms. Monika

**Course Outcomes:**

By the end of the course the students will be able to:

|  |  |
| --- | --- |
| CO1: | To provide the knowledge of basic data structures and their implementations. |
| CO2: | To understand importance of data structures in context of writing efficient programs. |
| CO3: | To develop skills to apply appropriate data structures in problem solving. |

**Text Books:**

T1: Seymour Lipschutz, “Data Structure”, Tata-McGraw-Hill

**Reference Books:**

**R1:** Horowitz, Sahni & Anderson-Freed, “Fundamentals of Data Structures in C”, Orientlongman.

R2: Trembley, J.P. And Sorenson P.G., “An Introduction to Data Structures With Applications”, Mcgrraw- Hill International Student Edition, New York.

R3: Mark Allen Weiss, “Data Structures and Algorithm Analysis in C”, Addison- Wesley, (An Imprint Of Pearson Education), Mexico City.Prentice- Hall Of India Pvt. Ltd., New Delhi.

**Evaluation Scheme:**

**Internal Assessment: 20 Marks External Assessment: 80**

**Continuous Assessment:**

| **S. No.** | **Component** | **Duration** | **Max. Marks** | **Date** | **Coverage** |
| --- | --- | --- | --- | --- | --- |
| 1. | Assignment-I | 1 Week | 10 | Fourth Week of Jan | Based on Unit –I |
| 2. | Test-I | 45 Minutes | 10 | Third week of February | Based on – II |
| 3. | Assignment-II | 1 Week | 10 | Second Week of March | Based on Unit –III |
| 4. | Test-II | 45 Minutes  | 10 | Second week of April | Based on Unit – IV |

 **Contact Hours: 6 Lectures (45 Minutes each)/Week**

| **S. No.** | **Lectures**  | **Topic to be covered** | **Text book**  |
| --- | --- | --- | --- |
| 1. | Jan 1-6, 2024 | Header nodes, Threads, Binary search trees, | T1, R2 |
| 2. | Jan 8-13, 2024 | Searching, Insertion and deletion in a Binary search tree, AVL search trees, Insertion and deletion in AVL search tree, | T1, R2 |
| 3 | Jan 15-20, 2024 | m-way search tree, Searching, Insertion and deletion in an m-way search tree | T1, R2 |
| 4. | Jan 22-27, 2024 | B-trees, Searching, Insertion and deletion in a B-tree, | T1, R2 |
| 5. | Jan 29-31, 2024Feb 1-3, 2024 | B+tree, Huffman’s algorithm, General trees. | T1, R2 |
| 6. | Feb5-10, 2024 | Warshall’s algorithm for shortest path, Dijkstra algorithm for shortest path, | T1, R2 |
| 7. | Feb 12-17, 2024 | gorithm for shortest path, Operations on graphs, Traversal of graph, Topological sorting. | T1, R2 |
| 8. | Feb 19-24, 2024 | Internal & external sorting, Radix sort, | T1, R2 |
| 9. | Feb 26-29, 2024, March 1-2, 2024 | Quick sort, Heap sort, Merge sort, Tournament sort, | T1, R2 |
| 10. | March 4-9, 2024 | Searching: Liner search, binary search, merging, | T1, R2 |
| 11. | March 11-16, 2024 | Comparison of various sorting and searching algorithms on the basis of their complexity | T1, R2 |
| 12. | March 18-22, 2024 |  Files: Physical storage devices and their characteristics, Attributes of a file viz fields, records,Fixed and variable length records, Primiry and secondary keys, | T1, R2 |
| 13. | April 1-6, 2024 | Classification of files, File operations, Comparison of various types of files, File organization: Serial, Sequential, Indexed-sequential, Random-access/Direct, Inverted, Multilist file organization. | T1, R1 |
| 14. | April 8-13, 2024 | Hashing: Introduction, Hashing functions and Collision resolution methods . | T1, R1 |
| 15 | April 15-20, 2024 | Revision |  |

**(MONIKA)**

Govt. College for Girls, Sec-14, Gurugram

**Course Lesson Plan 2023-24 (Even Sem)**

**Class:** BCA 6th Semester **Section -A & B**

**Course Title:**  Artificial Intelligence **Room No - 24**

**Instructor:**  Ms. Monika

**Course Outcomes:**

By the end of the course the students will be able to:

|  |  |
| --- | --- |
| CO1: | Study the concepts of Artificial Intelligence. |
| CO2: | Learn the methods of solving problems using Artificial Intelligence. |
| CO3: | Learn the knowledge representation techniques, reasoning techniques and planning |
| CO4: | Introduce the concepts of Expert Systems and machine learning |

**Text Books:**

**T1:** Elaine Rich, Kevin Knight : Artificial Intelligence, Tata McGraw Hill

**Reference Books:**

R1: D.W. Patterson, "Introduction to AI and Expert Systems", PHI, 1999 .

R2: Nils J Nilsson ,"Artificial Intelligence -A new Synthesis" 2nd Edition (2000), Harcourt Asia Ltd.

R3: David W. Rolston : Principlesof Artificial Intelligence and Expert System Development, McGraw Hill Book Company.

**Evaluation Scheme:**

**Internal Assessment: 20 Marks External Assessment: 80**

**Continuous Assessment:**

| **S. No.** | **Component** | **Duration** | **Max. Marks** | **Date** | **Coverage** |
| --- | --- | --- | --- | --- | --- |
| 1. | Assignment-I | 1 Week | 10 | Fourth Week of Jan | Based on Unit –I |
| 2. | Test-I | 45 Minutes | 10 | Third week of February | Based on – II |
| 3. | Assignment-II | 1 Week | 10 | Second Week of March | Based on Unit –III |
| 4. | Test-II | 45 Minutes  | 10 | Second week of April | Based on Unit – IV |

 **Contact Hours: 6 Lectures (45 Minutes each)/Week**

| **S. No.** | **Lectures**  | **Topic to be covered** | **Text book**  |
| --- | --- | --- | --- |
| 1. | Jan 1-6, 2024 | Introduction to AI, Importance of AI, AI and its related field | T1, R2 |
| 2. | Jan 8-13, 2024 | AI techniques, Criteria for success. | T1, R2 |
| 3 | Jan 15-20, 2024 | Defining the problem as a state space search, Production system and its characteristics, | T1, R2 |
| 4. | Jan 22-27, 2024 | Issues in the design of the search problem Heuristic search techniques : Generate and test, | T1, R2 |
| 5. | Jan 29-31, 2024Feb 1-3, 2024 | hill climbing, best first search technique, problem reduction, constraint satisfaction. | T1, R2 |
| 6. | Feb5-10, 2024 | Definition and importance of knowledge, Knowledge representation, Various approaches used in knowledge representation, | T1, R2 |
| 7. | Feb 12-17, 2024 | Issues in knowledge representation. Using Predicate Logic : Represent ting Simple Facts in logic, | T1, R2 |
| 8. | Feb 19-24, 2024 | Representing instances and is\_a relationship, Computable function and predicate. | T1, R2 |
| 9. | Feb 26-29, 2024, March 1-2, 2024 | Introduction syntactic processing, Semantic processing, Discourse and pragmatic processing. | T1, R2 |
| 10. | March 4-9, 2024 | Introduction learning, Rote learning, Learning by taking advice, | T1, R2 |
| 11. | March 11-16, 2024 | Learning in problem solving, Learning from example-induction,  | T1, R2 |
| 12. | March 18-22, 2024 | Explanation based learning. | T1, R2 |
| 13. | April 1-6, 2024 | Introduction, Representing using domain specific knowledge, | T1, R1 |
| 14. | April 8-13, 2024 | Expert system shells. | T1, R1 |
| 15 | April 15-20, 2024 | Revision |  |

**(MONIKA)**

Govt College for Girls, Sec-14, Gurugram

**Course Lesson Plan 2023-24 (Even Semester)**

**Class:** MCA (CS) IVth Semester

**Course Title:** **Android Programming Room No - 82**

**Instructor:**  Sangeeta Rani

**Course Outcomes:**

By the end of the course the students will be able to:

* Understand Android OS, Gradle, Android Studio.
* Install and configure Android Studio
* Explain and use key Android programming concepts
* Understand both the basic and advanced concepts of Java
* Build Basic mobile applications with java in Android.
* Develop UI based Mobile Application using Android Studio.
* Debug Android Application
* Deploy the application on Google Play.
* Design application for Mobile using various sensors.

**Text Books:**

1. Zigurd Mednieks, Laird Dornin, G, BlakeMeike and Masumi Nakamura: Programming Android, O'Reilly Publications.
2. Wei-Meng Lee: Beginning iPhone SDK Programming with Objective-C, Wiley India Ltd,
3. James C.S: Android Application development, CENGAGE Learning.
4. Gargenta M., Nakamura M.: Learning Android, O'Reilly Publications.
5. Reto Meier: Professional Android 2 Application Development, WROX Publication- Wiley-India,
6. James Edward: **J2ME: The Complete** Reference, James Edward — Publication.
7. Chris Haseman: Android Essentials, Apress Publication.
8. Mark L Murphy: Beginning Android - Wiley India Pvt Ltd.
9. Sayed Y Hashimi and Satya Kornatineni! Pro Android - Wiley India Pvt Ltd.
10. Lauren Darcey, Shane Conder: Android Wireless Application Development, 2nd edition -Pearson Education.
11. Any other book(s) covering the contents of the paper in more depth.

**Web Content Reference: https://developer.android.com/**

**Evaluation Scheme:**

**Internal Assessment: 20 Marks External Assessment: 80**

**Continuous Assessment:**

| **S. No.** | **Component** | **Duration** | **Max. Marks** | **Date** | **Coverage** |
| --- | --- | --- | --- | --- | --- |
| 1. | Assignment-I | 1 Week | 5 | Fourth Week of Jan | Based on Unit –I |
| 2. | Test-I | 45 Minutes | 5 | Third week of February | Based on – II |
| 3. | Test-II | 45 Minutes  | 5 | Second week of April | Based on Unit – III, IV |

 **Contact Hours: 6 Lectures (45 Minutes each)/Week**

| **S.No.** | **Lectures**  | **Topic to be covered** | **Text book**  |
| --- | --- | --- | --- |
| 1. | Jan 1-6, 2024 | **Unit I** **Introduction:** Mobile Applications, Characteristics and Benefits, Application Model, Infrastructure and Managing Resources,  | T1, R3 |
| 2. | Jan 8-13, 2024 | Mobile Software Engineering, Frameworks and Tools, Mobile devices Profiles. | T1, R3 |
| 3 | Jan 15-20, 2024 | **Application Design: Memory** Management, Design patterns for limited memory. Workflow **for** Application Development,  | T1, R3 |
| 4. | Jan 22-27, 2024 | Techniques for composing Applications, Dynamic Linking, Plug-ins and rules of thumb for using DLLs, Concurrency and Resource Management. | T1, R3 |
| 5. | Jan 29-31, 2024Feb 1-3, 2024 | **Unit II****Google Android:** Introduction, JDK & AOK, Android Application Architecture, Traditional Programming Model and Android, Activities, Intents, Tasks, Services. | T1, R3 |
| 6. | Feb5-10, 2024 | **Android Framework:** GUI and IV1VC Architecture, Fragments and Multi-platform development, Creating Widgets. Layouts, Shadows, Gradients; Applications with multiple screens. | T1, R3 |
| 7. | Feb 12-17, 2024 | **Development:** Intents and Services, Storing and Retrieving data, Graphics and Multimedia, Telephony, Location based services, Packaging and Deployment. | T1, R3, Internet Content |
| 8. | Feb 19-24, 2024 | **Unit III****Android Applications:** Working with Android, Various life cycles for applications,  | T1, R3 |
| 9. | Feb 26-29, 2024, March 1-2, 2024 | Building an User Interface: Blank UI, Folding and Unfolding a scalable Ul, Making Activity, Fragment,  | T1, R3 |
| 10. | March 4-9, 2024 | Multiple layouts; Content Provider, Location and Mapping: location based services, Mapping, Google Maps activity. Working with Map View and Map Activity;  | T1, R3, Internet Content |
| 11. | March 11-16, 2024 | Sensors and Near Field Communication; Native libraries and headers, Building client server applications. | T1, R3 |
| 12. | March 18-22, 2024 | **Unit IV**Using Google Maps, GPS and Wi-Fi Integration, Android Notification, Audio manager, Bluetooth; Camera and Sensor integration,  | T1, R3, Internet Content  |
| 13. | April 1-6, 2024 | Sending SMS, Phone Calls, Runtime Environment for Applications, **Callbacks** and Override in application, Concurrency,  | T1, R3, Internet Content |
| 14. | April 8-13, 2024 | Serialization, Application Signing, **API keys** for Google Maps, Publishing Android Application; Introduction to Flutter, **Android features, Ul,** implementation | T1, R3, Internet Content |
| 15 | April 15-20, 2024 | Revision and Problem Solving | T1, R3 |

**(Sangeeta Rani)**

**Department of Computer Science**

**Govt College for Girls, Sec-14, Gurugram**

Course Lesson Plan 2023-24 (Even Sem)

Class**: MCA 4th Semester**

Course Title**: Software Testing & Quality Assurance** Room No 81

Instructor**: Mrs. Preeti**

**Course Outcomes**:

By the end of the course the students will be able to:

|  |  |
| --- | --- |
| CO1: | Apply software testing knowledge and engineering methods. |
| CO2: | Understand and identify various software testing problems, and solve these problems by designing and selecting software test models, criteria, strategies, and methods. |
| CO3: | Analyze and understand the use of software testing methods and modern software testing tools for their testing projects. |
| CO4: | Identify defects and manage those defects for improvement in quality for given Software . |
| CO5: | Design SQA activities, SQA strategy. |

**Reference Books**:

1. Meyers, G.: The art of Software Testing, Wiley-Inter-Science.

2. Deutsch, Willis: Software Quality Engineering: A Total Technical and Management Approach, Prentice Hall.

3. Pressman : Software Engineering, TMH.

4. Gill, Nasib Singh: Software Engineering : Reliability, Testing and Quality Assurance, Khanna Book Publishing Co.(P) Ltd, N. Delhi

5. Ghazzi, Carlo: Fundaments of Software Engineering, PHI.

6. ChhillarRajender Singh: Software Engineering: Testing, Faults, Metrics, Excel Books, New Delhi.

7. Jalote, Pankaj: An Integrated Approach to Software Engineering, Narosa Publications.

8. Doug Bell, Ian Murrey, John Pugh: Software Engineering-A Programming Approach, Prentice Hall.

Evaluation Scheme:

Internal Assessment: 20 Marks External Assessment: 80

Continuous Assessment:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S. No. | Component | Duration | Max. Marks | Date | Coverage |
| 1. | Assignment-I | 1 Week | 10 | Third Week of Feb | Based on Unit –I |
| 2. | Test-I | 45 Minutes | 10 | First week of March | Based on Unit – II |
| 3. | Assignment-II | 1 Week | 10 | First Week of April | Based on Unit –III |
| 4. | Test-II | 45Minutes  | 10 | Second week of April | Based on Unit – IV |

 Contact Hours: 6 Lectures (45 Minutes each)/Week

|  |  |  |  |
| --- | --- | --- | --- |
| S.No. | Lectures  | Topic to be covered | Text book  |
| 1. | Jan 1-6, 2024 | Minimizing Risks, Writing a Policy for Software Testing, Economics of Testing, Testing-an organizational issue |  R1 |
| 2. | Jan 8-13, 2024 | Management Support for Software Testing, Building a Structured Approach to Software Testing, Developing a Test Strategy Building Software. | R1 |
| 3 | Jan 15-20, 2024 | Testing Process: Software Testing Guidelines, workbench concept, Customizing the Software Testing Process, Process Preparation checklist. | R1 |
| 4. | Jan 22-27, 2024 | Testing Techniques: Dynamic Testing – Black Box testing techniques, White Box testing techniques, Static testing, Validation Activities, Regression testing.  | R4 |
| 5. | Jan 29-31, 2024Feb 1-3, 2024 | Software Testing Strategies:Approach, Issues; integration, incremental, System, alpha, Beta testing etc Comparative evaluation of techniques. | R4 |
| 6. | Feb 5-10, 2024 | Testing tools; Dynamic analysis tools, test data generators, Debuggers, test drivers etc.  | R4 |
| 7. | Feb 12-17, 2024 | Technical Metrics for Software: Quality Factors, framework; Metrics for analysis, design, testing source code.  | R4 |
| 8. | Feb 19-24, 2024 | Introduction to Object Oriented testing, Path Testing, State Based Testing, Class Testing | R3 |
| 9. | Feb 26-29, 2024 | Testing Web Applications: Web testing, Functional Testing, User interface Testing, Usability Testing, | R3 |
| 10. | Mar 1-9, 2024 | Configuration and Compatibility Testing, Security Testing, Performance Testing. | R3 |
| 11. | Mar 11-16, 2024 | Database testing, Post Deployment Testing. | R4 |
| 12. | Mar 18-22, 2024 | Rational Rose Software:Introduction, Features, Various types of software testing using Rational Rose.  | R4 |
| 13. | April 1-6, 2024 | Software Quality, Software QualityChallenges, Software Quality factors. Software Quality Assurance: concept, components, importance and essence; FTR, structured walk through technique etc | R4 |
| 14. | April 8-13, 2024 | Software Quality Management Standards, Management and its role in Software Quality Assurance, Quality Standards: ISO 9000 and Companion ISO Standards, CMM, CMMI. Companion ISO Standards, CMM, CMMI. | R4 |
| 15 | April 15-20, 2024 | Revision and Doubts Discussion |  |

(Preeti)

**Govt College for Girls, Sec-14, Gurugram**

Course Lesson Plan 2023-24 (Even Sem)

Class**: BCA 2ND Semester**

Course Title**: BCA-109 : Structured Systems Analysis and Design** Room No: 25

Instructor**:** Arti

**Course Outcomes**:

By the end of the course the students will be able to:

CO1 : Understanding the Systems Development Environment

CO2 : Define Software Sources

CO3 : Understand how to manage the information systems project

CO4 : Understand Systems Planning and Selection

CO5 : Define Determining Systems Requirements.

CO6 : Understanding Structuring Systems Requirements Process Modelling

**Reference Books**:

1. Systems Analysis and design BY e.m. aWAD Galgotia Pub.(P) Ltd.

2. Data Management and Data Structures by Loomis (PHI)

3. System Analysis and Design by Elias Awad.

**Evaluation Scheme:**

Internal Assessment: 20 Marks External Assessment: 80

Continuous Assessment:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S. No. | Component | Duration | Max. Marks | Date | Coverage |
| 1. | Assignment-I | 1 Week | 10 | Third Week of Feb | Based on Unit –I |
| 2. | Test-I | 45 Minutes | 10 | First week of March | Based on Unit – II |
| 3. | Assignment-II | 1 Week | 10 | First Week of April | Based on Unit –III |
| 4. | Test-II | 45Minutes  | 10 | Second week of April | Based on Unit – IV |

 Contact Hours: 6 Lectures (45 Minutes each)/Week

|  |  |  |  |
| --- | --- | --- | --- |
| S.No. | Lectures  | Topic to be covered | Text book  |
| 1. | Jan 1-6, 2024 | Introduction to system, Definition and characteristics of a system, Elements of system, Types of system, System development life cycle,  |  R1 |
| 2. | Jan 8-13, 2024 | Role of system analyst, Analyst/user interface, System planning and initial investigation: Introduction, Bases for planning in system analysis, Sources of project requests, Initial investigation | R1 |
| 3 | Jan 15-20, 2024 | Fact finding, Information gathering, information gathering tools, Fact analysis, Determination of feasibility. | R1 |
| 4. | Jan 22-27, 2024 | Structured analysis, Tools of structured analysis: DFD, Data dictionary, Flow charts, Gantt charts, decision tree, decision table, structured English, Pros and cons of each tool, | R2 |
| 5. | Jan 29-31, 2024Feb 1-3, 2024 | Feasibility study: Introduction, Objective, Types, Steps in feasibility analysis, Feasibility report, Oral presentation, Cost and benefit analysis: Identification of costs and benefits. | R2 |
| 6. | Feb 5-10, 2024 | classification of costs and benefits, Methods of determining costs and benefits, Interpret results of analysis and take final action. | R2 |
| 7. | Feb 12-17, 2024 | System Design: System design objective, Logical and physical design, Design Methodologies, structured design, Form-Driven methodology(IPO charts), structured walkthrough | R2 |
| 8. | Feb 19-24, 2024 | Input/Output and form design: Input design, Objectives of input design, Output design | R3 |
| 9. | Feb 26-29, 2024 | Objectives of output design, Form design, Classification of forms | R3 |
| 10. | Mar 1-9, 2024 | requirements of form design, Types of forms, Layout considerations, Form control. | R3 |
| 11. | Mar 11-16, 2024 | System testing: Introduction, Objectives of testing, Test plan,  | R2 |
| 12. | Mar 18-22, 2024 | testing techniques/Types of system tests, Quality assurance goals in system life cycle,  | R3 |
| 13. | April 1-6, 2024 | System implementation, Process of implementation, System evaluation, | R3 |
| 14. | April 8-13, 2024 | System maintenance and its types, System documentation, Forms of documentation. | R2 |
| 15 | April 15-20, 2024 | Revision and Doubts Discussion |  |

(Arti)

**Govt College for Girls, Sec-14, Gurugram**

Course Lesson Plan 2023-24 (Even Sem)

Class**: BCA 2ND Semester**

Course Title**: BCA-109 : Structured Systems Analysis and Design** Room No: 26

Instructor**:** Ankita

**Course Outcomes**:

By the end of the course the students will be able to:

CO1 : Understanding the Systems Development Environment

CO2 : Define Software Sources

CO3 : Understand how to manage the information systems project

CO4 : Understand Systems Planning and Selection

CO5 : Define Determining Systems Requirements.

CO6 : Understanding Structuring Systems Requirements Process Modelling

**Reference Books**:

1. Systems Analysis and design BY e.m. aWAD Galgotia Pub.(P) Ltd.

2. Data Management and Data Structures by Loomis (PHI)

3. System Analysis and Design by Elias Awad.

**Evaluation Scheme:**

Internal Assessment: 20 Marks External Assessment: 80

Continuous Assessment:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S. No. | Component | Duration | Max. Marks | Date | Coverage |
| 1. | Assignment-I | 1 Week | 10 | Third Week of Feb | Based on Unit –I |
| 2. | Test-I | 45 Minutes | 10 | First week of March | Based on Unit – II |
| 3. | Assignment-II | 1 Week | 10 | First Week of April | Based on Unit –III |
| 4. | Test-II | 45Minutes  | 10 | Second week of April | Based on Unit – IV |

 Contact Hours: 6 Lectures (45 Minutes each)/Week

|  |  |  |  |
| --- | --- | --- | --- |
| S.No. | Lectures  | Topic to be covered | Text book  |
| 1. | Jan 1-6, 2024 | Introduction to system, Definition and characteristics of a system, Elements of system, Types of system, System development life cycle,  |  R1 |
| 2. | Jan 8-13, 2024 | Role of system analyst, Analyst/user interface, System planning and initial investigation: Introduction, Bases for planning in system analysis, Sources of project requests, Initial investigation | R1 |
| 3 | Jan 15-20, 2024 | Fact finding, Information gathering, information gathering tools, Fact analysis, Determination of feasibility. | R1 |
| 4. | Jan 22-27, 2024 | Structured analysis, Tools of structured analysis: DFD, Data dictionary, Flow charts, Gantt charts, decision tree, decision table, structured English, Pros and cons of each tool, | R2 |
| 5. | Jan 29-31, 2024Feb 1-3, 2024 | Feasibility study: Introduction, Objective, Types, Steps in feasibility analysis, Feasibility report, Oral presentation, Cost and benefit analysis: Identification of costs and benefits. | R2 |
| 6. | Feb 5-10, 2024 | classification of costs and benefits, Methods of determining costs and benefits, Interpret results of analysis and take final action. | R2 |
| 7. | Feb 12-17, 2024 | System Design: System design objective, Logical and physical design, Design Methodologies, structured design, Form-Driven methodology(IPO charts), structured walkthrough | R2 |
| 8. | Feb 19-24, 2024 | Input/Output and form design: Input design, Objectives of input design, Output design | R3 |
| 9. | Feb 26-29, 2024 | Objectives of output design, Form design, Classification of forms | R3 |
| 10. | Mar 1-9, 2024 | requirements of form design, Types of forms, Layout considerations, Form control. | R3 |
| 11. | Mar 11-16, 2024 | System testing: Introduction, Objectives of testing, Test plan,  | R2 |
| 12. | Mar 18-22, 2024 | testing techniques/Types of system tests, Quality assurance goals in system life cycle,  | R3 |
| 13. | April 1-6, 2024 | System implementation, Process of implementation, System evaluation, | R3 |
| 14. | April 8-13, 2024 | System maintenance and its types, System documentation, Forms of documentation. | R2 |
| 15 | April 15-20, 2024 | Revision and Doubts Discussion |  |

(Ankita)

**Govt College for Girls, Sec-14, Gurugram**

Course Lesson Plan 2023-24 (Even Sem)

Class**: BCA 4th Semester**

Course Title**:** BCA-209 : Software Engineering

Room No: 26

Instructor**:** Ankita

**Course Outcomes**:

By the end of the course the students will be able to:

|  |  |
| --- | --- |
| CO1: | Apply software testing knowledge and engineering methods. |
| CO2: | Understand and identify various software testing problems, and solve these problems by designing and selecting software test models, criteria, strategies, and methods. |
| CO3: | Analyze and understand the use of software testing methods and modern software testing tools for their testing projects. |
| CO4: | Identify defects and manage those defects for improvement in quality for given Software . |
| CO5: | Design SQA activities, SQA strategy. |

**Reference Books**:

1. Gill, Nasib Singh : Software Engineering, Khanna Book Publishing Co. (P) Ltd. N. Delhi.

2. Pressman : Software Engineering, TMH.

3. Jalote, Pankaj: An Integrated Approach to Software Engineering, Narosa Publications

**Evaluation Scheme:**

Internal Assessment: 20 Marks External Assessment: 80

Continuous Assessment:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S. No. | Component | Duration | Max. Marks | Date | Coverage |
| 1. | Assignment-I | 1 Week | 10 | Third Week of Feb | Based on Unit –I |
| 2. | Test-I | 45 Minutes | 10 | First week of March | Based on Unit – II |
| 3. | Assignment-II | 1 Week | 10 | First Week of April | Based on Unit –III |
| 4. | Test-II | 45Minutes  | 10 | Second week of April | Based on Unit – IV |

 Contact Hours: 6 Lectures (45 Minutes each)/Week

|  |  |  |  |
| --- | --- | --- | --- |
| S.No. | Lectures  | Topic to be covered | Text book  |
| 1. | Jan 1-6, 2024 | Introduction: Software Crisis, Software Processes & Characteristics, Software life cycle models, |  R1 |
| 2. | Jan 8-13, 2024 | Waterfall, Prototype, Evolutionary and Spiral Models. Software Requirements Analysis & Specifications: Requirement engineering, requirement elicitation techniques like FAST, QFD, | R1 |
| 3 | Jan 15-20, 2024 | requirements analysis using DFD, Data dictionaries & ER Diagrams, Requirements documentation, Nature of SRS, Characteristics & organization of SRS . | R1 |
| 4. | Jan 22-27, 2024 | Software Project Management Concepts: The Management spectrum, The People The Problem, The Process, The Project. | R2 |
| 5. | Jan 29-31, 2024Feb 1-3, 2024 | Software Project Planning: Size Estimation like lines of Code & Function Count | R2 |
| 6. | Feb 5-10, 2024 | Cost Estimation Models, COCOMO, | R2 |
| 7. | Feb 12-17, 2024 | Risk Management. | R2 |
| 8. | Feb 19-24, 2024 | Software Design: Cohesion & Coupling, Classification of Cohesiveness & Coupling, Function Oriented Design, Object Oriented Design, Software Metrics: Software measurements: | R3 |
| 9. | Feb 26-29, 2024 | What & Why, Token Count, Halstead Software Science Measures, Design Metrics, Data Structure Metrics | R3 |
| 10. | Mar 1-9, 2024 | Software Implementation: Relationship between design and implementation, Implementation issues and | R3 |
| 11. | Mar 11-16, 2024 | programming support environment, Coding the procedural design, Good coding style. | R2 |
| 12. | Mar 18-22, 2024 | Testing, Debugging Activities. Software Maintenance: Management of Maintenance,  | R3 |
| 13. | April 1-6, 2024 | Maintenance Process, Reverse Engineering | R3 |
| 14. | April 8-13, 2024 | , Software Re-engineering, Configuration Management, Documentation. | R2 |
| 15 | April 15-20, 2024 | Revision and Doubts Discussion |  |

(Ankita)

**Govt College for Girls, Sec-14, Gurugram**

Course Lesson Plan 2023-24 (Even Semester)

Class**: B.Sc Math Hons 2nd Semester**

Course Title**: Programming in Visual Basic** Room No 39

Instructor**: Mrs. Jyotsna Bhardwaj**

**Course Outcomes**:

By the end of the course the students will be able to:

|  |  |
| --- | --- |
| CO1: | Describe fundamental concepts of Visual Basic |
| CO2: | Recognize and arrange control structures. |
| CO3: | Design a complete program using visual programming concepts |
| CO4: | Prepare project in visual programming |
| CO5: | Manage and analyse prepared project with programs |
| CO6: | Interpret and report obtaining results |

**Reference Books**:

1. Reselman & Other, Using Visual Basic 6, Prentice Hall of India.
2. Donald &Oancea, Visual Basic 6 from Scratch, Prentice- Hall of India.
3. Noel Jerke, Visual Basic 6, Tata Mc-Graw Hill
4. Days Maver, Teach Yourself More VB in 21 days, Techmedia

Evauation Scheme:

Internal Assessment: 15 Marks External Assessment : 60 Marks

Continuous Assessment:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S. No. | Component | Duration | Max. Marks | Date | Coverage |
| 1. | Assignment-I | 1 Week | 10 | Third Week of Feb | Based on Unit –I |
| 2. | Test-I | 45 Minutes | 10 | First Week of March | Based on Unit – II |
| 3. | Assignment-II | 1 Week | 10 | First Week of April | Based on Unit –III |
| 4. | Test-II | 45 Minutes  | 10 | Second Week of April | Based on Unit – IV |

 Contact Hours: 6 Lectures (45 Minutes each)/Week

|  |  |  |  |
| --- | --- | --- | --- |
| S.No. | Lectures  | Topic to be covered | Text book  |
| 1. | Jan 1-6, 2024 | Visual Basic: Introduction, Analyzing, Data types, Variables, Constants |  R1 |
| 2. | Jan 8-13, 2024 | Controls and Properties. | R1 |
| 3 | Jan 15-20, 2024 | Control Structures: Conditional Statements,  | R1 |
| 4. | Jan 22-27, 2024 | Loop Statements, Exit statement, Stop statement  | R1 |
| 5. | Jan 29-31, 2024Feb 1-3, 2024 | Arrays, Practice questions of arrays, loops | R1 |
| 6. | Feb 5-10, 2024 | Text Boxes, Command Buttons, Labels, Additional Controls – List Box, Combo Box,  | R1 |
| 7. | Feb 12-17, 2024 | Difference between List Box and Combo Box, Option Buttons, Check Boxes, Frames, Scroll Bars, Timer Control | R1 |
| 8. | Feb 19-24, 2024 | Control Arrays, Procedures and Functions, SDI and MDI Applications | R1 |
| 9. | Feb 26-29, 2024 | Menus: Menu Editor, Menu controls, Submenus, Popup Menus Common Dialog Controls: Color Dialog Box, Font Dialog Box, Open and Save as Dialog Box, Print Dialog Box, Help Dialog Box. | R1 |
| 10. | Mar 1-9, 2024 | Database Programming: Data Access Object, Data Binding,  | R6 |
| 11. | Mar 11-16, 2024 | Data Control and Data Bound Controls, Database Object, Recordset Object, Field Object. | R6 |
| 12. | Mar 18-22, 2024 | Crystal Reports:Introduction to Reports, Crystal Reports, Creating and Using a Report in VB  | R7 |
| 13. | April 1-6, 2024 | Library Functions: Conversion functions, String functions, Numeric functions, Date and Time Functions. | R7 |
| 14. | April 8-13, 2024 | Practice questions of Unit 3 and Unit 4  | R7 |
| 15 | April 15-20, 2024 | Revision and Doubts Discussion |  |

(Jyotsna Bhardwaj)

Class**: B.Sc Botany Hons IV Semester**

Course Title **:Computation Skil**

Instructor**: Mrs. Jyotsna Bhardwaj**

**Course Outcomes**:

By the end of the course the students will be able to:

|  |  |
| --- | --- |
| CO1: | Describe fundamental concepts of MS office and Basic of Computers |
| CO2: | Recognize and understand various devices related to computers. |
| CO3: | Understanding of Number System. |
| CO4: | Understanding and skill to develop algorithm and know about Multimedia |
| CO5: | Knowledge about IT Act 2000 |
| CO6: | Working Knowledge of MSOFFICE |

**Reference Books**:

[1] V Rajaraman, Fundamentals of Computers, Fourth Edition, PHI.

[2] Anita Goel, Fundamentals of Computers; Forthcoming title in Pearson-Education

Evauation Scheme:

Internal Assessment: 10 Marks External Assessment : 40 Marks

Continuous Assessment:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S. No. | Component | Duration | Max. Marks | Date | Coverage |
| 1. | Assignment-I | 1 Week | 10 | Third Week of Feb | Based on Unit –I |
| 2. | Test-I | 45 Minutes | 10 | First Week of March | Based on Unit – II |
| 3. | Assignment-II | 1 Week | 10 | First Week of April | Based on Unit –III |
| 4. | Test-II | 45 Minutes  | 10 | Second Week of April | Based on Unit – IV |

 Contact Hours: 6 Lectures (45 Minutes each)/Week

|  |  |  |  |
| --- | --- | --- | --- |
| S.No. | Lectures  | Topic to be covered | Text book  |
| 1. | Jan 1-6, 2024 | Introduction to Computers: Characteristics of Computers, Uses of computers,  |  R1 |
| 2. | Jan 8-13, 2024 | Types and generations of Computers; Basic Computer Organization - Units of a computer, CPU, ALU | R1 |
| 3 | Jan 15-20, 2024 | memory hierarchy, registers, I/O devices; User Interface with the Operating System,  | R1 |
| 4. | Jan 22-27, 2024 | System Tools and Windows Introductions | R1 |
| 5. | Jan 29-31, 2024Feb 1-3, 2024 | Binary representation of integers and real numbers, 1's Complement, 2's Complement,  | R1 |
| 6. | Feb 5-10, 2024 | Addition and subtraction of binary numbers, BCD, ASCII, Unicode; | R1 |
| 7. | Feb 12-17, 2024 | Types of networks, router, switch,  | R1 |
| 8. | Feb 19-24, 2024 | server-client architecture. | R1 |
| 9. | Feb 26-29, 2024 | Multimedia: Introduction, Characteristics, Elements, Applications | R1 |
| 10. | Mar 1-9, 2024 | Problem Solving: Notion of algorithms, stepwise methodology of developing an algorithm,  | R6 |
| 11. | Mar 11-16, 2024 | Problem Solving: Notion of algorithms, stepwise methodology of developing an algorithm | R6 |
| 12. | Mar 18-22, 2024 | developing macros in spreadsheet | R7 |
| 13. | April 1-6, 2024 | General Awareness: IT Act, System Security (virus/firewall etc.),  | R7 |
| 14. | April 8-13, 2024 | I-Tax, Reservations, Banking | R7 |
| 15 | April 15-20, 2024 | Revision and Doubts Discussion |  |

(Jyotsna Bhardwaj)

**Govt College for Girls, Sec-14, Gurugram**

Course Lesson Plan 2023-24 (Even Sem)

Class**: MCA 4th Semester**

Course Title**: Computer Security and Block chain Technology** Room No 81

Instructor**: Mrs. Vasudha Sharma**

**Course Outcomes**:

By the end of the course the students will be able to:

|  |  |
| --- | --- |
| CO1: | Describe fundamental concepts of Computer Security and Block Chain technology. |
| CO2: | Determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation |
| CO3: | Design and develop secure Operating system, Database and Network architecture |
| CO4: | Design security policies , models and implement them. |
| CO5: | Learn about administering security planning, Risk analysis, legal issues like copyrights, patents and rights of Employees and employers |
| CO6: | Learn about cryptocurrency, and blockchain applications and implement blockchain in lab. |

**Reference Books**:

1. Security in Computing by Charles P. Pfleeger, SL Pfleegar , Pearson 4th Ed

2. Nina Godbole and Sunit Belpure: Cyber Security Understanding Cyber Crimes, ComputerForensics and Legal Perspectives, Wiley.

3. Achyut S.Godbole: Data Communication and Networking, McGraw –Hill Education New Delhi.

4. Forouzan: Data Communication and Networking (Global Edition) 5/e, McGraw Hill Education India.

5. Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller and Steven Goldfeder: Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction, Princeton University Press.

6. Wattenhofer: The Science of the Blockchain.

7. Satoshi Nakamoto: Bitcoin: A Peer-to-Peer Electronic Cash System

8. Forouzan, B.A.: Cryptography & Network Security. Tata McGraw-Hill Education.

Evaluation Scheme:

Internal Assessment: 20 Marks External Assessment: 80

Continuous Assessment:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S. No. | Component | Duration | Max. Marks | Date | Coverage |
| 1. | Assignment-I | 1 Week | 10 | Third Week of Feb | Based on Unit –I |
| 2. | Test-I | 45 Minutes | 10 | First week of March | Based on Unit – II |
| 3. | Assignment-II | 1 Week | 10 | First Week of April | Based on Unit –III |
| 4. | Test-II | 45Minutes  | 10 | Second week of April | Based on Unit – IV |

 Contact Hours: 6 Lectures (45 Minutes each)/Week

|  |  |  |  |
| --- | --- | --- | --- |
| S.No. | Lectures  | Topic to be covered | Text book  |
| 1. | Jan 1-6, 2024 | Security Problem in Computing: meaning of Computer Security, Computer Criminals, Methods of Defense |  R1 |
| 2. | Jan 8-13, 2024 | Elementary Cryptography: Substitution Ciphers, Transpositions | R1 |
| 3 | Jan 15-20, 2024 | Making "Good" Encryption Algorithms, The Data Encryption Standard, The AES Encryption Algorithm, Public Key Encryptions, Uses of Encryption. | R1 |
| 4. | Jan 22-27, 2024 | Secure Programs, Non-malicious Program Errors, viruses and other malicious code, Targeted Malicious code, controls Against Program Threats | R1 |
| 5. | Jan 29-31, 2024Feb 1-3, 2024 | Protection in General-Purpose operating system protected objects and methods of protection, File protection Mechanisms, User Authentication Designing Trusted O.S : Security polices | R1 |
| 6. | Feb 5-10, 2024 | models of security, trusted O.S. design, Assurance in trusted OS. Implementation examples.Database Security: Security requirements, Reliability and integrity, Sensitive data, Inference, | R1 |
| 7. | Feb 12-17, 2024 | Multilevel database, proposals for multilevel security.Security in Network: Threats in Network, Network Security Controls, Firewalls, Intrusion Detection Systems, Secure E-mail. | R1 |
| 8. | Feb 19-24, 2024 | Security Planning, Risk Analysis, Organizational Security policies, Physical Security. Legal Privacy and Ethical Issues in Computer Security: | R1 |
| 9. | Feb 26-29, 2024 | Protecting Programs and data,Computer Crime, Praia, Ethical issues in Computer Security, Case studies of Ethics | R1 |
| 10. | Mar 1-9, 2024 | Blockchain Technology: Cryptography - Hash function, Digital Signature - ECDSA, Memory Hard Algorithm, Zero Knowledge Proof | R6 |
| 11. | Mar 11-16, 2024 | Blockchain Overview: Introduction, Advantage over conventional distributed database, Blockchain Network, Mining Mechanism, Distributed Consensus, Merkle Patricia Tree, Gas Limit, Transactions and Fee,Private and Public blockchain. | R6 |
| 12. | Mar 18-22, 2024 | Cryptocurrency: History, Distributed Ledger, Bitcoin protocols - Mining strategy and rewards, Ethereum - Construction, DAO, Smart Contract, GHOST, Vulnerability, Attacks, Sidechain, Namecoin.  | R7 |
| 13. | April 1-6, 2024 | Blockchain Applications: Internet of Things, Medical Record Management System, | R7 |
| 14. | April 8-13, 2024 | Domain Name Service and future of Blockchain.  | R7 |
| 15 | April 15-20, 2024 | Revision and Doubts Discussion |  |

(Vasudha)

**Govt College for Girls, Sec-14, Gurugram**

Course Lesson Plan 2023-24 (Even Sem)

Class**: BCA 6th Semester**

Course Title**: BCA – 306: E-Commerce**

Room No: 24

Instructor**:** Arti

**Course Outcomes**:

By the end of the course the students will be able to:

CO1 : lower prices offered by vendors operating with less margin than a bricks and mortar store

CO2 : greater convenience of having a product delivered rather than the cost of time and transport and parking of going to a store

CO3 : sourcing product more cheaply from overseas vendors

CO4 : great variety and inventory offered by online stores

CO5 : comparison engines that compare and recommend product auction sites, where they did for goods

**Reference Books**:

1. R.Kalakota and A.B.Whinston,Readings in Electronic Commerce, Addison Wesley,
2. David Kosiur, Understanding E- Commerce, Microsoft Press, 1997. 3) Soka, From EDI to Electronic Commerce , McGraw Hill, 1995.
3. David whitely, E-commerce Strategy, Technology and application, Tata McGraw Hill.
4. E-Commerce An Indian Perspective; P.T.Joseph; S.J.; PHI.
5. E-Commerce; S.Jaiswal – Glgotia

**Evaluation Scheme:**

Internal Assessment: 20 Marks External Assessment: 80

Continuous Assessment:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S. No. | Component | Duration | Max. Marks | Date | Coverage |
| 1. | Assignment-I | 1 Week | 10 | Third Week of Feb | Based on Unit –I |
| 2. | Test-I | 45 Minutes | 10 | First week of March | Based on Unit – II |
| 3. | Assignment-II | 1 Week | 10 | First Week of April | Based on Unit –III |
| 4. | Test-II | 45Minutes  | 10 | Second week of April | Based on Unit – IV |

 Contact Hours: 6 Lectures (45 Minutes each)/Week

|  |  |  |  |
| --- | --- | --- | --- |
| S.No. | Lectures  | Topic to be covered | Text book  |
| 1. | Jan 1-6, 2024 | Electronic Commerce: Overview of Electronic Commerce, Scope of Electronic Commerce, Traditional Commerce |  R1 |
| 2. | Jan 8-13, 2024 | vs. Electronic Commerce, Impact of E-Commerce, Electronic Markets, Internet Commerce, e-commerce in perspective, Application of E Commerce in | R1 |
| 3 | Jan 15-20, 2024 | Direct Marketing and Selling, Obstacles in adopting E-Commerce Applications; Future of ECommerce. | R1 |
| 4. | Jan 22-27, 2024 | Value Chains in electronic Commerce, Supply chain, Porter’s value chain Model, Inter Organizational value chains | R2 |
| 5. | Jan 29-31, 2024Feb 1-3, 2024 | Strategic Business unit chains, Industry value chains. Security Threats to E-commerce: Security Overview,. | R2 |
| 6. | Feb 5-10, 2024 | Computer Security Classification, Copyright and Intellectual Property, security Policy and Integrated Security, Intellectual | R2 |
| 7. | Feb 12-17, 2024 | Property Threats, electronic Commerce Threats, Clients Threats, Communication Channel Threats, server Threats. | R2 |
| 8. | Feb 19-24, 2024 | Implementing security for E-Commerce: Protecting E-Commerce Assets, Protecting Intellectual Property, | R3 |
| 9. | Feb 26-29, 2024 | Protecting Client Computers, Protecting E-commerce Channels, | R3 |
| 10. | Mar 1-9, 2024 | Insuring Transaction Integrity, Protecting the Commerce Server. | R3 |
| 11. | Mar 11-16, 2024 | Electronic Payment System: Electronic Cash, Electronic Wallets, Smart Card, Credit and Change Card. | R2 |
| 12. | Mar 18-22, 2024 | Business to Business E-Commerce: Inter-organizational Transitions, Credit Transaction Trade Cycle, | R3 |
| 13. | April 1-6, 2024 | a variety of transactions. Electronic Data Interchange (EDI): Introduction to EDI, Benefits of EDI, EDI Technology, | R3 |
| 14. | April 8-13, 2024 | EDI standards, EDI Communication, EDI Implementation, EDI agreement, EDI security. | R2 |
| 15 | April 15-20, 2024 | Revision and Doubts Discussion |  |

(Arti)

**Govt College for Girls, Sec-14, Gurugram**

Course Lesson Plan 2023-24 (Even Sem)

Class**: Bsc(CS) 2nd Semester**

Course Title**:** Paper-2.1: Programming in C

Room No: 24

Instructor**:** Ankita

**Course Outcomes**:

By the end of the course the students will be able to:

CO1: To introduce students to a powerful programming language – C.

CO2: To understand the basic structure of a C program.

CO3: To gain knowledge of various programming errors.

CO4: To enable the students to make flowchart and design an algorithm for a given problem.

CO5: To enable the students to develop logics and programs.

**Reference Books**:

1. Gill Nasib Singh: Computing Fundamentals and Programming in C, Khanna Books Publishing Co., New Delhi.

2. Gottfried: C Programming (Schaum’s Outline Series), Tata McGraw-Hill Publishers.

3. Kanetkar: Let Us C, BPB Publications, New Delhi.

4. E. Balagurusamy: C Programming (Tata McGraw-Hill Publishers)

**Evaluation Scheme:**

Internal Assessment: 20 Marks External Assessment: 80

Continuous Assessment:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S. No. | Component | Duration | Max. Marks | Date | Coverage |
| 1. | Assignment-I | 1 Week | 10 | Third Week of Feb | Based on Unit –I |
| 2. | Test-I | 45 Minutes | 10 | First week of March | Based on Unit – II |
| 3. | Assignment-II | 1 Week | 10 | First Week of April | Based on Unit –III |
| 4. | Test-II | 45Minutes  | 10 | Second week of April | Based on Unit – IV |

Contact Hours: 6 Lectures (45 Minutes each)/Week

|  |  |  |  |
| --- | --- | --- | --- |
| S.No. | Lectures  | Topic to be covered | Text book  |
| 1. | Jan 1-6, 2024 | Basic concepts of programming, techniques of problem solving, algorithm designing and flowcharting, concept of structured programming-Top-Down design, |  R1 |
| 2. | Jan 8-13, 2024 | Development of efficient program; Program correctness; Debugging and testing of programs, | R1 |
| 3 | Jan 15-20, 2024 | Algorithm for searching, sorting(Insertion, Exchange), Merging of Order-List. | R1 |
| 4. | Jan 22-27, 2024 | Overview of C: History of C, Importance of C, Structure of a C Program Elements of C: C | R2 |
| 5. | Jan 29-31, 2024Feb 1-3, 2024 | character set, identifiers and keywords, Data types: declaration and definition. Operators: | R2 |
| 6. | Feb 5-10, 2024 | Arithmetic, relational, logical, bitwise, unary, assignment and conditional operators and their hierarchy | R2 |
| 7. | Feb 12-17, 2024 | & associativity, input/output statements, Arithmetic Expression, Evaluation of | R2 |
| 8. | Feb 19-24, 2024 | Arithmetic Expression, Type-casting and Conversion. | R3 |
| 9. | Feb 26-29, 2024 | Decision making & branching: Decision making with if statement, if-else statement, nested if, else-if | R3 |
| 10. | Mar 1-9, 2024 | ladder, switch statement, goto statement. Decision making & looping: for, | R3 |
| 11. | Mar 11-16, 2024 | while, and do-while loop; Jumps in loop, break, continue | R2 |
| 12. | Mar 18-22, 2024 | Functions: Definition, prototype, passing parameters, Recursion. | R3 |
| 13. | April 1-6, 2024 | Pointers: Declaration, operations on pointers, array of pointers, pointers to arrays. Data Structures: Arrays: One Dimensional, Multidimensional, Pointers and arrays. Strings: String Constants, Input & Output, String Functions | R3 |
| 14. | April 8-13, 2024 | . Structure & Unions. File Handling: Standard I/O text File, Writing to File, Reading a File. | R2 |
| 15 | April 15-20, 2024 | Revision and Doubts Discussion |  |

(Ankita)

**Govt College for Girls, Sec-14, Gurugram**

Course Lesson Plan 2023-24 (Even Sem)

Class**: Bcom 2ND Semester**

Course Title**: Basics of Computer-II 2.06**

Instructor**: Arti**

**Course Outcomes**:

By the end of the course the students will be able to:

CO1 : handle a computer system for day-to-day use.

CO2 : enumerate different types of input/ output devices and types of memory.

CO3 : differentiate between system and application software.

CO4 : study windows operating system

CO5 : prepare documents / spreadsheets

**Reference Books**:

1 . Introduction of Information System ALEXISLEON Introduction to essential tools or Sushila Madan

**Evaluation Scheme:**

Internal Assessment: NA External Assessment: 50

Continuous Assessment:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S. No. | Component | Duration | Max. Marks | Date | Coverage |
| 1. | Assignment-I | 1 Week | NA | Third Week of Feb | Based on Unit –I |
| 2. | Test-I | 45 Minutes | NA | First week of March | Based on Unit – II |
| 3. | Assignment-II | 1 Week | NA | First Week of April | Based on Unit –III |
| 4. | Test-II | 45Minutes  | NA | Second week of April | Based on Unit – IV |

 Contact Hours: 3 Lectures (45 Minutes each)/Week

|  |  |  |  |
| --- | --- | --- | --- |
| S.No. | Lectures  | Topic to be covered | Text book  |
| 1. | Jan 1-6, 2024 | Fundamental of computers: Model of a digital computer; Functioning of a digital computer; |  R1 |
| 2. | Jan 8-13, 2024 | Types of a digital computer; Advantages of computers. Difference between digital computer and analog computer, | R1 |
| 3 | Jan 15-20, 2024 | Applications of computers: Computers in Commerce, Marketing, Education and Management. | R1 |
| 4. | Jan 22-27, 2024 | Software concepts: Types of Software and their role, Different System Software types Operating systems, | R1 |
| 5. | Jan 29-31, 2024Feb 1-3, 2024 | Translators, System Utilities; Concept of Application Packages; Types of an Operating system- | R1 |
| 6. | Feb 5-10, 2024 | Multi-user O.S., Multi-tasking O.S., Multi-Processing O.S; Time – sharing O.S., | R1 |
| 7. | Feb 12-17, 2024 | Multi-Programming O.S.Operating System as a resource Manager, concept of GUI and CUI. | R1 |
| 8. | Feb 19-24, 2024 | Introduction to Windows: Components of a Application Window; Types of Windows | R1 |
| 9. | Feb 26-29, 2024 | Windows as an Operating System, Windows explorer, Using Paintbrush, Control Panel, | R1 |
| 10. | Mar 1-9, 2024 | Installing a printer. User interfaces- CUI and GUI; Concept of a Desktop and Taskbar, | R1 |
| 11. | Mar 11-16, 2024 | My Computer, Recycle Bin, My Documents and Internet Explorer icons. | R1 |
| 12. | Mar 18-22, 2024 | MS-Excel: Applications of a Spreadsheet; Advantages of an Spreadsheet; Features of Excel; | R1 |
| 13. | April 1-6, 2024 | Rows, Columns, Cell, Menus, Creating worksheet, Formatting, Printing, establishing | R1 |
| 14. | April 8-13, 2024 | worksheet links, Table creating and printing graphs, Macros, Using Built-in-functions. | R1 |
| 15 | April 15-20, 2024 | Revision and Doubts Discussion |  |

(ARTI)

**Govt College for Girls, Sec-14, Gurugram**

Course Lesson Plan 2023-24 (Even Sem)

Class**: BCom 2nd Semester**

Course Title**: Basics of Computer-II 2.06**

Instructor**: Ankita**

**Course Outcomes**:

By the end of the course the students will be able to:

CO1 : handle a computer system for day-to-day use.

CO2 : enumerate different types of input/ output devices and types of memory.

CO3 : differentiate between system and application software.

CO4 : study windows operating system

CO5 : prepare documents / spreadsheets

**Reference Books**:

1 . Introduction of Information System ALEXISLEON Introduction to essential tools or Sushila Madan

**Evaluation Scheme:**

Internal Assessment: NA External Assessment: 50

Continuous Assessment:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S. No. | Component | Duration | Max. Marks | Date | Coverage |
| 1. | Assignment-I | 1 Week | NA | Third Week of Feb | Based on Unit –I |
| 2. | Test-I | 45 Minutes | NA | First week of March | Based on Unit – II |
| 3. | Assignment-II | 1 Week | NA | First Week of April | Based on Unit –III |
| 4. | Test-II | 45Minutes  | NA | Second week of April | Based on Unit – IV |

 Contact Hours: 3 Lectures (45 Minutes each)/Week

|  |  |  |  |
| --- | --- | --- | --- |
| S.No. | Lectures  | Topic to be covered | Text book  |
| 1. | Jan 1-6, 2024 | Fundamental of computers: Model of a digital computer; Functioning of a digital computer; |  R1 |
| 2. | Jan 8-13, 2024 | Types of a digital computer; Advantages of computers. Difference between digital computer and analog computer, | R1 |
| 3 | Jan 15-20, 2024 | Applications of computers: Computers in Commerce, Marketing, Education and Management. | R1 |
| 4. | Jan 22-27, 2024 | Software concepts: Types of Software and their role, Different System Software types Operating systems, | R1 |
| 5. | Jan 29-31, 2024Feb 1-3, 2024 | Translators, System Utilities; Concept of Application Packages; Types of an Operating system- | R1 |
| 6. | Feb 5-10, 2024 | Multi-user O.S., Multi-tasking O.S., Multi-Processing O.S; Time – sharing O.S., | R1 |
| 7. | Feb 12-17, 2024 | Multi-Programming O.S.Operating System as a resource Manager, concept of GUI and CUI. | R1 |
| 8. | Feb 19-24, 2024 | Introduction to Windows: Components of a Application Window; Types of Windows | R1 |
| 9. | Feb 26-29, 2024 | Windows as an Operating System, Windows explorer, Using Paintbrush, Control Panel, | R1 |
| 10. | Mar 1-9, 2024 | Installing a printer. User interfaces- CUI and GUI; Concept of a Desktop and Taskbar, | R1 |
| 11. | Mar 11-16, 2024 | My Computer, Recycle Bin, My Documents and Internet Explorer icons. | R1 |
| 12. | Mar 18-22, 2024 | MS-Excel: Applications of a Spreadsheet; Advantages of an Spreadsheet; Features of Excel; | R1 |
| 13. | April 1-6, 2024 | Rows, Columns, Cell, Menus, Creating worksheet, Formatting, Printing, establishing | R1 |
| 14. | April 8-13, 2024 | worksheet links, Table creating and printing graphs, Macros, Using Built-in-functions. | R1 |
| 15 | April 15-20, 2024 | Revision and Doubts Discussion |  |

(Ankita)

**Govt College for Girls, Sec-14, Gurugram**

**Course Lesson Plan 2023-24 (Even Sem)**

**Class:** BCA 2nd Semester **Section -B**

**Course Title:** LOGICAL ORGANIZATION OF COMPUTER-II **Room No - 26**

**Instructor:**  Ms. Vanita Saini

**Course Outcomes:**

By the end of the course the students will be able to:

CO1: Understand working of different types of flip-flops and design different types of registers.

CO2: Identify various components of computer and their interconnection

CO3.To understand the practical aspects of logical organization of computer.

CO4. Understand working of various Memory devices and input/ output devices.

**Text Books:**

T1. Gill, Nasib Singh and Dixit J.B.: Digital Design and Computer Organisation, University

 Science Press (Laxmi Publications), New Delhi..

**Reference Books:**

R1. M. Morris Mano, Digital Logic and Computer Design, Prentice Hall of India Pvt. Ltd.

R2. V. Rajaraman, T. Radhakrishnan, An Introduction to Digital Computer Design, Prentice Hall

 of India Pvt. Ltd.

R3. Andrew S. Tanenbaum, Structured Computer Organization, Prentice Hall of India Pvt. Ltd.

**Evaluation Scheme:**

**Internal Assessment: 20 Marks External Assessment: 80**

**Continuous Assessment:**

| **S. No.** | **Component** | **Duration** | **Max. Marks** | **Date** | **Coverage** |
| --- | --- | --- | --- | --- | --- |
| 1. | Assignment-I | 1 Week | 10 | Fourth Week of Jan | Based on Unit –I |
| 2. | Test-I | 45 Minutes | 10 | Third week of February | Based on – II |
| 3. | Assignment-II | 1 Week | 10 | Second Week of March | Based on Unit –III |
| 4. | Test-II | 45 Minutes  | 10 | Second week of April | Based on Unit – IV |

 **Contact Hours: 6 Lectures (45 Minutes each)/Week**

| **S.No.** | **Lectures**  | **Topic to be covered** | **Text book**  |
| --- | --- | --- | --- |
| 1. | Jan 1-6, 2024 | Revision of gates, Sequential Logic: Characteristics, ,  | T1, R2 |
| 2. | Jan 8-13, 2024 | Flip-Flops, Types of flip flops- S-R Flip Flop, Clocked RS, D Flip Flop | T1, R2 |
| 3 | Jan 15-20, 2024 | JK Flip Flop, JK Master slave Flip Flop, T Flip flop | T1, R2 |
| 4. | Jan 22-27, 2024 | Excitatation table, state table of flip flops | T1, R2 |
| 5. | Jan 29-31, 2024Feb 1-3, 2024 | state diagram and state equations with examples, Revision of all flip flops and doubt class ,Assignment 1 | T1, R2 |
| 6. | Feb5-10, 2024 | Sequential Circuits: Definition of registers, their working Designing registers –Designing counters – Asynchronous and Synchronous Binary Counters, Modulo-N Counters and Up-Down Counters | T1, R2 |
| 7. | Feb 12-17, 2024 | Serial Input Serial Output (SISO), Serial Input Parallel Output (SIPO), Parallel Input Serial Output (PISO), Parallel Input Parallel Output (PIPO) and shift registers. | T1, R2 |
| 8. | Feb 19-24, 2024 | Designing counters – Asynchronous Binary Counters, Modulo-N Counters , steps of designing a counter | T1, R2 |
| 9. | Feb 26-29, 2024, March 1-2, 2024 | Designing counters –Synchronous Binary Counters, Modulo-N Counters and Up-Down Counters , Test 1 | T1, R2 |
| 10. | March 4-9, 2024 | Memory & I/O Devices: Memory Parameters, Types of memory, Main Memory | T1, R2 |
| 11. | March 11-16, 2024 | Semiconductor RAM, ROM, Magnetic and Optical Storage devices, Hard Disk , Floppy Disk, Flash memory, Assignment 2 | T1, R2 |
| 12. | March 18-22, 2024 |  I/O Devices and their controllers. All types of input devices, Pronters and plotters  | T1, R2 |
| 13. | April 1-6, 2024 | Instruction Design & I/O Organization: Machine instruction, Instruction set selection, Instruction cycle, Instruction Format and Addressing Modes | T1, R1 |
| 14. | April 8-13, 2024 | I/O Interface, Interrupt structure, Program-controlled, Interrupt-controlled & DMA transfer, I/O Channels, IOP., Test 2 | T1, R1 |
| 15 | April 15-20, 2024 | Revision |  |

**(Vanita Saini)**

**Govt College for Girls, Sec-14, Gurugram**

**Course Lesson Plan 2023-24 (Even Sem)**

**Class:** B Sc 2nd Semester **Computer Sc. (4-6 Days)**

**Course Title:** Structured Systems Analysis and Design **Room No - 24**

**Instructor:**  Ms. Vanita Saini

**Course Outcomes:**

By the end of the course the students will be able to:

CO1: Basic knowledge and understanding of the analysis and design of complex systems.

CO2: Understanding of the role of project management including planning, and analysis

CO3: Describe fesibility study, deisg, testing etc. of a system.

**Text Books:**

T1. System Analysis and Design by Elias Awad (Galgotia Publications)...

**Reference Books:**

R1. Introductory System analysis and Design by Lee Vol. I

R2. System Analysis & design by Award, E Homewood(Irwin press).

R3. System analysis & Design (Joint Volume) by LEE (Galgotia Publications)

R4. Analysis of Design of Information System by James( Mc Graw Hill).

**Evaluation Scheme:**

**Internal Assessment: 10 Marks External Assessment: 40**

**Continuous Assessment:**

| **S. No.** | **Component** | **Duration** | **Max. Marks** | **Date** | **Coverage** |
| --- | --- | --- | --- | --- | --- |
| 1. | Assignment-I | 1 Week | 10 | Fourth Week of Jan | Based on Unit –I |
| 2. | Test-I | 45 Minutes | 10 | Third week of February | Based on – II |
| 3. | Assignment-II | 1 Week | 10 | Second Week of March | Based on Unit –III |
| 4. | Test-II | 45 Minutes  | 10 | Second week of April | Based on Unit – IV |

 **Contact Hours: 3 Lectures (45 Minutes each)/Week**

| **S.No.** | **Lectures**  | **Topic to be covered** | **Text book**  |
| --- | --- | --- | --- |
| 1. | Jan 4-6, 2024 | Introduction to system, Definition and characteristics of a system, Elements of system, Types of system | T1, R1 |
| 2. | Jan 11-13, 2024 | System development life cycle, detail study of all steps of SDLC, Role of system analyst, Analyst/user interface | T1, R1 |
| 3 | Jan 18-20, 2024 | System planning and initial investigation: Introduction, Bases for planning in system analysis | T1, R1 |
| 4. | Jan 25-27, 2024 | Sources of project requests, Initial investigation, Fact finding, Information gathering, information gathering tools., Assignment 1 | T1, R1 |
| 5. | Feb 1-3, 2024 | Structured analysis, Tools of structured analysis: DFD, Data dictionary, Pros and cons of DFD | T1, R1 |
| 6. | Feb8-10, 2024 | Flow charts, Gantt charts, decision tree, decision table, structured English, Pros and cons of each tool | T1, R1 |
| 7. | Feb 15-17, 2024 | Feasibility study: Introduction, Objective, Types, Steps in feasibility analysis, Feasibility report, Oral presentation, Test 1 | T1, R1 |
| 8. | Feb 22-24, 2024 | Cost and benefit analysis: Identification of costs and benefits, classification of costs and benefits, Methods of determining costs and benefits, Interpret results of analysis and take final action | T1, R1 |
| 9. | Feb 29, 2024, March 1-2, 2024 | System Design: System design objective, Logical and physical design, Design Methodologies,  | T1, R1 |
| 10. | March 7-9, 2024 | Structured design, Form-Driven methodology(IPO charts), structured walkthrough | T1, R4 |
| 11. | March 14-16, 2024 | Input/Output and form design: Input design, Objectives of input design, Output design, Objectives of output design,Assignment 2 | T1, R4 |
| 12. | March 21-22, 2024 | Form design, Classification of forms, requirements of form design, Types of forms, Layout considerations, Form control. | T1, R4 |
| 13. | April 4-6, 2024 | System testing: Introduction, Objectives of testing, Test plan, testing techniques/Types of system tests, Quality assurance goals in system life cycle | T1, R1 |
| 14. | April 11-13, 2024 | System implementation, Process of implementation, System evaluation, System maintenance and its types, System documentation, Forms of documentation. Test 2 | T1, R1 |
| 15 | April 18-20, 2024 | Revision |  |

**(Vanita Saini)**

**Govt. College for Girls, Sec-14, Gurugram**

Course Lesson Plan 2023-24 (Even Sem)

Class**: BCA 4th Semester (Section A & B)**

Course Title**: WEB DESIGNING** Room No 25 & 26

Instructor**: Ms. Komal Bansal**

**Course Outcomes**:

By the end of the course the students will be able to:

|  |  |
| --- | --- |
| CO1: | Understand basics of website and web development life cycle. |
| CO2: | Understand the language HTML, how HTML language tags are used, and how these tags are helpful in making website |
| CO3: | Define HTML list, table and forms, the forms with menu working radio button, check box, text box, etc |
| CO4: | Design website using HTML and CSS. |
| CO5: | Understand importance and working of HTML5 |
| CO6: | Understanding basic web terminology and technologies. |

**Reference Books**:

1. Thomas A. Powell, “Web Design: The Complete Reference” , 4/e, Tata McGraw-Hill

2 Wendy Willard, “HTML Beginners Guide”, Tata McGraw-Hill.

3. Deitel and Goldberg, “Internet and World Wide Web, How to Program”, PHI.

4. Raj Kamal, “Internet and Web Technologies”, Tata McGraw-Hill.

5. Ramesh Bangia, “Multimedia and Web Technology”, Firewall Media..

Evaluation Scheme:

Internal Assessment: 20 Marks External Assessment: 80

Continuous Assessment:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S.No. | Component | Duration | Max. Marks | Date | Coverage |
| 1. | Assignment-I | 1 Week | 10 | Third Week of Feb | Based on Unit –I |
| 2. | Test-I | 45 Min. | 10 | First week of March | Based on Unit – II |
| 3. | Assignment-II | 1 Week | 10 | First Week of April | Based on Unit –III |
| 4. | Test-II | 45 Min.  | 10 | Second week of April | Based on Unit – IV |

 Contact Hours: 6 Lectures (45 Minutes each)/Week

|  |  |  |  |
| --- | --- | --- | --- |
| SNo | Lectures | Topic to be covered | Text book |
| 1. | Jan 1-6, 2024 | Introduction to Internet and World Wide Web; Evolution and History of World Wide Web | R1 |
| 2. | Jan 8-13, 2024 | Basic features; Web Browsers; Web Servers; Hypertext Transfer Protocol | R1 |
| 3 | Jan 15-20, 2024 | Overview of TCP/IP and its services; URLs; Searching and Web-Casting Techniques; Search Engines. | R3 |
| 4. | Jan 22-27, 2024 | Web Publishing: Hosting your Site; Internet Service Provider; Web terminologies | R3 |
| 5. | Jan 29-31,Feb 1-3, 2024 | Phases of Planning and designing your Web Site; Steps for developing your Site; Choosing the contents; Home Page; Domain Names, Front page views, Adding pictures, Links, Backgrounds, Relating Front Page to DHTML | R1 |
| 6. | Feb 5-10, 2024 | Creating a Website and the Markup Languages (HTML, DHTML); Web Development: Introduction to HTML | R1 |
| 7. | Feb 12-17, 2024 | Hypertext and HTML; HTML Document Features; HTML command Tags; Creating Links | R2 |
| 8. | Feb 19-24, 2024 | Headers; Text styles; Text Structuring; Text colors and Background; Formatting text; Page layouts | R2 |
| 9. | Feb 26-29, 2024 | Images; Ordered and Unordered lists; Inserting Graphics; Table Creation and Layouts | R2 |
| 10. | Mar 1-9, 2024 | Working with Forms and Menus; Working with Radio Buttons; Check Boxes; Text Boxes | R2 |
| 11. | Mar 11-16, 2024 | DHTML: Dynamic HTML, Features of DHTML,CSSP(cascading style sheet positioning | R2 |
| 12. | Mar 18-22, 2024 | Frame Creation and Layouts; JSSS(JavaScript assisted style sheet),  | R2 |
| 13. | April 1-6, 2024 | Layers of netscape, The ID attributes | R2 |
| 14. | April 8-13, 2024 | DHTML events | R2 |
| 15 | April 15-20, 2024 | Revision and Doubts Discussion |  |

(Komal)

**Govt. College for Girls, Sec-14, Gurugram**

Course Lesson Plan 2023-24 (Even Sem)

Class**: BCA 6th Semester**

Course Title**: INTRODUCTION TO .NET** Room No 24

Instructor**: Ms. Komal Bansal**

**Course Outcomes**:

By the end of the course the students will be able to:

|  |  |
| --- | --- |
| CO1: | Define .net framework, class libraries in .NET.. |
| CO2: | Understand object oriented Programming in C#.NET application. |
| CO3: | Apply classes, methods and objects in C# |
| CO4: | Analyze C# language concept. |
| CO5: | Develop exception handling and Interfaces in .NET application environment. |
| CO6: | Understanding inheritance and polymorphism concepts using C#. |

**Reference Books**:

1. Introduction to C# using .NET By Robert J. Oberg, PHI, 2002.

2. Programming in C# By E. Balaguruswamy, Tata McGraw Hill.

3. The Complete Guide to C# Programming by V. P. Jain.

4. C#: A Beginner's Guide, Herbert Schildt, Tata McGraw Hill.

5. C# and .NET Platform by Andrew Troelsen, Apress, 1st edition, 2001

Evaluation Scheme:

Internal Assessment: 20 Marks External Assessment: 80

Continuous Assessment:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S.No. | Component | Duration | Max. Marks | Date | Coverage |
| 1. | Assignment-I | 1 Week | 10 | Third Week of Feb | Based on Unit –I |
| 2. | Test-I | 45 Min. | 10 | First week of March | Based on Unit – II |
| 3. | Assignment-II | 1 Week | 10 | First Week of April | Based on Unit –III |
| 4. | Test-II | 45 Min.  | 10 | Second week of April | Based on Unit – IV |

 Contact Hours: 6 Lectures (45 Minutes each)/Week

|  |  |  |  |
| --- | --- | --- | --- |
| SNo | Lectures | Topic to be covered | Text book |
| 1. | Jan 1-6, 2024 | The Framework of .Net: Building blocks of .Net Platform (the CLR, CTS and CLS), | R1 |
| 2. | Jan 8-13, 2024 | Features of .Net, Deploying the .Net Runtime, Architecture of .Net platform | R1 |
| 3 | Jan 15-20, 2024 | Introduction to namespaces & type distinction. Types & Object in .Net, the evolution of Web development. | R1 |
| 4. | Jan 22-27, 2024 | Class Libraries in .Net, Introduction to Assemblies & Manifest in .Net | R1 |
| 5. | Jan 29-31,Feb 1-3, 2024 | Metadata & attributes. Introduction to C#: Characteristics of C#, Data types: Value types, reference types | R1 |
| 6. | Feb 5-10, 2024 | default value, constants, variables, scope of variables, boxing and unboxing | R1 |
| 7. | Feb 12-17, 2024 | Operators and expressions: Arithmetic, relational, logical, bitwise, special operators | R2 |
| 8. | Feb 19-24, 2024 | evolution of expressions, operator precedence & associativity, Control constructs in C#: Decision making | R2 |
| 9. | Feb 26-29, 2024 | loops, Classes & methods: Class, methods, constructors, destructors, overloading of operators & functions | R2 |
| 10. | Mar 1-9, 2024 | Inheritance & polymorphism: visibility control, overriding, abstract class & methods | R2 |
| 11. | Mar 11-16, 2024 | Sealed classes & methods, interfaces | R2 |
| 12. | Mar 18-22, 2024 | Advanced features of C#: Exception handling & error handling, automatic memory management | R2 |
| 13. | April 1-6, 2024 | Input and output (Directories, Files, and streams) | R2 |
| 14. | April 8-13, 2024 | boxing and unboxing | R2 |
| 15 | April 15-20, 2024 | Revision and Doubts Discussion |  |

(Komal)

**Govt. College for Girls, Sec-14, Gurugram**

Course Lesson Plan 2023-24 (Even Sem)

Class**: BCA 2nd Semester (Section B)**

Course Title**: C PROGRAMMING** Room No 26

Instructor**: Ms. Komal Bansal**

**Course Outcomes**:

By the end of the course the students will be able to:

|  |  |
| --- | --- |
| CO1: | Develop a C program |
| CO2: | Control the sequence of the program and give logical outputs |
| CO3: | Implement strings in your C program |
| CO4: | Repeat the sequence of instructions and points for a memory location |
| CO5: | Apply code reusability with functions and pointers |
| CO6: | Evaluate C programs implementing all features of C. |

**Reference Books**:

1. Gottfried, Byron S., Programming with C, Tata McGraw Hill

2. Gill Nasib Singh: Computing Fundamentals and Programming in C, Khanna Books Publishing Co., New Delhi.

3. Balagurusamy, E., Programming in ANSI C, 4E, Tata McGraw-Hill

4. Jeri R. Hanly & Elliot P. Koffman, Problem Solving and Program Design in C, Addison Wesley.

5. Yashwant Kanetker, Let us C, BPB.

6. Rajaraman, V., Computer Programming in C, PHI.

7. Yashwant Kanetker, Working with C, BPB.

Evaluation Scheme:

Internal Assessment: 20 Marks External Assessment: 80

Continuous Assessment:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S.No. | Component | Duration | Max. Marks | Date | Coverage |
| 1. | Assignment-I | 1 Week | 10 | Third Week of Feb | Based on Unit –I |
| 2. | Test-I | 45 Min. | 10 | First week of March | Based on Unit – II |
| 3. | Assignment-II | 1 Week | 10 | First Week of April | Based on Unit –III |
| 4. | Test-II | 45 Min.  | 10 | Second week of April | Based on Unit – IV |

 Contact Hours: 6 Lectures (45 Minutes each)/Week

|  |  |  |  |
| --- | --- | --- | --- |
| SNo | Lectures | Topic to be covered | Text book |
| 1. | Jan 1-6, 2024 | Overview of C: History of C, Importance of C, Elements of C: C character set, identifiers and keywords, Data types | R5 |
| 2. | Jan 8-13, 2024 | Constants and Variables, Assignment statement, Symbolicconstant, Structure of a C Program, printf(), scanf() Functions | R5 |
| 3 | Jan 15-20, 2024 | Arithmetic, relational, logical, bitwise, unary, assignment, shorthand assignment operators, conditional operators and increment and decrement operators, Arithmetic expressions,evaluation of arithmetic expression | R5 |
| 4. | Jan 22-27, 2024 | type casting and conversion, operator hierarchy &associativity. Decision making & branching: Decision making with IF statement, IF-ELSE statement | R5 |
| 5. | Jan 29-31,Feb 1-3, 2024 | Nested IF statement, ELSE-IF ladder, switch statement, goto statement. Decision making & looping: For, while, and do-while loop | R5 |
| 6. | Feb 5-10, 2024 | jumps in loops, break, continue statement, Nested loops.Functions: Standard Mathematical functions, Input/output: Unformatted & formatted I/O function in C | R5 |
| 7. | Feb 12-17, 2024 | Input functions viz. getch(), getche(), getchar(), gets() | R5 |
| 8. | Feb 19-24, 2024 | output functions viz., putch(), putchar(), puts(), string manipulation functions | R5 |
| 9. | Feb 26-29, 2024 | User defined functions: Introduction/Definition, prototype, Local and global variables, passing parameters, recursion. | R5 |
| 10. | Mar 1-9, 2024 | Arrays, strings and pointers: Definition, types, initialization,  | R5 |
| 11. | Mar 11-16, 2024 | Array of Strings. String constant and variables, Declaration andinitialization of string, Input/output of string data, Introduction to pointers | R5 |
| 12. | Mar 18-22, 2024 | Storage classes in C: auto, extern, register and static storage class, their scope, storage, & lifetime. | R5 |
| 13. | April 1-6, 2024 | Algorithm development, Flowcharting and Development of efficient program in C. | R5 |
| 14. | April 8-13, 2024 | processing an array, passing arrays to functions | R5 |
| 15 | April 15-20, 2024 | Revision and Doubts Discussion |  |

(Komal)

**Govt. College for Girls, Sec-14, Gurugram**

**Lesson Plan 2023-24(Even sem)**

**Class: BCA** 2nd Semester

**Course Title:** C Programming  **Room No - 25**

**Instructor:**  Dr. Pradeep Kumar Sharma

**Objectives**:

To enable the student:

Use of various problem solving techniques. Understand the C programming fundamentals. Understand C by using arrays, functions, structures and union. To practice some real world problems using C.

**Text Books:**

T1. E. Balaguruswamy: Programming in C, Tata McGraw Hill.

**Reference Books:**

R1. Y. Kanetkar: Let us C, BPB Publication

R2. H. Schildt: C-The Complete Reference, Tata McGraw Hill.

R3. Kerninghan & Ritchie: The C Programming Language, PHI.

R4. Gottfried, B.: Theory and problems of Programming in C, Schaum Series.

R5. “C++: The Complete Reference” by Herbert Schildt.

**Evaluation Scheme:**

**Continuous Assessment: 20 Marks Final Assessment: 80**

**Continuous Assessment:**

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| --- | --- | --- | --- | --- | --- |
| **S. No.** | **Component** | **Duration** | **Max. Marks** | **Date** | **Coverage** |
| 1. | Assignment-I | 1 Week | 05\* | First Week of Feb | Based on Unit –A |
| 2. | Class Test | 45 Minutes | 10 | Third Week of March | Based on Section –A, B  |
| 3. | Assignment-II  | 1 Week | 05\* | First Week of April | Based on Unit –C |
| 4. | Attendance | Throughout the semester | 05 |  |  |

\* Best of Two Assignments

**Contact Hours: 6 Lectures (45 Minutes each)/Week**

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| **S.No.** | **Lectures**  | **Topic to be covered** |
| 1. | 1-2 | Overview of C: History of C, Importance of C, Elements of C: C character set, identifiers and keywords |
| 2. | 3-6 | Data types, Constants and Variables, Assignment statement, Symbolic constant, Structure of a C Program, printf(), scanf() Functions |
| 3 | 7-10 | Operators & Expression: Arithmetic, relational, logical, bitwise, unary, assignment, shorthand assignment operators, conditional operators and increment and decrement operators |
| 4. | 11-15 | Arithmetic expressions, evaluation of arithmetic expression, type casting and conversion, operator hierarchy & associativity. |
| 5. | 16-18 | Decision making & branching: Decision making with IF statement, IF-ELSE statement, Nested IF statement, ELSE-IF ladder |
| 6. | 19-22 | switch statement, goto statement. Decision making & looping: For, while, and do-while loop, jumps in loops, Nested loops. |
| 7. | 23-24 | break, continue statement |
| 8. | 25-29 | Functions: Standard Mathematical functions, Input/output: Unformatted & formatted I/O function in C |
| 9. | 30-34 | Input functions viz. getch(), getche(), getchar(), gets(), output functions viz., putch(), putchar(), puts(), string manipulation functions.  |
| 10. | 35-40 | User defined functions: Introduction/Definition, prototype, Local and global variables, passing parameters, recursion. |
| 11. | 41-46 | Arrays, strings and pointers: Definition, types, initialization, processing an array |
| 12. | 47-50 | passing arrays to functions, Array of Strings. String constant and variables,  |
| 13. | 51-55 | Declaration and initialization of string, Input/output of string data, Introduction to pointers.  |
| 14. | 56-60 | Storage classes in C: auto, extern, register and static storage class, their scope, storage, & lifetime.  |
| 15. | 61-65 | Algorithm development, Flowcharting and Development of efficient program in C |
| 16. | 66-70 | Revision and Problem Solving |

**(Pradeep Kumar Sharma)**

 **Govt College for Girls, Sec-14, Gurugram**

**Course Lesson Plan 2023-24 (Even Semester)**

**Class:** MCA (CS) 2ND Semester

**Course Title:** **THEORY OF COMPUTATION AND COMPILERS**

 **MCA 202**

**TEACHER:**  MONIKA SIHMAR

**Course Outcomes:**

By the end of the course the students will be able to:

* Demonstrate advanced knowledge of formal computation and its relationship to languages
* Distinguish different computing languages and classify their respective types.
* Recognize and comprehend formal reasoning about languages.
* Will apply knowledge of computing and mathematics appropriate to the discipline
* Learn about Automata theory and its application in Language Design
* Learn about Turing Machines and Pushdown Automata and understand Linear Bound Automata and its applications
* Discuss key notions of computation, such as algorithm, computability, decidability, reducibility, and complexity, through problem solving
* Solve computational problems regarding their computability and complexity and prove the basic results of the theory of computation

**Text Books:**

* Alfred V. Aho, Monica S. Lam, Ravi Sethi and Jeffrey D. Ullman: Compilers: Principles, Techniques & Tools, 2nd edition, Pearson Addison Wesley, 2007.
* John E. Hopcroft, Rajeev Motwani, Jeffrey D. Ullman, Introduction to Automata Theory Languages and Computation, 3’d edition, Pearson Education, India, 2007.
* K. L. P Mishra, N. Chandrashekaran, Theory of Computer Science-Automata Languages and Computation, 2nd edition, Prentice Hall of India, India, (2003).
* Any other book(s) covering the contents of the paper in more depth.
* Note: Latest and additional good books may be suggested and added from time to time

| **S.No.** | **Lectures**  | **Topic to be covered** |
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| 1. | Jan 1-6, 2024 | **Theory of Computation:** Formal Language, Language Vs Grammar, Non-Computational Prob(ems, Chomsky Hierarchy of Languages  |
| 2. | Jan 8-13, 2024 | **System Programming & Compiler:** Introduction to System programs; Assembler Vs Compiler Vs Interpreter |
| 3 | Jan 15-20, 2024 | Structure of a Compiler: Lexical Analysis, Syntax Analysis, Semantic Analysis, Intermediate Code Generation, Code Optimization, Code Generation, Symbol Table Management, Grouping of phases into passes, compiler construction tools. Applications of Compiler Technology. |
| 4. | Jan 22-27, 2024 | **Lexical Analysis:** The role of lexical analyser, Lexical Analysis vs Parsing, Specification of Tokens, Recognition of Tokens, Basic introduction to *lex.* |
| 5. | Jan 29-31, 2024Feb 1-3, 2024 | Regular Language Models: Regular Languages, Regular Grammars, Regular Expressions, Properties of Regular Language, Pumping Lemma, |
| 6. | Feb5-10, 2024 | Non-Regular Languages, Deterministic Finite Automaton (DFA), Non-Deterministic Finite Automaton (NDFA), Equivalence of DFA and NDFA. |
| 7. | Feb 12-17, 2024 | **Syntax Analysis:** Basic Concepts: Syntax definition, Parse Tree and Derivations, Ambiguity, Associativity & Precedence of Operations; |
| 8. | Feb 19-24, 2024 |  Context Free Grammars Vs Regular Expressions; Lexical Analysis Vs Syntactical Analysis,  |
| 9. | Feb 26-29, 2024, March 1-2, 2024 | Eliminating Ambiguity, Eliminating Left Recursion |
| 10. | March 4-9, 2024 | Parsing: Top Down Parsing: Recursive Descent, Predictive Parsing, LL(1) Grammars, |
| 11. | March 11-16, 2024 | Bottom up Parsing: Reductions, Handle Pruning, SR parsing, LR Parser, LALR Parser; Basic introduction to *Yacc.* |
| 12. | March 18-22, 2024 |  Code Generation and Code Optimization: Control-flow, Data-flow Analysis, Local Optimization, Global Optimization, Loop Optimization, Peep-Hole Optimization. |
| 13. | April 1-6, 2024 | **Context Free Language:** Pushdown Automaton (PDAj, Non-Deterministic Pushdown Automaton (NPDA) |
| 14. | April 8-13, 2024 | Context Free Grammar, Chomsky Normal Form, Greibach Normal Form, Ambiguity, Equivalence of PDA’s and Context Free Grammars; Properties of Context Free Language. |
| 15 | April 15-20, 2024 | Revision and Problem Solving |

**MONIKA SIHMAR**

**Department of Computer Science**

**Lesson Plan (Session 2023-24)**

**Subject: Data StructuresUsing C**

**Class:MSC Comp Sc 2nd Sem PAPER CODE: 16MCS22C1**

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| Month  | Topics |
| Jan 2024 | **UNIT-I** Programming fundamentals: Algorithm development, Techniques of problem solving, flow-chart, decision table, structured programming concepts; top-down design, development of efficient program; program correctness; debugging and testing of programs, algorithm for searching, sorting (exchange and insertion), Analysis of Algorithm: Frequency count, Time Space tradeoff. **UNIT-II** Programming in C: Introduction to C, Data type, constants and variable; Structure of a C program, Operators and Expressions Control statements: Sequencing, Alteration and Iteration; Arrays: Representation of single and multidimensional arrays; sparse arrays - lower and upper triangular matrices and Tri-diagonal matrices; String and pointers, Functions, Recursion |
| Feb2024 | **UNIT-III** Stacks and Queues: Introduction and Primitive operations on stack; Stack application: Infix, postfix, prefix expressions; Evaluation of postfix expression; Conversion from infix to PostfixIntroduction and Primitive Operation on queues, D-queues and Priority queues, Circular queue. Linked Lists: Introduction to Linked lists; Implementation of linked lists, operations such as traversal, Insertion, deletion, searching, Two way lists. |
| Mar, 2024 | **UNIT-IV** Trees: Introduction and Terminology; Traversal of binary trees; Recursive algorithms for tree operations such as traversal, insertion, deletion; threaded Binary trees, binary search trees; AVL trees, B tress.File structure: Physical Storage devices and their characteristics, constituents of a file viz. fields, records, fixed and variable length records, primary and secondary keys; file operations, basic file system operations, file organizations: serial sequential, index sequential, direct, inverted, multilist. Sorting Techniques: Bubble Sort, Insertion sort |
| April, 2024 | Selection sort, merge sort, Heap sort, Quick sort. Searching Techniques: Linear search, Binary search, Hashing function and Collision Handling methods. Revision  |

Sangeeta Bhatia

Assistant Professor, Computer Science