



Sh. L. N. Hindu College, Rohtak (Haryana)

Course Plan

Department of Computer Science

Program: BCA IInd Year

‘Operating System’ BCA 201

SCHEME

| | | | |
|-----------------------------|--|---------------------------|---|
| Course Name | Operating System | Course Type | Theory |
| Course Code | BCA 201 | Class | BCA III rd Sem. |
| Instruction Delivery | Per week Lectures: 4, Tutorial:1, Practical: - Total No. Classes Per Sem: 60(L) Assessment in Weightage: Sessional (20%), End Term Exams (80%) | | |
| Course Coordinator | Mrs. Kirti Dhingra | Course Instructors | Mrs. Kirti Dhingra Mrs. Preeti Yadav |

COURSE OVERVIEW

This Course will introduce the core concepts of Operating Systems, such as processes & threads, scheduling, synchronization, memory Management, File Systems, input & Output device management & Security. The goal of the Programming assignments is to give students some exposure to operating system code.

PREREQUISITE

Basic Computer Organization, operating system structures, processes & threads

COURSE OBJECTIVE

This Course OPERATING SYSTEMS is an essential part of any Computer-Science education. The Purpose of this course is to understand the mechanisms of Operating Systems like Process Management, Process Synchronization, Memory Management, File System implementation, Storage Structures used in OS & Protection Principles.

COURSE OUTCOMES (COs)

After the completion of the course, the student will be able to:

| CO No. | Course Outcomes |
|--------|---|
| 1 | Understand the different services provided by Operating System at different level. |
| 2 | They learn real life applications of Operating System in every field. |
| 3 | Understands the use of different process scheduling algorithm & Synchronization techniques to avoid deadlock. |
| 4 | They will learn different memory management techniques like paging, Segmentation & Demand Paging etc. |



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COURSE CONTENT

| Content |
|--|
| <p>UNIT - I Fundamentals of Operating system: Introduction to Operating System, its need and operating System services, Early systems, Structures - Simple Batch, Multi programmed, timeshared, Personal Computer, Parallel, Distributed Systems, Real-Time Systems. Process Management: Process concept, Operation on processes, Cooperating Processes, Threads, and Inter-Process Communication.</p> |
| <p>UNIT-II CPU Scheduling: Basic concepts, Scheduling criteria, Scheduling algorithms: FCFS, SJF, Round Robin & Queue Algorithms. Deadlocks: Deadlock characterization, Methods for handling deadlocks, Banker’s Algorithm.</p> |
| <p>UNIT-III Memory Management: Logical versus Physical address space, Swapping, Contiguous allocation, Paging, Segmentation. Virtual Memory: Demand paging, Performance of demand paging, Page replacement, Page replacement algorithms, Thrashing.</p> |
| <p>UNIT-IV File management: File system Structure, Allocation methods: Contiguous allocation, Linked allocation, Indexed allocation, Free space management: Bit vector, Linked list, Grouping, Counting. Device Management: Disk structure, Disk scheduling: FCFS, SSTF, SCAN, C-SCAN, LOOK, C-LOOK.</p> |

LESSON PLAN (THEORY AND TUTORIAL CLASSES)

| L. No | Topic to be Delivered | Tutorial Plan | Unit |
|-------|---|---|------|
| 1 | Introduction to Operating System and its Objectives | | 1 |
| 2 | Functions and Services of operating System | | |
| 3 | Types of Operating System | | |
| 4 | Structure of Operating System | Operating System & its services & its Classifications | |
| 5 | Classification of Operating System | | |



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|----|--|--|---|
| 6 | System Calls and System Programs | | 1 |
| 7 | Introduction to Process and its need | Process & Its States,PCB | |
| 8 | Process States and PCB | | |
| 9 | Operations on Processes | | |
| 10 | Cooperating Processes and Context Switch | Thread & Differentiate Between Thread & Process | |
| 11 | Threads | | |
| 12 | Multithreading and Differentiate b/w Threading and Multithreading | Inter- Process Communication | |
| 13 | Differentiate b/w Processes and Threads | | |
| 14 | Inter-Process Communication | | |
| 15 | CPU Scheduling and Scheduling Criteria | | |
| 16 | Scheduler and Levels of Scheduler | | |
| 17 | Types of Scheduling and Dispatcher | CPU Scheduling & Its Algorithms | |
| 18 | CPU Scheduling Algorithms | | |
| 19 | Introduction to Deadlock and various deadlock Conditions | | |
| 20 | Methods for handling deadlocks | Deadlock & Methods for handling deadlock | |
| 21 | Deadlock Avoidance | | |
| 22 | Banker's Algorithm | Banker's Algorithm | |
| 23 | Deadlock Detection and Recovery | Deadlock Detection & Recovery | |
| 24 | Introduction to Memory Management, Logical vs Physical Address Space, Swapping | | 3 |
| 25 | Memory Allocation Techniques | Memory Allocation Techniques Storage Placement Policies | |
| 26 | Storage Placement Policies, Compaction | Paging | |
| 27 | Paging | | |



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|----|-----------------------------------|-----------------------------------|--|
| 28 | Segmentation | Segmentation | |
| 29 | Virtual Memory & its advantages | Virtual Memory | |
| 30 | Demand Paging | Page Replacement & its Algorithms | |
| 31 | Page Replacement & its Algorithms | | |
| 32 | Thrashing and its Causes | | |

| | | | |
|----|---|--|---|
| 33 | Methods to handle Thrashing | Thrashing & Methods to handle Thrashing | 3 |
| 34 | Introduction to File & its types, | | |
| 35 | File System Structure | File & Allocation Methods of File | |
| 36 | Allocation Methods of File | File | |
| 37 | Free Space Management | Free Space Management | 4 |
| 38 | Introduction to Device Management & its Functions | | |
| 39 | Disk Scheduling, Disk Structure | | |
| 40 | Various disk Scheduling Algorithms | Disk Scheduling & Various Disk Scheduling Algorithms | |

Text Book

SUSHIL GOEL, Operating Systems , Natraj Publishing House

Reference Books

- Abraham Silberschatz, Peter B. Galvin, "Operating System Concepts", Addison-Wesley publishing. Co., 7th. Ed., 2004.
- Ekta Walia, "Operating Systems Concepts", Khanna Publishes, New Delhi, 2002.

Web/Links for e-content

- <https://www.scaler.com>
- <https://www.geeksforgeeks.org>
- <https://www.tutorialspoint.com>



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PRACTICE QUESTIONS (QUESTION BANK)

| S No | Problem |
|------|--|
| 1 | Define Operating System and various services of Operating System? |
| 2 | What are the Various Classifications of Operating System? |
| 3 | Explain the structure of Operating System? |
| 4 | Define Process? Explain various states of Process? |
| 5 | Explain System calls & System programs in detail? |
| 6 | Explain Thread? Differentiate between Thread & Process? |
| 7 | Explain Inter-Process communication in detail? |
| 8 | Define Scheduler? Explain different types of Scheduler in detail? |
| 9 | Explain CPU Scheduling & various CPU Scheduling Algorithms in detail? |
| 10 | Explain Deadlock & various deadlock conditions? |
| 11 | What are the various methods for handling Deadlock? |
| 12 | What is Banker's Algorithm? Explain it with an example? |
| 13 | Explain Deadlock Detection & Recovery in detail? |
| 14 | What is Memory Management? Explain various Memory Allocation Techniques? |
| 15 | Explain Swapping in detail? |
| 16 | What is Storage Placement policies? Explain it with an example? |
| 17 | Explain Paging in Detail? |
| 18 | Explain Segmentation in detail? |



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|----|---|
| 19 | Explain Virtual Memory ? |
| 20 | Explain Demand Paging in detail? |
| 21 | Explain Page Replacement & its Algorithms in detail? |
| 22 | What is thrashing & its Causes? What are the various methods to handle thrashing? |
| 23 | What is File? Explain File System Structure in detail? |
| 24 | Explain various File Allocation Methods in detail? |
| 25 | Explain Free Space Management in detail? |
| 26 | What is Device management? Explain functions of Device Management? |
| 27 | What is Disk structure? Explain Disk Structure in detail? |
| 28 | What is Disk Scheduling? Explain different types of Disk Scheduling Algorithms in detail? |



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Course Plan

Department of Computer Science and Applications

Program: BCA

DATA STRUCTURE-I (BCA-202)

SCHEME

| | | | |
|-----------------------------|--|---------------------------|---------------------------------------|
| Course Name | Data Structure-I | Course Type | Theory |
| Course Code | BCA-202 | Class | BCA IIIrd Sem. |
| Instruction Delivery | Per week Lectures: 5, Tutorial:1 Total No. Classes Per Sem: 60(L), 15(T) Assessment in Weightage: Sessional (20%), End Term Exams (80%) | | |
| Course Coordinator | Ms.Madhu | Course Instructors | Theory: Ms.Madhu and Ms. Preeti Yadav |

COURSE OVERVIEW

This course provides an introduction to Data Structure-I. It is designed to familiarize students with basic data structure and their use in fundamental algorithms. It is also useful to understand various data structure like array, stack, queue, linked list, tree and graph etc.

PREREQUISITE

- Basic knowledge about data structure.
- Familiarity with Algorithms of different data structure.
- Knowledge about different data structure and their operations.

COURSE OBJECTIVE

The main objective of this is to introduce to the students the concepts of data structure. It starts with an overview of data structure and its classification, Algorithms of different data structure and their operations. Apply data structure to algorithmically design efficient computer programs that will cope with the complexity of various data structure.

COURSE OUTCOMES (COs)

After the completion of the course, the student will be able to:

| CO No. | Course Outcomes |
|--------|---|
| 1 | Demonstrate an Understanding of basic data structure such as array, linked list, stack queue, tree and graph. |
| 2 | Understanding of data structure. |
| 3 | Apply data structure to algorithmically design efficient computer programs that will cope with the complexity of various data structure and actual programs in running. |
| 4 | Design and implementation of data structure algorithms. |
| 5 | Analysis of data structures and algorithms. |



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COURSE CONTENT

| Content |
|---|
| UNIT – I |
| Introduction: Elementary data organization, Data Structure definition, Data type vs. data structure, Categories of data structures, Data structure operations, Applications of data structures, Algorithms complexity and time-space tradeoff, Big-O notation. Strings: Introduction, Storing strings, String operations, Pattern matching algorithms. |
| UNIT – II |
| Arrays: Introduction, Linear arrays, Representation of linear array in memory, address calculations, Traversal, Insertions, Deletion in an array, Multidimensional arrays, Parallel arrays, Sparse arrays. Linked List: Introduction, Array vs. linked list, Representation of linked lists in memory, Traversal, Insertion, Deletion, Searching in a linked list, Header linked list, Circular linked list, Two-way linked list, Threaded lists, Garbage collection, Applications of linked lists. |
| UNIT – III |
| Stack: Introduction, Array and linked representation of stacks, Operations on stacks, Applications of stacks: Polish notation, Recursion. Queues: Introduction, Array and linked representation of queues, Operations on queues, Deques, Priority Queues, Applications of queues. |
| UNIT – IV |
| Tree: Introduction, Definition, Representing Binary tree in memory, Traversing binary trees, Traversal algorithms using stacks. Graph: Introduction, Graph theory terminology, Sequential and linked representation of graphs. |

LESSON PLAN (THEORY AND TUTORIAL CLASSES)

| L. No | Topic to be Delivered | Tutorial Plan | Unit |
|-------|---|--|----------|
| 1 | Introduction to Data Structure | Discussion on Data Structure | 1 |
| 2 | Elementary data organization: Record, File, Field, attribute | | |
| 3 | Classification of Data Structure | | |
| 4 | Algorithm: Introduction, Definition, Features, | | |
| 5 | Algorithm and its notation | Discussion on Data Structure Classification | 1 |
| 6 | Algorithm & its complexity: Asymptotic Notations | | |
| 7 | String: Introduction, Definition, Representation in memory | | |



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| 8 | String operations with examples. | | |
| 9 | First Pattern Matching Algorithm with examples. | Discussion on String & its Algorithm | 1 |
| 10 | Second Pattern Matching Algorithm with examples. | | |



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|----|---|---|---|
| 11 | Arrays: Introduction, Linear arrays, Representation of linear array in memory, address calculations, Traversal, Insertions, Deletion in an array, | Discussion on Array & its operations | 2 |
| 12 | Multidimensional arrays, Parallel arrays, Sparse arrays. | | |
| 13 | Linked List: Introduction, Array vs. linked list, Representation of linked lists in memory | | |
| 14 | Traversal, Insertion, Deletion, Searching in a linked list | | |
| 15 | Header Linked List, Circular Linked List | Discussion on Linked list & algorithms based on its operations | 2 |
| 16 | Two way Linked List | | |
| 17 | Threaded List, Garbage Collection | | |
| 18 | Applications of Linked List | | |
| 19 | Stack:Introduction,Definition, Representation in Memory | Discussion on Stack &Practice of Algorithms | 3 |
| 19 | Stack Operation:Insertion,Deletion | | |
| 20 | Stack Applications:Evaluation of Postfix notation | | |
| 21 | Conversion of infix to postfix with suitable example | | |
| 22 | Numericals:Evaluation of Postfix notation | Discussion on various applications of stack & practice of Algorithms. | 3 |
| 23 | Numericals:Conversion infix to postfix numericals | | |
| 24 | Conversion of infix to prefix with suitable example | | |
| 25 | Numericals: Conversion infix to prefix numericals | | |
| 26 | Recursion,Tower of Hanoi | Discussion on Queue&Practice of Algorithms | 3 |
| 27 | Queue:Introduction,Definition, Representation in Memory | | |
| 28 | Queue operation: Insertion,Deletion | | |
| 29 | Types of Queue:Priority Queue,Circular queue | | |
| 30 | Applications of Queue | Discussion on graph& its traversal | 4 |
| 31 | Graph & Graph Terminology | | |
| 32 | Graph traversal:Breadth First traversal with algorithm & Example | | |
| 33 | Graph traversal:Depth First traversal with algorithm & Example | | |



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|----|--|---|---|
| 34 | Memory Representation in sequential & Linked list representation of graph | | 4 |
| 35 | Tree: Introduction, Definition, tree terminology | | |
| 36 | Representing tree in memory | | |
| 37 | Difference between general tree & binary tree | | |
| 38 | Binary search tree & its applications | | |
| 39 | Traversing binary tree in Inorder, preorder and postorder | | |
| 40 | Inorder to preorder traversal using stack with suitable example | Revision of Unit-4 | 4 |
| 41 | Numericals on Inorder to preorder traversal using stack with suitable example | | |
| 42 | Inorder to postorder traversal using stack with suitable example | | |
| 43 | Numericals on Inorder to postorder traversal using stack with suitable example | Discussion on Tree, its types and traversal | 4 |

Text Book

Data Structure using C: E Balagurusamy

Reference Books

1. Seymour Lipschutz, "Data Structure", Tata-McGraw-Hill
2. Horowitz, Sahni & Anderson-Freed, "Fundamentals of Data Structures in C", Orient Longman.
3. Trembley, J.P. And Sorenson P.G., "An Introduction to Data Structures With Applications", McGraw-Hill International Student Edition, New York.
4. 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.
5. Yedidyan Langsam, Moshe J. Augenstein, and Aaron M. Tenenbaum, "Data Structures Using C", Prentice-Hall of India Pvt. Ltd., New Delhi. Note: Latest and additional good books may be suggested and added from time to time

Web/Links for e-content:

- [Data Structures Tutorial - GeeksforGeeks](#)
- [visualising data structures and algorithms through animation - VisuAlgo](#)
- [DSA Introduction \(w3schools.com\)](#)



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PRACTICE QUESTIONS (QUESTION BANK)

| S No | Problem |
|------------------|---|
| UNIT I | |
| 1. | What is data Structure? Explain its classification. |
| 2. | Difference between data types, data structure and abstract data structure |
| 3. | What is string? Explain all string operations in detail. |
| 4. | What is algorithm? Explain its all notations in detail. |
| 5. | What is algorithm complexity? Briefly explain how we calculate complexity of an algorithm. |
| 6. | What is first pattern matching algorithm? Explain it with suitable example. |
| 7. | What is second pattern matching algorithm? Explain it with suitable example. |
| UNIT-II | |
| 8. | What is array? Explain various operations performed on Array. |
| 9. | What is array? Explain its types. |
| 10. | What is one dimensional array? Explain its representation in memory. |
| 11. | Explain address calculation in one dimensional array in detail with suitable example. |
| 12. | What is two dimensional array? Explain its representation in memory. |
| 13. | Explain address calculation in two dimensional array in detail with suitable example. |
| 14. | Explain Algorithm of all operations of array in detail. |
| 15. | What is Linked List? Explain its types in detail. |
| 16. | Explain various applications of linked list in detail. |
| UNIT- III | |
| 17. | What is stack? Explain its memory representation in detail. |
| 18. | What is stack? Explain its all operations in detail with algorithm and examples. |
| 19. | Explain the procedure of Infix to Postfix conversion in detail. Explain it with suitable example. |



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| 20. | Explain the procedure of Infix to Prefix conversion in detail. Explain it with suitable example. |
| 21. | What is queue? Explain its representation in Memory. |
| 22. | What is queue? Explain its all operations in detail. |
| 23. | Explain applications of queue in detail? |
| 24. | What is queue? Explain its all types in detail. |
| UNIT-IV | |
| 25. | What is graph? Explain its memory representation in detail. |
| 26. | What is graph? Explain traversal algorithm of graph in detail. |
| 27. | What is tree? Explain traversal algorithm of tree with stack in detail. |
| 28. | What is binary tree? Explain it with suitable example. |
| 29. | What is binary search tree? |
| 30. | Explain Kuruskal's algorithm for minimum spanning tree in detail. |
| 31. | Explain prim's algorithm for minimum spanning tree in detail. |
| 32. | Explain algorithm for In order to preorder traversal in detail with example. |
| 33. | Explain algorithm for Inorder to Postorder traversal in detail with example. |



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Course Plan

Department of computer Science Program: BCA DBMS

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|----------------------|---|--------------------|--|
| Course Name | Database Management System | CourseType | Theoryc |
| Course Code | BCA-203 | Class | BCA 3 rd sem |
| Instruction Delivery | Per week Lectures: 4, Tutorial: 1, Practical:- Total No. Classes Per Sem: 60(L), 15(T), -(P) Assessment in Weightage: Sessional (20%), EndTermExams (80%) | | |
| Course Coordinator | Dr.Reena Katyal | Course Instructors | Theory:Dr. Reena Katyal and Mrs. Preeti Bhardwaj |

COURSEOVERVIEW

This course describes basics of data and information. It describes limitations of file based system and also explains DBMS and its advantages over file based system. It provides knowledge about different type of data models. It also describes relational algebra, relational calculus, functional dependencies and SQL queries.

PREREQUISITE

Basic knowledge of data, information and data processing

COURSE OBJECTIVE

The objective of this course is learning about data models, database, and database management system. Students learn about structured query language, query processing and query optimization.

COURSE OUTCOMES (COs)

After the completion of the course, the student will be able to:

| CO No. | Course Outcomes |
|--------|--|
| 1 | Students learn about the basic concepts and terminology of DBMS. |
| 2 | Students gain a basic understanding about data models. |
| 3 | Students know about relational algebra and SQL queries, query processing and query optimization. |
| 4 | Students know about concurrency and recovery. |



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COURSECONTENT

| Content |
|---|
| <p>Unit-I Basic Concepts–Data, Information, Records and files. Traditional file –based Systems-File Based Approach-Limitations of File Based Approach, Database Approach-Characteristics of Database Approach, advantages and disadvantages of database system, components of database system, Database Management System (DBMS), Components of DBMS Environment, DBMS Functions and Components, DBMS users, Advantages and Disadvantages of DBMS, DBMS languages. Roles in the Database Environment - Data and Database Administrator, Database Designers, Applications Developers and Users.</p> |
| <p>Unit-II Database System Architecture–Three Levels of Architecture, External, Conceptual and Internal Levels, Schemas, Mappings and Instances. Data Independence– Logical and Physical Data Independence. Classification of Database Management System, Centralized and Client Server architecture to DBMS . Data Models: Records- based Data Models, Object-based Data Models, Physical Data Models and Conceptual Modeling.</p> |
| <p>Unit-III Entity-Relationship Model – Entity Types, Entity Sets, Attributes Relationship Types, Relationship Instances and ER Diagrams, abstraction and integration. Basic Concepts of Hierarchical and Network Data Model, Relational Data Model:-Brief History, Relational Model Terminology-Relational Data Structure, Database Relations, Properties of Relations, Keys, Domains, Integrity Constraints over Relations,.</p> |
| <p>Unit-IV Relational algebra, Relational calculus, Relational database design: Functional dependencies, Modification anomalies, 1st to 3rd NFs, BCNF, 4th and 5th NFs, computing closures of set FDs, SQL:Data types, Basic Queries in SQL, Insert, Delete and Update Statements, Views, Query processing: General strategies of query processing, query optimization, query processor, concept of security, concurrency and recovery.</p> |



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LESSON PLAN (THEORY AND TUTORIAL CLASSES)

| L.No | Topic to be Delivered | Tutorial Plan | Unit |
|------|---|------------------------------------|------|
| 1 | Data, Information, Record and files | Discussion of data and information | 1 |
| 2 | Traditional file based system, file based approach, limitation of file based approach | | |
| 3 | Database approach and its characteristics | | |
| 4 | Advantages and disadvantages of database system | | |
| 5 | Components of database system | | |



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|----|---|--|---|
| 6 | Database management system | Discussion on DBMS, its advantages and disadvantages | 1 |
| 7 | Components of DBMS environment | | |
| 8 | Functions and components of DBMS | | |
| 9 | DBMS users and languages | | |
| 10 | Advantages and disadvantages of DBMS | | |
| 11 | Data and database administrator | | |
| 12 | Database designers, Application developers and users | | |
| 13 | Database system architecture- Three level of architecture | Discussion on data independence | 2 |
| 14 | External, Conceptual and Internal levels | | |
| 15 | Schema, Mapping and instances | | |
| 16 | Data Independence-Logical and physical Independence | | |
| 17 | Classification of DBMS | Discussion on Centralized and client server architecture | |
| 18 | Centralized architecture of DBMS | | |
| 19 | Client Server Architecture of DBMS | | |
| 20 | Data models: Record based models , Relational model | | |
| 21 | Hierarchical model | | |
| 22 | Network model | Discussion on various type of data model | |
| 23 | Object based data model | | |
| 24 | Physical data model | | |
| 25 | Conceptual model | | |
| 26 | Entity-relationship model | | |
| 27 | Entity types and entity sets | | |
| 28 | Attributes and relationship types | | |
| 29 | Relationship Instances | | |
| 30 | ER Diagram | | |



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|----|--|--|---|
| 31 | Abstraction and Integration | Database relations and properties of relations | 3 |
| 32 | Basic concept of Hierarchical and network data model | | |
| 33 | Relational data model History, structure and terminology | | |
| 34 | Database relations, properties of relation | | |
| 35 | Keys and domains | Integrity constraints over relations | |
| 36 | Integrity constraints over relation | | |
| 37 | Primary key and secondary key | | |
| 38 | Relational algebra | Relational algebra | 4 |
| 39 | Relational calculus | | |
| 40 | Relational database design | | |
| 41 | Functional dependency | | |
| 42 | Normalization | | |
| 43 | Basic queries in SQL | | |
| 44 | Views, query processing | | |
| 45 | General strategies of query processing | | |
| 46 | Query optimization | Functional Dependency | |
| 47 | Query processor and concept of query | | |
| 48 | Concurrency and security | | |

Text Book

1. Elmasri&Navathe,“Fundamentals of Database Systems”,5th edition,Pearson Education

Reference Books

1. Thomas Connolly Carolyn Begg,“Database Systems”,3/e, Pearson Education
2. C.J.Date, “An Introduction to Database Systems”,8th edition,Addison Wesley N. Delhi.

Web/Links for e-content

<https://www.javatpoint.com>

<https://www.techtarget.com>

PRACTICE QUESTIONS(QUESTION BANK)



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| | |
|----|--|
| 1 | What is database and its terminology? |
| 2 | What is file based system and its limitations? |
| 3 | What is database approach and its characteristics? |
| 4 | What is advantages and disadvantages of database system? |
| 5 | What are components of database system? |
| 6 | What is DBMS and components of DBMS environment? |
| 7 | Explain advantages and disadvantages of DBMS? |
| 8 | Explain DBA and its responsibilities. |
| 9 | Explain three level of architecture. |
| 10 | Explain schemas, mappings and Instances. |
| 11 | What is data independence? Explain in detail. |
| 12 | Explain Centralized system architecture. |
| 13 | Explain Client- Server architecture. |
| 14 | Explain different types of data model. |
| 15 | What is Entity relationship model? Explain entity types, entity sets and relationship. |
| 16 | What is hierarchical and network data model? |
| 17 | What is relational data model? Explain in detail. |
| 18 | What is key? |
| 19 | Explain Integrity constraints over relations. |
| 20 | What is relational algebra? Explain in detail. |
| 21 | What is relational calculus? Explain in detail. |



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| 22 | Explain functional dependency and different type of normal forms. |
| 23 | Explain SQL queries in detail with example. |
| 24 | What is query processing and query optimization? |
| 25 | Explain concept of security in DBMS. |
| 26 | What is concurrency and recovery? Explain in detail. |



Sh. L. N. Hindu College, Rohtak (Haryana)

Course Plan

Department of English

Program: BCA II

Communication Skills (English) (BCA-204)

SCHEME

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|-----------------------------|--|---------------------------|--|
| Course Name | Communication Skills (English) | Course Type | Basics of Communication & Grammar |
| Course Code | BCA-204 | Class | BCA II |
| Instruction Delivery | Text Per week Lectures: 5 Tutorial: -1 Total No. Classes Per Sem: 60(L), 15(T) Assessment in Weightage: Sessional (20%), End Term Exams (80%) | | |
| Course Coordinator | Dr. Shikha Phogat | Course Instructors | Dr. Harshita Chhikara, Dr Sumit Kumari Dahiya |

COURSE OVERVIEW

This course is designed to enhance students' communication skills in English, focusing on effective verbal and written communication. Students will learn to express themselves clearly, confidently, and persuasively in various contexts, including presentations, group discussions, and written reports. The course covers topics such as public speaking, active listening, verbal and non-verbal communication, etc. Through interactive sessions, role-plays and assignments, students will develop their ability to communicate effectively in personal and professional settings, preparing them for success in their academic and professional careers.

PREREQUISITE

A Basic understanding of English language fundamentals, including grammar, vocabulary and sentence structure. Additionally, students should be able to read, write, and comprehend English at intermediate level.

COURSE OBJECTIVE

- Develop effective verbal and written communication skills in English.
- Enhance public speaking, presentation and negotiation skills.
- Improve active listening, non-verbal communication and formal etiquette.
- Master business communication formats.



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COURSE OUTCOMES (COs)

After the completion of the course, the student will be able to:

| CO No. | Course Outcomes |
|--------|--|
| 1 | Communicate effectively in English, both verbally and in writing, in various personal and professional contexts. |
| 2 | Deliver confident and persuasive presentations, pitches and negotiations, using appropriate language, tone and body language. |
| 3 | Write clear, concise and well-structured business documents that meet industry standards. |
| 4 | Engage actively in group discussions, meetings and debates, using active listening skills, critical thinking and effective feedback in their academic and professional pursuits. |

COURSE CONTENT

| Content |
|---|
| <p style="text-align: center;">Unit-1</p> <p>Introduction to Basics of Communication: Communication and its various definition, features/characteristics of the communication, process of communication, communication models and theories, barrier to effective communication.</p> |
| <p style="text-align: center;">Unit-2</p> <p>Improving LSRW: verbal and non-verbal communication, listening process, group discussion, forms of oral presentation, self-presentation, dyadic communication, 7 Cs of communication, Developing dialogues, soft skills.</p> |
| <p style="text-align: center;">Unit-3</p> <p>Basic Vocabulary: how to improve vocabulary, prefix, suffix, synonyms, antonyms, one word substitution, spellings.</p> <p>Developing Fluency: grammar (parts of speech, articles and tenses), language games.</p> |
| <p style="text-align: center;">Unit-4</p> <p>Proper use of Language: The Communication Skills, effective Speech.</p> <p>Effective self-presentation & facing interview: The interview process and preparing for it. The presentation skills.</p> |



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Course Plan

LESSON PLAN (THEORY AND TUTORIAL CLASSES)

| L. No | Topic to be Delivered | Tutorial Plan |
|-------|---|---|
| 1 | Communication and its various definitions | Discussion of Short & Long Questions answers on Communication, its features and process. |
| 2 | Features/characteristics of the communication | |
| 3 | Process of communication | |
| 4-6 | Communication models | Discussion of Short and Long questions on communication models, theories and barriers. |
| 7-8 | Communication theories | |
| 9 | Barriers to Effective Communication | |
| 10 | Discussion on Short & Long Questions Answers | |
| 11 | Verbal Communication and its different medium | Revision of Short & Long Questions answers on Verbal and non-verbal communication. |
| 12 | Non-verbal communication and its different medium | |
| 13 | Listening process | Revision of Short & Long Questions answers on Verbal and non-verbal communication. |
| 14-15 | Group discussion | |
| 16 | Forms of Oral Presentation | Revision of Short & Long questions on Oral and self-presentation and Dyadic communication. |
| 17 | Self-Presentation | |
| 18 | Dyadic Communication | |
| 19 | 7 Cs of Communication | |
| 20 | Developing Dialogues | Revision of Short & Long Questions answers on Developing dialogues and soft skills. |
| 21 | Developing Soft Skills | |
| 22 | Discussion on Short & Long Questions answers | |
| 23 | Vocabulary and ways to improve it | Revision of Short & Long Questions answers on Vocabulary, prefix and suffix. |
| 24 | Prefix and suffix | |
| 25 | Synonyms | Revision of Short & Long Questions answers on Synonyms and Antonyms. |
| 26 | Antonyms | |
| 27 | Words often confused | Revision of Short & Long Questions answers on Words often confused and one word substitution. |
| 28 | One word Substitution | |
| 29 | Rules of Spellings | Revision of Short & Long Questions answers on Spelling Rules and Making Plurals. |
| 30 | Making Plurals | |



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| 31 | Parts of Speech-Introduction Nouns, Pronouns, Adjectives, Verbs and Adverbs | Revision of Short & Long Questions answers on Parts of Speech. |
| 32 | Conjunctions, Prepositions and Interjections | |
| 33-35 | Tenses | Revision of Short & Long Questions answers on Tenses and Word Games. |
| 40 | Word Games | |
| 41 | Discussion on Short & Long Questions answers | |

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|-------|--|---|
| 42 | The Communication Skills and its Types | Revision of Short & Long Questions answers on Communication Skills and Effective Skills. |
| 43 | Effective Speech | |
| 44-48 | Interview Process | Revision of Short & Long Questions answers on Interview Process and Preparing for it, presentation skills and effective presentation. |
| 49-52 | Preparing for Interview | |
| 53 | The presentation Skills | |
| 54-55 | How to make an effective presentation | |
| 56-60 | Discussion on Glossary, Short & Long Questions answers and Revision | Revision |

Text Book

Communication Skills by Dr. F. C. Sharma.

Reference Books

- Kapoor, Virender. *The Soft Skills Handbook*. Atlantic Publishers and Distributors, 2024.
- Murphy Raymond, *English Grammar in Use*, Cambridge University Press. 2019.
- Narula, Uma. *Communication Models*. Atlantic Publishers and Distributors, 2023.
- Turner, Lynn H, & Richard West. *An Introduction to Communication*. Cambridge University Press, 2018.
- Tuhovsky. *Communication Skills Training*. Createspace Independent Pub, 2015.

Web/Links for e-content

- <https://www.coursera.org>
- www.betterup.com
- <https://novoresume.com>
- <https://www.tcsion.com>



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Course Plan

PRACTICE QUESTIONS (QUESTION BANK)

| S No | Questions for Practice |
|------|---|
| 1 | <ul style="list-style-type: none">a) Define Communication.b) Write various definitions of communication.c) Write features of effective communication.d) Describe the process of communication.e) Write a note on David Berlo's SMCR model.f) Write a note on Shannon and Weaver Model.g) Write a note on Interactional Model of communication.h) Write a note on Westley and MacLean model.i) Write a note on Muted Group Theory.j) Write a note on Cognitive Dissonance Theory.k) Write a note on Linear communication model.l) Define Communication Barrier.m) Write ways to overcome communication barriers. |
| 2 | <ul style="list-style-type: none">a) What is Verbal Communication?b) Write different medium of verbal communication.c) Define non-verbal communication.d) Write different medium of non-verbal communication.e) Describe the process of listening.f) Describe Group Discussion.g) Write ways for conducting effective group discussion.h) Write different forms of oral presentation.i) Define self-presentation.j) Describe dyadic communication and its types.k) Write 7 Cs of communication.l) Define dialogue. Write ways to develop it.m) Define soft skills. Write ways to improve it. |
| 3 | <ul style="list-style-type: none">a) Define vocabulary. Write ways to improve it.b) Write words with prefix: un-, im-, a-, de-, non-c) Write words with suffix: -ous, -es, -ing, -ion, -edd) Write synonyms: beautiful, adjacent, begin, adapt, role, jaile) Write antonyms: day, ugly, hell, soft, beginning, virtuef) Choose the correct option: He (is/are) in the garden. They (were/was) dancing. |



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| | <p>Nita (is/was) watching a show. (present)</p> <p>I (have/had) visited many historical places. (past perfect)</p> <p>He (does/did) not like Italian food. (present)</p> <p>..... (Do/Does) you prefer tea to coffee?</p> <p>..... (Did/Do) they gather in the park? (present)</p> |
| 4 | <ol style="list-style-type: none">Define communication skills. Describe its various types.Define effective skills and ways to achieve it.Describe the process of interview.How do you prepare for interview.Describe ways to achieve effective presentation skills. |