# DEPARTMENT OF COMPUTER ENGINEERING
## SIRDA POLYTECHNIC SUNDERNAGAR
## DISTT.- MANDI (H.P.) - 175019

### LESSON PLAN

| | |
|---|---|
| Program Name | Computer Engineering |
| Subject Name | Wireless Communication |
| Subject Code | COPE204-II |
| Semester | 4th |
| Subject Teacher Name | Er. Shiwanshu |

**Evaluation Scheme**

| S. No. | Subject Name | Study Scheme (Hrs/week) | | Marks Distribution in Evaluation Scheme | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Internal Assessment | | | External Assessment | | |
| | | Th | Pr | Th | Pr | Total | Th | Pr | Total |
| 1 | Wireless Communication | 3 | 0 | 40 | 0 | 40 | 60 | 0 | 100 |

**Teaching Plan**

| | Name of Topic | Proposed Date | Actual Date | Remarks |
|---|---|---|---|---|
| Unit-I Introduction to Wireless Communication | Wireless communication and its applications | 28.01.2026 | | |
| | Wireless communication and its applications | 30.01.2026 | | |
| | Advantages and Disadvantages of wireless communication | 31.01.2026 | | |
| | Types of Services broadcast, paging, cellular telephony , trunking radio, cordless telephony | 04.02.2026 | | |
| | Types of Services broadcast, paging, cellular telephony , trunking radio, cordless telephony | 06.02.2026 | | |
| | trunking radio, cordless telephony WLAN, PAN | 07.02.2026 | | |
| | adhoc & sensor networks | 11.02.2026 | | |
| | fixed wireless access | 13.02.2026 | | |
| | challenges in wireless communication | 18.02.2026 | | |
| | Revision | 20.02.2026 | | |
| Unit-II Electromagnetic Spectrum | Electromagnetic spectrum, licensed/unlicensed spectrum bands, | 21.02.2026 | | |
| | Electromagnetic spectrum, licensed/unlicensed spectrum bands, | 25.02.2026 | | |
| | ISM band, terrestrial and satellite microwave communication | 27.02.2026 | | |
| | broadcast radio, infrared and light wave communication, | 28.02.2026 | | |
| | wireless transmission impairments | 06.03.2026 | | |
| | attenuation, distortion, noise, interference, path loss, | 07.03.2026 | | |
| | shadowing and fading | 11.03.2026 | | |
| | CT-1 | 13.03.2026 | | |

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|---|---|---|---|---|
| Unit-III Fundamentals of Wireless Communication - | Concept of bandwidth, analog and digital signals, | 20.03.2026 | | |
| | Concept of bandwidth, analog and digital signals, | 25.03.2026 | | |
| | data rate, signal strength, SNR, RSSI, | 27.03.2026 | | |
| | electromagnetic wave propagation: ground waves, sky waves and line-of-sight propagation; | 28.03.2026 | | |
| | radiowaves, microwaves, infrared; | 01.04.2026 | | |
| | Overview of Propagation Mechanisms: reflection, diffraction andscattering | 04.04.2026 | | |
| | Overview of Propagation Mechanisms: reflection, diffraction andscattering | 08.04.2026 | | |
| | outdoor and indoor propagation. | 10.04.2026 | | |
| | Revision | 10.04.2026 | | |
| Unit-IV Cellular Architecture | Cellular Communication: cellular concept, cellular system architecture | 15.04.2026 | | |
| | cells, clusters, frequency reuse, cell splitting, handoff, | 17.04.2026 | | |
| | Digital Cellular System: TDMA, ETDM, PCS, CDMA, | 18.04.2026 | | |
| | Digital Cellular System: TDMA, ETDM, PCS, CDMA, | 22.04.2026 | | |
| | Global System for Mobile Communication (GSM) | 24.04.2026 | | |
| | GSM network: switching system, BSS,operation and support system | 25.04.2026 | | |
| | **CT-2** | 29.04.2026 | | |
| | Generations of cellular networks and their features (1G – 5G). | 08.05.2026 | | |
| Unit-V Wireless LAN Technology and Bluetooth | Wireless LAN (WLAN), IEEE-802.11, | 13.05.2026 | | |
| | WLAN applications, WLAN types, | 15.05.2026 | | |
| | WLAN problems – hidden station and exposed station problems | 16.05.2026 | | |
| | Bluetooth technology, | 22.05.2026 | | |
| | Direct Sequence Spectrum Scheme, | 23.05.2026 | | |
| | Frequency Hopping Spread Spectrum,PAN | 23.05.2026 | | |

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Raman Sharma
(Signature of HOD)

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# DEPARTMENT OF COMPUTER ENGINEERING
## SIRDA POLYTECHNIC SUNDERNAGAR
## DISTT.- MANDI (H.P.) - 175019

### LESSON PLAN

| | |
|---|---|
| Program Name | Computer Engineering |
| Subject Name | Information Security |
| Subject Code | ITPE202-I |
| Semester | 4th |
| Subject Teacher Name | Er.Abhishek |

**Evaluation Scheme**

| S. No. | Subject Name | Study Scheme (Hrs/week) | | Marks Distribution in Evaluation Scheme | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Internal Assessment | | | External Assessment | | |
| | | Th | Pr | Th | Pr | Total | Th | Pr | Total |
| 1 | Information Security | 4 | 0 | 40 | 0 | 40 | 60 | 0 | 100 |

| | |
|---|---|
| **Refrence Books** | (1) Information Security: The Complete Reference By Mark Rhodes, McGraw-Hill<br>(2) Cryptography and Network Security : Principles and Practice by William Stallings, Pearson Education |

**Teaching Plan**

| | Name of Topic | Proposed Date | Actual Date | Remarks |
|---|---|---|---|---|
| Unit-I Introduction | Introduction | 27.01.2026 | | |
| | Information Security, Cybersecurity | 28.01.2026 | | |
| | Need for Cybersecurity, Aspects of Information Security | 29.01.2026 | | |
| | Malware - Worm, Virus, Trojan Horse, Bots & Botnets | 31.01.2026 | | |
| | Ransomware, Spyware, Keylogger, Spamming and Phishing; | 03.02.2026 | | |
| | Security Features of Operating Systems - Authentication, | 04.02.2026 | | |
| | File System Protection | 05.02.2026 | | |
| | User Privileges, RAID Options | 07.02.2026 | | |
| | Anti-Virus Software, | 10.02.2026 | | |
| | OS Security Patches | 11.02.2026 | | |
| | Introduction | 12.02.2026 | | |
| | Cryptography, | 17.02.2026 | | |
| | Symmetric Ciphers | 18.02.2026 | | |
| | Asymmetric Ciphers | 19.02.2026 | | |
| | Substitution Cipher | 21.02.2026 | | |

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|---|---|---|---|---|
| **Unit-II Basics of Cryptography** | Caesar Cipher, | 24.02.2026 | | |
| | Transposition Technique | 25.02.2026 | | |
| | Stegnography | 26.02.2026 | | |
| | Stream and Block Ciphers (Introduction Only | 28.02.2026 | | |
| | Public Key Cryptography | 03.03.2026 | | |
| | Public Key Cryptography | 05.03.2026 | | |
| | **Class Test - I** | **12.03.2026** | | |
| **Unit-III Cybersecurity Framework** | Introduction | 07.03.2026 | | |
| | NIST Definition of Computer Security | 10.03.2026 | | |
| | CIA Triad | 11.03.2026 | | |
| | NIST Framework for Cybersecurity, | 17.03.2026 | | |
| | Cybersecurity Framework Components | 18.03.2026 | | |
| | Framework Core - Functions | 19.03.2026 | | |
| | Categories | 24.03.2026 | | |
| | Subcategories | 25.03.2026 | | |
| | Framework Implementation Tier | 28.03.2026 | | |
| | Framework Implementation Tier | 31.03.2026 | | |
| **Unit-IV Information Security Architecture** | OSI Security Architecture | 01.04.2026 | | |
| | Definitions of Security Attack, | 02.04.2026 | | |
| | Security Mechanism, Security Service, | 04.04.2026 | | |
| | **Class Test - II** | **09.04.2026** | | |
| | Threat and Attack; Active and Passive Attacks, | 07.04.2026 | | |
| | Security Services - Authentication, Access Control, | 07.04.2026 | | |
| | Data Confidentiality, Data Integrity and Non-repudiation; | 08.04.2026 | | |
| | Security Mechanisms - Encipherment, | 16.04.2026 | | |
| | Digital Signature | 18.04.2026 | | |
| | Access Control, Data Integrity, | 18.04.2026 | | |
| | Authentication Exchange, | 21.04.2026 | | |
| | Traffic Padding, | 22.04.2026 | | |
| | Routing Control and Notarization | 23.04.2026 | | |

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|---|---|---|---|---|
| Unit-V : Network and Internet Security | Network Classification : Trusted, Semi-trusted, Untrusted & Unknown Networks; | 25.04.2026 | | |
| | Network Attacks Classification : Interruption, Interception | 28.04.2026 | | |
| | Modification & Fabrication; | 29.04.2026 | | |
| | Network Attacks : Password Stealing, Packet Sniffers, IP Spoofing | 30.04.2026 | | |
| | Denial-of-Service (DoS), Man-in-Middle, Session Hijacking; | 02.05.2026 | | |
| | Security Weaknesses in Networks,Network Access Control, IEEE 802.1x, | 05.05.2026 | | |
| | VLAN, Firewall, Extensible Authentication Protocol, | 06.05.2026 | | |
| | Network Security Protocols - TLS, SSL, HTTPS, IPSec and SSH, | 07.05.2026 | | |
| | Ingres Filtering, VPN, Firewalls, Internet Security Threats : Privacy Breach, | 12.05.2026 | | |
| | DNS Spoofing, Email Spam, Cross-site Scripting (XSS); | 13.05.2026 | | |
| | Web Browser Security Settings : Cookies, | 14.05.2026 | | |
| | Website Certificate,Browsing History, | 16.05.2026 | | |
| | Plugins, Parental Control, | 19.05.2026 | | |
| | Form Autofill, CAPTCHA; Strong Passwords | 20.05.2026 | | |
| Unit-VI : Cyber Laws | Cyber Crime, | 21.05.2026 | | |
| | Cyber Crime against Person, | 21.05.2026 | | |
| | Property and Government, | 21.05.2026 | | |
| | Major Provisions under Indian IT Act-2000 (Sections 65, 66, 67, 69) | 23.05.2026 | | |
| | Intellectual Property Rights, | 23.05.2026 | | |
| | Patent Law, | 23.05.2026 | | |
| | Copyright Law, | 26.05.2026 | | |
| | Digital Signatures | 26.05.2026 | | |

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## DISTT.- MANDI (H.P.) - 175019

### LESSON PLAN

| | |
|---|---|
| Program Name | Computer Engineering |
| Subject Name | Data Structure & Algorithms |
| Subject Code | (COPC204) |
| Semester | 4th |
| Subject Teacher Name | Er. Rekha |

**Evaluation Scheme**

| S. No. | Subject Name | Study Scheme (Hrs/week) | | Marks Distribution in Evaluation Scheme | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Internal Assessment | | | External Assessment | | |
| | | Th | Pr | Th | Pr | Total | Th | Pr | Total |
| 1 | Data Structure & Algorithms | 4 | 4 | 40 | 0 | 40 | 60 | 0 | 100 |
| 2 | Data Structure & Algorithms | 0 | 4 | 0 | 40 | 40 | 0 | 60 | 100 |

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|---|---|
| **Refrence Books** | (1) Fundamentals of Data Structure in C,Data Structure using C udit Agrwal |
| **Teaching Plan** | |

| | Name of Topic | Proposed Date | Actual Date | Remarks |
|---|---|---|---|---|
| Unit-I Introduction | **Introduction:** | 28/1/2026 | | |
| | Algorithms-Definition, | 30/1/2026 | | |
| | Characteristics, Efficiency | 31/1/2026 | | |
| | Notations - Asymptotic, Big-Oh, | 2/2/2026 | | |
| | Notations - Asymptotic, Big-Oh, | 4/2/2026 | | |
| | Omega, Theta notation; | 6/2/2026 | | |
| | Data Types, | 7/2/2026 | | |
| | Data Types, | 9/2/2026 | | |
| | Data Structures - Characteristics, | 11/2/2026 | | |
| | Types - Linear, Non-linear | 13/2/2026 | | |
| | General Operations, Efficiency | 16/2/2026 | | |
| | Revison | 18/2/2026 | | |

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|---|---|---|---|---|
| Unit-II<br>Arrays, Structures and Pointers | **Arrays, Structures and Pointers** | 20/2/2026 | | |
| | Arrays, One-Dimensional and | 21/2/2026 | | |
| | Multi-Dimensional Arrays | 23/2/2026 | | |
| | Two-Dimensional Arrays–Memory Representation, | 25/2/2026 | | |
| | Implement Matrices using Two-Dimensional Arrays, | 27/2/2026 | | |
| | Implement Matrices using Two-Dimensional Arrays, | 28/2/2026 | | |
| | Two-Dimensional Arrays–Memory Representation, | 2/3/2026 | | |
| | Matrix Operations-Addition, | 6/3/2026 | | |
| | Matrix Operations- Subtraction, | 6/3/2026 | | |
| | Multiplication, Transpose; | 6/3/2026 | | |
| | Structure-Accessing structure members using (.) | 7/3/2026 | | |
| | and (->) operators, selfreferencing structures, | 7/3/2026 | | |
| | Pointers-Dynamic Memory Allocation using malloc(), | 7/3/2026 | | |
| | **CT-1** | 9/3/2026 | | |
| | calloc(),free() and realloc(), | 11/3/2026 | | |
| | Manipulate Arrays using Pointers. | 13/3/2026 | | |
| | Revison | 16/3/2026 | | |
| | Revison | 18/3/2026 | | |
| Unit-III<br>Sorting and Searching | **Sorting and Searching** | 20/3/2026 | | |
| | Searching Techniques - Linear Search, | 21/2026 | | |
| | Linear Search; | 23/3/2026 | | |
| | Binary Search; | 25/3/2026 | | |
| | Sorting Techniques – Selection Sort, | 27/3/2026 | | |
| | Insertion Sort, | 28/3/2026 | | |
| | Bubble Sort, | 30/3/2026 | | |
| | Quick Sort, | 1/4/2026 | | |
| | **CT-2** | 4/4/2026 | | |
| | Merge Sort; | 6/4/2026 | | |
| | Efficiencies of Sorting Algorithms. | 8/4/2026 | | |

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|---|---|---|---|---|
| Unit-IV<br>Linear Data Structures | **Linear Data Structures** | 10/4/2026 | | |
| | Linked Lists - Representation, Advantages, Disadvantages, | 13/4/2026 | | |
| | Linked Lists - Representation, Advantages, Disadvantages, | 17/4/2026 | | |
| | Implementation, Operations; Doubly Linked List, | 18/4/2026 | | |
| | Implementation, Operations; Doubly Linked List, | 20/4/2026 | | |
| | Stacks, Stack Operations - Push, Pop; | 22/4/2026 | | |
| | Implementation of Stack using Arrays | 24/4/2026 | | |
| | Implementation of Stack using Linked List | 25/4/2026 | | |
| | Queues, Queue Operations, | 27/4/2026 | | |
| | Implementation of Queue using Arrays | 29/4/2026 | | |
| | Implementation of Queue using linked list | 2/5/2026 | | |
| Unit-V<br>Non -Linear Data Structures | Trees, Tree Terminology - Node, Root, Parent, Children, | 4/5/2026 | | |
| | Sibling, Edge, Leaves; Binary Tree, | 11/5/2026 | | |
| | Binary TreeRepresentation, | 13/5/2026 | | |
| | Binary Tree Traversal, | 15/5/2026 | | |
| | Binary Search Tree | 16/5/2026 | | |
| | Graphs, Graph Terminology, | 18/5/2026 | | |
| | Directed Graphs,Weighted Graphs, | 20/5/2026 | | |
| | Graph Implementation using Adjacency Matrix | 22/5/2026 | | |
| | Graph Implementation using Adjacency Matrix | 23/5/2026 | | |
| | Graph Implementation using Adjacency Adjacency List. | 25/5/2026 | | |

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## SIRDA POLYTECHNIC SUNDERNAGAR
## DISTT.- MANDI (H.P.) - 175019

### LESSON PLAN

| | |
|---|---|
| Program Name | Computer Engineering |
| Subject Name | Database Management Systems |
| Subject Code | ITPC204 |
| Semester | 4th |
| Subject Teacher Name | Er. Abhishek |

### Evaluation Scheme

| S. No. | Subject Name | Study Scheme (Hrs/week) | | Marks Distribution in Evaluation Scheme | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Internal Assessment | | | External Assessment | | |
| | | Th | Pr | Th | Pr | Total | Th | Pr | Total |
| 1 | Database Management Systems | 4 | 0 | 40 | 0 | 40 | 60 | 0 | 100 |

### Teaching Plan

| | Name of Topic | Proposed Date | Actual Date | Remarks |
|---|---|---|---|---|
| Unit-I Introduction to Database Systems | Introduction to Database Systems | 27.01.2026 | | |
| | Database Systems, Database and its Purpose | 28.01.2026 | | |
| | File-based and Traditional Record Keeping Approaches | 31.01.2026 | | |
| | Comparison of Database Approach | 02.02.2026 | | |
| | Advantages and Disadvantages of Database Approach | 03.02.2026 | | |
| | Classification of Database Users | 04.02.2026 | | |
| | Role of DBA | 07.02.2026 | | |
| Unit-II Database System Concepts and Architecture | Data Models, Schemas, and Instances | 09.02.2026 | | |
| | ANSI/SPARC Architecture of a Database System | 10.02.2026 | | |
| | External Level | 11.02.2026 | | |
| | Conceptual Level | 16.02.2026 | | |
| | Internal Level, | 17.02.2026 | | |
| | Mappings; Data Independence | 18.02.2026 | | |
| | Logical Data Independence, Physical Data Independence | 21.02.2026 | | |
| Unit-III Relational and E-R Models | Relational Database Model | 23.02.2026 | | |
| | Relations, Attributes Tuples | 24.02.2026 | | |
| | Prime and Non-prime Attributes | 25.02.2026 | | |
| | Key – Primary Key, Candidate Keys | 28.02.2026 | | |
| | Alternate Keys, Superkey | 02.03.2026 | | |
| | Secondary Key, Foreign Keys | 03.03.2026 | | |
| | Entity Relationship Model - Entity, Entity Sets, Strong and Weak Entities | 07.03.2026 | | |
| | class test-1 | 11.03.2026 | | |
| | Attributes, and Keys; Association, | 09.03.2026 | | |
| | Relationship, Roles, Structural Constraints | 10.03.2026 | | |
| | ER Diagrams | 10.03.2026 | | |
| Unit - 4 Database Dependencies and Normalization | Functional Dependencies | 16.03.2026 | | |
| | Trivial and Non-trivial Dependencies | 17.03.2026 | | |
| | Non-Loss Decomposition, Normalization, | 18.03.2026 | | |
| | First, Second and Third Normal Forms | 23.03.2026 | | |
| | Boyce-Codd Normal Form | 24.03.2026 | | |

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|---|---|---|---|---|
| | class test-2 | 25.03.2026 | | |
| | MySQL, Features of MySQL | 28.03.2026 | | |
| | Database Objects - Database, Table, View, Index | 30.03.2026 | | |
| | Alias; MySQL Object Naming, Keywords | 31.03.2026 | | |
| | User-defined Variables, Data Types - Numeric, Date and Time, | 01.04.2026 | | |
| Unit-V Overview of MySQL | String Types; Operators: Arithmetic, Logical, Relational, String | 04.04.2026 | | |
| | String Types; Operators: Arithmetic, Logical, Relational, String | 06.04.2026 | | |
| | MySQL System Schema, MySQL Database Users and Roles, | 07.04.2026 | | |
| | MySQL System Schema, MySQL Database Users and Roles, | 08.04.2026 | | |
| | Database Privileges, Access Control and Account Management | 13.04.2026 | | |
| | MySQL Server and MySQL Client | 18.04.2026 | | |
| | SQL, DDL Statements : CREATE, DROP, ALTER, RENAME | 20.04.2026 | | |
| | DML Statements: INSERT, UPDATE , DELETE, SELECT | 21.04.2026 | | |
| | DML Statements: INSERT, UPDATE , DELETE, SELECT | 22.04.2026 | | |
| | SELECT Clauses - FROM, WHERE, ORDER BY, GROUP BY, | 25.04.2026 | | |
| | Join Operations - Inner, Left, Right and Outer Joins | 27.04.2026 | | |
| | Join Operations - Inner, Left, Right and Outer Joins | 28.04.2026 | | |
| | Subqueries, Set Operations - Union, Intersect, Minus; | 29.04.2026 | | |
| | Transaction Statements - COMMIT, ROLLBACK, SAVEPOINT | 02.05.2026 | | |
| Unit-VI Structure Query Language using MySQL | Prepared Statements, SQL Functions | 04.05.2026 | | |
| | ABS, ROUND, FLOOR, CEIL, SQRT, POWER, TRUNCATE | 05.05.2026 | | |
| | ABS, ROUND, FLOOR, CEIL, SQRT, POWER, TRUNCATE | 06.05.2026 | | |
| | LOG, NOW, DATE, TIME, CURDATE, CURTIME, DAY | 11.05.2026 | | |
| | LOG, NOW, DATE, TIME, CURDATE, CURTIME, DAY | 12.05.2026 | | |
| | MONTH, YEAR, DATEDIFF, DATE_SUB, DATE_ADD | 13.05.2026 | | |
| | DATE_FORMAT, CONCACT, LENGTH, UPPER, LOWER, LEFT, RIGHT, | 16.05.2026 | | |
| | LTRIM, RTRIM, MAX, MIN, SUM | 18.05.2026 | | |
| | AVG, COUNT, CAST, STR_TO_DATE | 19.05.2026 | | |
| | Revision | 20.05.2026 | | |
| | Revision | 23.05.2026 | | |
| | Revision | 25.05.2026 | | |
| | Revision | 26.05.2026 | | |

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