| **CSC301** | Engineering Mathematics-III | **4** |
| --- | --- | --- |

| 5 | **Statistical Techniques** | | 6 |
| --- | --- | --- | --- |
|  | 5.1 | Karl Pearson‟s coefficient of correlation (r) |  |
| 5.2 | Spearman‟s Rank correlation coefficient (R) (with repeated and non-repeated ranks) |
| 5.3 | Lines of regression |
| 5.4 | Fitting of first- and second-degree curves. |
| 5.5 | **Self-learning Topics:** Covariance, fitting of an exponential curve. |
| 6 | **Probability** | | 6 |
|  | 6.1 | Definition and basics of probability, conditional probability. |  |
| 6.2 | Total Probability theorem and Bayes‟ theorem. |
| 6.3 | Discrete and continuous random variable with a probability distribution and probability density function. |
| 6.4 | Expectation, Variance, Moment generating function, Raw and central moments up to 4th order. |
| 6.5 | **Self-learning Topics:** Skewness and Kurtosis of distribution (data). |

| **Course Name** | **Credit** |
| --- | --- |
| Data Structure | **03** |

| **1** |  | **Introduction to Data Structures** | 2 |
| --- | --- | --- | --- |
| **2** |  | **Stack and Queues** | 8 |
|  | 2.1 | Introduction, ADT of Stack, Operations on Stack, Array Implementation of Stack, Applications of Stack-Well form-ness of Parenthesis, Infix to Postfix Conversion and Postfix Evaluation, Recursion. |  |
|  |  | 2.2 Introduction, ADT of Queue, Operations on Queue, Array Implementation of Queue, Types of Queue-Circular Queue, Priority Queue, Introduction of Double Ended Queue, Applications of Queue. |  |
| **3** |  | **Linked List** | 10 |
|  | 3.1 | Introduction, Representation of Linked List, Linked List v/s Array, Types of Linked List - Singly Linked List, Circular Linked List, Doubly Linked List, Operations on Singly Linked List and Doubly Linked List, Stack and Queue using Singly Linked List, Singly Linked List Application-Polynomial Representation and Addition. |  |
| **4** |  | **Trees** | 11 |
|  |  | 4.1 Introduction, Tree Terminologies, Binary Tree, Binary Tree Representation, Types of Binary Tree, Binary Tree Traversals, Binary Search Tree, Operations on Binary Search Tree, Applications of Binary Tree-Expression Tree, Huffman Encoding, Search Trees-AVL, rotations in AVL Tree, operations on AVL Tree,  Introduction of B Tree, B+ Tree. |  |
| **5** |  | **Graphs** | 4 |

|  | 5.1 | Introduction, Graph Terminologies, Representation of Graph, Graph Traversals Depth First Search (DFS) and Breadth-First Search (BFS), Graph Application Topological Sorting. |  |
| --- | --- | --- | --- |
| **6** |  | **Searching Techniques** | 4 |
|  | 6.1 | Linear Search, Binary Search, Hashing-Concept, Hash Functions, Collision resolution Techniques |  |