Complete Computer Science Engineering (CSE) Full Syllabus

1. Programming Fundamentals (C & Python)

- Introduction to Programming
- Compilers vs Interpreters
- C: Variables, Data Types, Operators
- Control Statements (if, switch, loops)
- Functions & Recursion
- Arrays & Strings
- Pointers
- Structures & Unions
- Dynamic Memory Allocation
- File Handling in C
- Python Basics (Syntax, Data Types)
- Lists, Tuples, Dictionaries
- Functions & Modules
- Object Oriented Programming
- Exception Handling
- File Handling in Python

2. Mathematics for CSE

- Discrete Mathematics (Logic, Sets, Relations)
- Graph Theory
- Recurrence Relations
- Linear Algebra (Matrices, Vectors)
- Calculus (Differentiation, Integration)
- Probability & Statistics

3. Data Structures

- Arrays
- Linked List
- Stack
- Queue
- Recursion
- Trees
- Binary Search Tree
- Heap
- Hashing
- Graphs

4. Algorithms

- Time & Space Complexity
- Sorting Algorithms
- Searching Algorithms
- Divide & Conquer
- Greedy Algorithms
- Dynamic Programming
- Backtracking
- Graph Algorithms (DFS, BFS, Dijkstra)

5. Computer Organization & Architecture

- Number Systems
- Boolean Algebra
- CPU Architecture
- Instruction Cycle
- Memory Hierarchy
- Cache Memory
- Pipelining

6. Operating Systems

- Process & Thread
- CPU Scheduling
- Deadlock
- Memory Management
- Paging & Segmentation
- Virtual Memory
- File Systems

7. Database Management Systems

- Database Concepts
- ER Model
- Relational Model
- SQL
- Normalization
- Transactions & ACID Properties
- Indexing

8. Computer Networks

- OSI Model
- TCP/IP Model
- IP Addressing
- Routing
- DNS
- HTTP/HTTPS
- Network Security Basics

9. Theory Subjects

- Theory of Computation
- Finite Automata
- Context Free Grammar
- Turing Machine
- Compiler Design (Lexical, Parsing, Optimization)
- Software Engineering (SDLC, Agile, Testing, Git)

10. Specialization Areas

- Artificial Intelligence
- Machine Learning
- Deep Learning
- Data Science
- Cyber Security
- Web Development
- Cloud Computing
- Blockchain
- Embedded Systems