



**BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE**  
(An AUTONOMOUS INSTITUTION, APPROVED BY AICTE-NEW DELHI, PERMANENTLY  
AFFILIATED TO JNTUK-KAKINADA, ACCREDITED BY NAAC 'A' GRADE,  
2 PROGRAMMES (CSE,EEE) ACCREDITED BY NBA ( For A.Y 2023-24 to 2025-26)  
Post Box: 26, Amalapuram 533201, Dr.B R Ambedkar Konaseema Dt., A.P.

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**BONAM VENKATA CHALAMAYYA INSTITUTE OF  
TECHNOLOGY & SCIENCE- An AUTONOMOUS INSTITUTION  
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

**COURSE STRUCTURE**

**B.Tech CSE-MINORS (BR-23 Regulations)**

**For MINOR DEGREE IN COMPUTER SCIENCE &  
ENGINEERING PROGRAMME**

*(Applicable for batches admitted from 2023-24)*



**Bonam Venkata Chalamayya Institute of Technology & Science ,Bhatlapalem, Amalapuram -533201**



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## COURSES OFFERED FOR MINOR DEGREE IN CSE

Note:

1. To obtain Minor Engineering, student needs to obtain 18 credits by successfully completing any of the following courses in the concern stream.
2. During Minor/Honors Course selection, there should not be any overlapping with Regular/Major/OPEN Electives

### Minor in CSE

Code	Subject Title	L-T-P-C	Sem
23CSMT01	Operating Systems	3-0-0-3	II-II
23CSMT02	Principles of Software Engineering	3-0-0-3	III-I
23CSMT03	Advanced Data Structures & Algorithm Analysis	3-0-0-3	III-II
23CSML01	Advanced Data Structures & Algorithm Analysis Lab	0-0-3-1.5	III-II
23CSMT04	Artificial Intelligence: Concepts and Techniques	3-0-0-3	MOOCS
23CSMT05	Principles of Database Management Systems	3-0-0-3	IV-I
23CSML02	Database Management Systems Lab	0-0-3-1.5	IV-I
23CSMT06	Machine Learning and Deep Learning - Fundamentals and Applications	3-0-0-3	MOOCS
23CSMT07	Fundamentals of Object Oriented Programming	3-0-0-3	MOOCS
23CSMT08	Discrete Mathematics for CS	3-0-0-3	MOOCS
23CSMT09	Software Engineering	3-0-0-3	MOOCS
23CSMT10	The Joy of Computing using Python	3-0-0-3	MOOCS
23CSMT11	Data Analytics with Python	3-0-0-3	MOOCS



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## BR23B.Tech CSE II YEAR II SEMESTER SYLLABUS

II Year II Semester	Operating Systems(23CSMT01)	L	T	P	C
		3	0	0	3

### Course Objectives:

The main objectives of the course is to make student

- Understand the basic concepts and principles of operating systems, including process management, memory management, file systems.
- Make use of process scheduling algorithms and synchronization techniques to achieve better performance of a computer system.
- Illustrate different conditions for deadlock.

### Course Outcomes:

- CM221.1 Study of Operating Systems concepts the structure and functions of OS.(Understand)
- CM221.2 Design various Scheduling algorithms. (Create)
- CM221.3 Compare and contrast various memory management schemes.(Analyze)
- CM221.4 The principles of concurrency, Design deadlock prevention and avoidance algorithms.(Evaluate)
- CM221.5 Study to Design and Implement file systems.( Analyze)

### UNIT-I

**Operating Systems Overview:** Introduction, Computer system overview, Operating system operations, Computing environments, Operating System types, Operating System Structures, System calls, Types of System Calls.

### UNIT-II

**Processes:** Process Concept, Process scheduling, CPU Scheduling Algorithms.

**Threads:** Threads and Multithreading models.

### UNIT-III

**Synchronization Tools:** Concurrency, The Critical Section Problem, Peterson's Solution, Semaphores, Classic problems of Synchronization. **Deadlocks:** Deadlock characterization, Methods for handling Deadlocks, Deadlock prevention and avoidance.

### UNIT-IV

**Memory-Management Strategies:** Introduction, Contiguous memory allocation, Paging, Structure of the Page Table, Swapping.

**Virtual Memory Management:** Demand paging, Page replacement Algorithms.

**Storage Management:** Overview of Mass Storage Structure, HDD Scheduling.

### UNIT-V

**File System:** File System Interface, File concept ,Access methods, Directory Structure, File system Implementation, File-system structure, File-system Operations, Directory implementation,



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Allocation method, Free space management.

### *Text Books:*

1. Operating System Concepts, Silberschatz A, Galvin P B, Gagne G, 10<sup>th</sup>Edition, Wiley, 2018.
2. Modern Operating Systems, Tanenbaum AS, 4<sup>th</sup>Edition, Pearson, 2016

### *Reference Books:*

1. Operating Systems- Internals and Design Principles, Stallings W, 9<sup>th</sup> edition, Pearson, 2018
2. Operating Systems: A Concept Based Approach, D.M Dhamdhere, 3<sup>rd</sup> Edition, McGraw- Hill, 2013

### *Online Learning Resources:*

1. <https://nptel.ac.in/courses/106/106/106106144/>
2. <http://peterindia.net/OperatingSystems.html>



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## BR23B.Tech CSE III YEAR I SEMESTER SYLLABUS

III Year I Semester	Principles of Software Engineering(23CSMT02)	L	T	P	C
		3	0	0	3

### Course Objectives:

The objectives of this course are to introduce

- Software life cycle models, Software requirements and SRS document.
- Project Planning, quality control and ensuring good quality software.
- Software Testing strategies, use of CASE tools, Implementation issues, validation & verification procedures.

### Course Outcomes:

- Identify suitable life cycle models to be used in the software development process.(UNDERSTAND)
- Outline the software requirements and develop SRS document(UNDERSTAND)
- Translate a requirement specification to a design using an appropriate software engineering methodology.(APPLY)
- Analyze the skills to design, implement, and execute test cases and perform debugging. (ANALYZE)
- Dissect the use of CASE tools, implementation issues, validation & verification procedures. (ANALYZE)

### UNIT I:

**Introduction:** Evolution, Software development projects, Exploratory style of software developments, Emergence of software engineering, Notable changes in software development practices, Computer system engineering.

**Software Life Cycle Models:** Basic concepts, Waterfall model and its extensions, Rapid application development, Agile development model, Spiral model.

### UNIT II:

**Software Project Management:** Software project management complexities, Responsibilities of a software project manager, Metrics for project size estimation, Project estimation techniques, Empirical Estimation techniques, COCOMO, Halstead's software science, risk management.

**Requirements Analysis And Specification:** Requirements gathering and analysis, Software Requirements Specification (SRS), Formal system specification, Axiomatic specification, Algebraic specification, Executable specification and 4GL.

### UNIT III:

**Software Design:** Overview of the design process, How to characterize a good software design? Layered arrangement of modules, Cohesion and Coupling. approaches to software design.



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**Agility:** Agility and the Cost of Change, Agile Process, Extreme Programming (XP), Other Agile Process Models, Tool Set for the Agile Process (Text Book 2)

**Function-Oriented Software Design:** Overview of SA/SD methodology, Structured analysis, Developing the DFD model of a system, Structured design, Detailed design, and Design Review.

**User Interface Design:** Characteristics of a good user interface, Basic concepts, Types of user interfaces, Fundamentals of component-based GUI development, and user interface design methodology.

## UNIT IV:

**Coding And Testing:** Coding, Code review, Software documentation, Testing, Black-box testing, White-Box testing, Debugging, Program analysis tools, Integration testing, Testing object-oriented programs, Smoke testing, and Some general issues associated with testing.

**Software Reliability And Quality Management:** Software reliability. Statistical testing, Software quality, Software quality management system, ISO 9000.SEI Capability maturity model. Few other important quality standards, and Six Sigma.

## UNIT V:

**Computer-Aided Software Engineering (Case):** CASE and its scope, CASE environment, CASE support in the software life cycle, other characteristics of CASE tools, Towards second generation CASE Tool, and Architecture of a CASE Environment.

**Software Maintenance:** Characteristics of software maintenance, Software reverse engineering, Software maintenance process models and Estimation of maintenance cost.

**Software Reuse:** reuse- definition, introduction, reason behind no reuse so far, Basic issues in any reuse program, A reuse approach, and Reuse at organization level.

## Text Books:

1. Fundamentals of Software Engineering, Rajib Mall, 5<sup>th</sup> Edition, PHI.
2. Software Engineering A practitioner's Approach, Roger S. Pressman, 9<sup>th</sup> Edition, Mc-Graw Hill International Edition.

## Reference Books:

1. Software Engineering, Ian Sommerville, 10<sup>th</sup> Edition, Pearson.
2. Software Engineering, Principles and Practices, Deepak Jain, Oxford University Press.

## e-Resources:

- 1) <https://nptel.ac.in/courses/106/105/106105182/>
- 2) [https://infyspringboard.onwingspan.com/web/en/app/toc/lex\\_auth\\_01260589506387148827\\_shared/overview](https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_01260589506387148827_shared/overview)
- 3) [https://infyspringboard.onwingspan.com/web/en/app/toc/lex\\_auth\\_013382690411003904735\\_shared/overview](https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_013382690411003904735_shared/overview)
- 4) <http://vlabs.iitkgp.ac.in/se/>



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## BR23B.Tech CSE III YEAR II SEMESTER SYLLABUS

III Year II Semester	Advanced Data Structures & Algorithm Analysis(23CSMT03)	L	T	P	C
		3	0	0	3

### Course Objectives:

The main objectives of the course is to

- provide knowledge on advance data structures frequently used in Computer Sciencedomain
- Develop skills in algorithm design techniques popularly used
- Understand the use of various data structures in the algorithm design

### Course Outcomes:

- CO1: Describe the asymptotic performance of different algorithms (Understand).
- CO2: Summarize knowledge on Advanced Data Structures through algorithms analysis and demonstrate divide and conquer paradigm (Understand).
- CO3: Apply and describe various algorithmic approaches and solve problems using greedy method and dynamic programming (Apply).
- CO4: Organize important algorithmic design paradigms such as backtracking, branch & bound algorithmic approaches (Apply).
- CO5: Investigate the complexity of NP-Hard through decision problems (Analyze).

### UNIT – I:

Introduction to Algorithm Analysis, Space and Time Complexity analysis, Asymptotic Notations.AVL Trees – Creation, Insertion, Deletion operations and Applications  
B-Trees – Creation, Insertion, Deletion operations and Applications

### UNIT – II:

Heap Trees (Priority Queues) – Min and Max Heaps, Operations and Applications  
Graphs – Terminology, Representations, Basic Search and Traversals, Connected Components and Biconnected Components, applications Divide and Conquer: The General Method, Quick Sort, Merge Sort, Strassen's matrixmultiplication, Convex Hull

### UNIT – III:

Greedy Method: General Method, Job Sequencing with deadlines, Knapsack Problem, Minimum cost spanning trees, Single Source Shortest Paths  
Dynamic Programming: General Method, All pairs shortest paths, Single Source Shortest Paths– General Weights (Bellman Ford Algorithm), Optimal Binary Search Trees, 0/1 Knapsack, String Editing, Travelling Salesperson problem



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## UNIT – IV:

Backtracking: General Method, 8-Queens Problem, Sum of Subsets problem, Graph Coloring, 0/1 Knapsack Problem

Branch and Bound: The General Method, 0/1 Knapsack Problem, Travelling Salesperson problem

## UNIT – V:

NP Hard and NP Complete Problems: Basic Concepts, Cook's theorem

NP Hard Graph Problems: Clique Decision Problem (CDP), Chromatic Number Decision Problem (CNDP), Traveling Salesperson Decision Problem (TSP)

NP Hard Scheduling Problems: Scheduling Identical Processors, Job Shop Scheduling

## Textbooks:

1. Fundamentals of Data Structures in C++, Horowitz, Ellis; Sahni, Sartaj; Mehta, Dinesh, 2<sup>nd</sup> Edition Universities Press
2. Computer Algorithms in C++, Ellis Horowitz, Sartaj Sahni, Sanguthevar Rajasekaran, 2<sup>nd</sup> Edition University Press

## Reference Books:

1. Data Structures and program design in C, Robert Kruse, Pearson Education Asia
2. An introduction to Data Structures with applications, Trembley & Sorenson, McGraw Hill
3. The Art of Computer Programming, Vol.1: Fundamental Algorithms, Donald E Knuth, Addison-Wesley, 1997.
4. Data Structures using C & C++: Langsam, Augenstein & Tanenbaum, Pearson, 1995
5. Algorithms + Data Structures & Programs:, N.Wirth, PHI
6. Fundamentals of Data Structures in C++: Horowitz Sahni & Mehta, Galgottia Pub.
7. Data structures in Java:, Thomas Standish, Pearson Education Asia

## Online Learning Resources:

1. [https://www.tutorialspoint.com/advanced\\_data\\_structures/index.asp](https://www.tutorialspoint.com/advanced_data_structures/index.asp)
2. <http://peterindia.net/Algorithms.html>
3. Abdul Bari, [Introduction to Algorithms \(youtube.com\)](https://www.youtube.com/watch?v=...)



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## BR23 B.Tech CSE III YEAR II SEMESTER SYLLABUS

III Year II Semester	<b>ADVANCED DATA STRUCTURES &amp; ALGORITHM ANALYSIS LAB (23CSML01)</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
		<b>0</b>	<b>0</b>	<b>3</b>	<b>1.5</b>

### Course Objectives:

The objectives of the course is to

- acquire practical skills in constructing and managing Data structures
- apply the popular algorithm design methods in problem-solving scenarios

### Course Outcomes:

- At the end of the course students can be able to ,
- Apply practical skills in constructing and managing advanced data structures (Apply).
- Analyze the performance of sorting algorithms through various input sizes (Analyze).
- Apply greedy and dynamic programming design methods in problem solving scenarios (Apply).
- Practice backtracking, branch-and-bound design methods in real-world problems (Apply).

### Experiments covering the Topics:

- Operations on AVL trees, B-Trees, Heap Trees
- Graph Traversals
- Sorting techniques
- Minimum cost spanning trees
- Shortest path algorithms
- 0/1 Knapsack Problem
- Travelling Salesperson problem
- Optimal Binary Search Trees
- N-Queens Problem
- Job Sequencing

### Sample Programs:

1. Construct an AVL tree for a given set of elements which are stored in a file. And implement insert and delete operation on the constructed tree. Write contents of tree into a new file using in-order.
2. Construct B-Tree an order of 5 with a set of 100 random elements stored in array. Implement searching, insertion and deletion operations.
3. Construct Min and Max Heap using arrays, delete any element and display the content of the Heap.
4. Implement BFT and DFT for given graph, when graph is represented by
  - a) Adjacency Matrix
  - b) Adjacency Lists
5. Write a program for finding the biconnected components in a given graph.



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6. Implement Quick sort and Merge sort and observe the execution time for various input sizes (Average, Worst and Best cases).
7. Compare the performance of Single Source Shortest Paths using Greedy method when the graph is represented by adjacency matrix and adjacency lists.
8. Implement Job Sequencing with deadlines using Greedy strategy.
9. Write a program to solve 0/1 Knapsack problem Using Dynamic Programming.
10. Implement N-Queens Problem Using Backtracking.
11. Use Backtracking strategy to solve 0/1 Knapsack problem.
12. Implement Travelling Sales Person problem using Branch and Bound approach.

## Reference Books:

1. Fundamentals of Data Structures in C++, Horowitz Ellis, SahniSartaj, Mehta, Dinesh, 2<sup>nd</sup>Edition, Universities Press
2. Computer Algorithms/C++ Ellis Horowitz, SartajSahni, SanguthevarRajasekaran, 2<sup>nd</sup>Edition, University Press
3. Data Structures and program design in C, Robert Kruse, Pearson Education Asia
4. An introduction to Data Structures with applications, Trembley& Sorenson, McGraw Hill

## Online Learning Resources:

1. <http://cse01-iiith.vlabs.ac.in/>
2. <http://peterindia.net/Algorithms.html>
3. <https://ds1-iiith.vlabs.ac.in/>
4. <https://ds2-iiith.vlabs.ac.in/>



**BR23B.Tech CSE IV YEAR I SEMESTER SYLLABUS**

IV Year I Semester	<b>Principles of Database Management Systems (23CSMT05)</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
		<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>

**Course Objectives:**

The main objectives of the course is to

- Introduce database management systems and to give a good formal foundation on the relational model of data and usage of Relational Algebra
- Introduce the concepts of basic SQL as a universal Database language
- Demonstrate the principles behind systematic database design approaches by covering conceptual design, logical design through normalization
- Provide an overview of physical design of a database system, by discussing Database indexing techniques and storage techniques

**Course Outcomes:**

- Illustrate basic concepts of database management systems through Entity-Relationship diagrams (UNDERSTAND)
- Interpret relational model of data and usage of Relational Algebra (APPLY)
- Practice the concepts of basic SQL as a Universal Database Language (APPLY)
- Demonstrate the principles behind systematic database design through normalization (APPLY)
- Structure the physical design of a Database system by means of indexing and storage techniques for database (ANALYZE)

**UNIT I:**

Introduction: Database system, Characteristics (Database Vs File System), Database Users, Advantages of Database systems, Database applications. Brief introduction of different Data Models; Concepts of Schema, Instance and data independence; Three tier schema architecture for data independence; Database system structure, environment, Centralized and Client Server architecture for the database.

Entity Relationship Model: Introduction, Representation of entities, attributes, entity set, relationship, relationship set, constraints, sub classes, super class, inheritance, specialization, generalization using ER Diagrams.

**UNIT II:**

Relational Model: Introduction to relational model, concepts of domain, attribute, tuple, relation, importance of null values, constraints (Domain, Key constraints, integrity constraints) and their importance, Relational Algebra, Relational Calculus. BASIC SQL: Simple Database schema, data types, table definitions (create, alter), different DML operations (insert, delete, update).

**UNIT III:**

SQL: Basic SQL querying (select and project) using where clause, arithmetic & logical operations, SQL



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functions(Date and Time, Numeric, String conversion).Creating tables with relationship, implementation of key and integrity constraints, nested queries, sub queries, grouping, aggregation, ordering, implementation of different types of joins, view(updatable and non-updatable), relational set operations.

## UNIT IV:

Schema Refinement (Normalization):Purpose of Normalization or schema refinement, concept of functional dependency, normal forms based on functional dependency Lossless join and dependency preserving decomposition, (1NF, 2NF and 3 NF), concept of surrogate key, Boyce-Codd normal form(BCNF), MVD, Fourth normal form(4NF), Fifth Normal Form (5NF).

## UNIT V:

Transaction Concept: Transaction State, ACID properties, Concurrent Executions, Serializability, Recoverability, Implementation of Isolation, Testing for Serializability, lock based, time stamp based, optimistic, concurrency protocols, Deadlocks, Failure Classification, Storage, Recovery and Atomicity, Recovery algorithm.

Introduction to Indexing Techniques: B+ Trees, operations on B+Trees, Hash Based Indexing:

### Text Books:

- 1) Database Management Systems, 3<sup>rd</sup> edition, Raghurama Krishnan, Johannes Gehrke, TMH (For Chapters 2, 3, 4)
- 2) Database System Concepts, 5<sup>th</sup> edition, Silberschatz, Korth, Sudarsan, TMH (For Chapter 1 and Chapter 5)

### Reference Books:

- 1) Introduction to Database Systems, 8<sup>th</sup> edition, C J Date, Pearson.
- 2) Database Management System, 6<sup>th</sup> edition, Ramez Elmasri, Shamkant B. Navathe, Pearson
- 3) Database Principles Fundamentals of Design Implementation and Management, Corlos Coronel, Steven Morris, Peter Robb, Cengage Learning.

### Web-Resources:

- 1) <https://nptel.ac.in/courses/106/105/106105175/>
- 2) [https://infyspringboard.onwingspan.com/web/en/app/toc/lex\\_auth\\_01275806667282022456\\_shared/overview](https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_01275806667282022456_shared/overview)



**BR23B.Tech CSE IV YEAR I SEMESTER SYLLABUS**

IV Year I Semester	<b>Database Management Systems Lab(23CSML02)</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
		<b>0</b>	<b>0</b>	<b>3</b>	<b>1.5</b>

This Course will enable students to

- Populate and query a database using SQL DDL/DML Commands
- Declare and enforce integrity constraints on a database
- Writing Queries using advanced concepts of SQL
- Programming PL/SQL including procedures, functions, cursors and triggers

**Course Outcomes:**

- Formulate queries using SQL DML/DDD/DCL commands. (CREATE)
- Design and implement a database schema for given problem. (EVALUTE )
- Apply the normalization techniques for development of application software to realistic problems.(APPLY)
- Build PL/SQL programs including stored procedures, functions, cursors and triggers (CREATE)

**Experiments covering the topics:**

- DDL, DML, DCL commands
- Queries, nested queries, built-in functions,
- PL/SQL programming- control structures
- Procedures, Functions, Cursors, Triggers,
- Database connectivity- ODBC/JDBC

**Sample Experiments:**

1. Creation, altering and dropping of tables and inserting rows into a table (use constraints while creating tables) examples using SELECT command.
2. Queries (along with sub Queries) using ANY, ALL, IN, EXISTS, NOTEXISTS, UNION, INTERSET, Constraints. Example:- Select the roll number and name of the student who secured fourth rank in the class.
3. Queries using Aggregate functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views.
4. Queries using Conversion functions (to\_char, to\_number and to\_date), string functions (Concatenation, lpad, rpad, ltrim, rtrim, lower, upper, initcap, length, substr and instr), date functions (Sysdate, next\_day, add\_months, last\_day, months\_between, least, greatest, trunc, round, to\_char, to\_date)
5.
  - i. Create a simple PL/SQL program which includes declaration section, executable section and exception –Handling section (Ex. Student marks can be selected from the table and printed for those who secured first class and an exception can be raised if no records were found)
  - ii. Insert data into student table and use COMMIT, ROLLBACK and SAVEPOINT in PL/SQL



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block.

6. Develop a program that includes the features NESTED IF, CASE and CASE expression. The program can be extended using the NULLIF and COALESCE functions.
7. Program development using WHILE LOOPS, numeric FOR LOOPS, nested loops using ERROR Handling, BUILT –IN Exceptions, USE defined Exceptions, RAISE- APPLICATION ERROR.
8. Programs development using creation of procedures, passing parameters IN and OUT of PROCEDURES.
9. Program development using creation of stored functions, invoke functions in SQLStatements and write complex functions.
10. Develop programs using features parameters in a CURSOR, FOR UPDATECURSOR, WHERE CURRENT of clause and CURSOR variables.
11. Develop Programs using BEFORE and AFTER Triggers, Row and StatementTriggers and INSTEAD OF Triggers
12. Create a table and perform the search operation on table using indexing and non-indexing techniques.

## **Text Books/Suggested Reading:**

1. Oracle: The Complete Reference by Oracle Press
2. Nilesh Shah, "Database Systems Using Oracle", PHI, 2007
3. Rick F Vander Lans, "Introduction to SQL", Fourth Edition, Pearson Education, 2007



**BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE**  
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2 PROGRAMMES (CSE,EEE) ACCREDITED BY NBA ( For A.Y 2023-24 to 2025-26)  
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### **BR23 B.TECH CSE MOOC COURSES**

**Any of the following 12 Week 3 credit NPTEL MOOC Courses**

<b>Code</b>	<b>Subject Title</b>	<b>L-T-P-C</b>	<b>Sem</b>
23CSMT04	Artificial Intelligence: Concepts and Techniques	3-0-0-3	<b>MOOC COURSES</b>
23CSMT06	Machine Learning and Deep Learning - Fundamentals and Applications	3-0-0-3	
23CSMT07	Fundamentals of Object Oriented Programming	3-0-0-3	
23CSMT08	Discrete Mathematics for CS	3-0-0-3	
23CSMT09	Software Engineering	3-0-0-3	
23CSMT10	The Joy of Computing using Python	3-0-0-3	
23CSMT11	Data Analytics with Python	3-0-0-3	