

# **regulation 2**

2026-2027

## **Department Regulation Document**

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# 1 Vision and Mission

## 1.1 Vision

## 1.2 Mission

- Provide strong academic foundation
- Promote research and innovation

# 2 Program Educational Objectives (PEOs)

1. PEO1: Graduates will pursue advanced studies
2. PEO2: Graduates will adapt to emerging technologies
3. PE03: Graduates will demonstrate leadership, teamwork, and ethical responsibility.

# 3 Program Outcomes (POs)

1. PO1: Engineering knowledge
2. PO2: Problem analysis

# 4 Program Specific Outcomes (PSOs)

1. PSO1: Ability to design software systems.
2. PSO2: Ability to apply algorithms effectively

# 5 PEO-PO Mapping

PEO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
PEO1	3	2	0	0	0	0	0	0	0	0	0	0
PEO2	2	3	0	0	0	0	0	0	0	0	0	0
PEO3	1	2	0	0	0	0	0	0	0	0	0	0

# 6 Curriculum

## 6.1 Semester 1

Code	Course	L	T	P	C	Hrs/Wk	CIA	SEE	Total	Category
CS3501	Database Management Systems	3	1	2	4	6	40	60	100	Core

Code	Course	L	T	P	C	Hrs/Wk	CIA	SEE	Total	Category
CS3801	Cloud Computing	0	0	0	3	0	40	60	100	Elective

## 7 Course Syllabi

### 7.1 CS3501:Database Management Systems

#### Course Objectives:

1. To analyze the time and space complexity of algorithms.
2. To understand the fundamentals of data structures and algorithm design.

#### Course Outcomes:

1. CO3: Implement tree and graph traversal algorithms effectively.
2. CO3: Implement tree and graph traversal algorithms effectively.

CO-PO Mapping:	CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
	CO1	1	2	1	3	1	2	1	0	0
	CO2	2	2	1	3	0	1	0	0	2

**Unit I:** Introduction to Data Structures: Definition, Types of Data Structures, Abstract Data Types (ADTs), Time and Space Complexity, Asymptotic Notations, Recursion, Algorithm Design and Analysis Techniques.

**Unit II:** Arrays, Stacks and Queues: Array Operations, Stack Implementation and Applications, Infix to Postfix Conversion, Expression Evaluation, Queue and Circular Queue, Priority Queue, Deque.

**Unit III:** Linked Lists: Singly Linked List, Doubly Linked List, Circular Linked List, List Operations, Skip Lists, Introduction to Hashing, Hash Functions, Collision Resolution Strategies.

**Unit IV:** Trees: Binary Trees, Binary Search Trees, AVL Trees, B-Trees, Heap and Heap Operations, Tree Traversal Techniques, Huffman Coding Tree.

**Unit V:** Graphs: Graph Terminology, Graph Representations, BFS and DFS Traversal, Minimum Spanning Trees (Prim's and Kruskal's), Shortest Path Algorithms (Dijkstra's and Floyd-Warshall), Topological Sorting.

#### Textbooks:

1. Ellis Horowitz, Sartaj Sahni, "Fundamentals of Data Structures", Computer Science Press.

#### References:

1. Cormen T.H., Leiserson C.E., Rivest R.L., Stein C., "Introduction to Algorithms", MIT Press.

## 7.2 CS3801:Cloud Computing

### Course Objectives:

1. To understand the fundamentals of data structures and algorithm design.
2. To analyze the time and space complexity of algorithms.
3. To develop efficient programs using various data structures.
4. To strengthen problem-solving and logical thinking skills.

### Course Outcomes:

1. CO1: Apply data structures such as arrays, stacks, queues, and linked lists in program development.
2. CO2: Analyze and compare algorithm performance in terms of complexity.
3. CO3: Implement tree and graph traversal algorithms effectively.

CO-PO Mapping:	CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
	CO1	3	2	1	1	2	0	0	0	1
	CO2	2	3	2	2	1	0	0	0	1
	CO3	1	2	3	2	3	0	1	0	1

**Unit I:** Introduction to Data Structures: Definition, Types of Data Structures, Abstract Data Types (ADTs), Time and Space Complexity, Asymptotic Notations, Recursion, Algorithm Design and Analysis Techniques.

**Unit II:** Arrays, Stacks and Queues: Array Operations, Stack Implementation and Applications, Infix to Postfix Conversion, Expression Evaluation, Queue and Circular Queue, Priority Queue, Deque.

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### Textbooks:

1. Ellis Horowitz, Sartaj Sahni, "Fundamentals of Data Structures", Computer Science Press.
2. Mark Allen Weiss, "Data Structures and Algorithm Analysis in C", Pearson.

### References:

1. Cormen T.H., Leiserson C.E., Rivest R.L., Stein C., "Introduction to Algorithms", MIT Press.
2. Narasimha Karumanchi, "Data Structures and Algorithms Made Easy", Career-Monk.