NIRMA UNIVERSITY

Institute:	Institute of Technology, School of Technology
Name of Programme:	MTech CSE, MTech CSE (Cyber Security), and MTech CSE (Data Science)
Course Code:	6CS282VA25
Course Title:	Capstone Course
Course Type:	Supplementary Course
Year of Introduction:	2025-26

L	T	Practical Component				C
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Course Learning Outcomes (CLO):

At the end of the course, the students will be able to:

1. summarise the computer network concepts with real-time applications (BL2)
2. make use of DBMS concepts to define an efficient database (BL3)
3. analyse the various operating system components and their services (BL4)
4. solve real-life problems using programming constructs. (BL6)

Unit	Contents	Teaching Hours (Total 15)
Unit-I	**Introduction to Programming:** Concepts of procedural and object-oriented programming constructs, problem-solving	05
Unit-II	**Introduction to Data Structures:** Linear and non-linear data structures, graphs, and trees	04
Unit-III	**Introduction to Operating Systems**: Scheduling algorithms, Inter-process Communications, Memory management, Deadlock	02
Unit-IV	**Introduction to Computer Networks:** Layer concepts of network protocols, IPv4 Addressing, TCP/UDP, Application layer	02
Unit-V	**Introduction to DBMS:** Relational databases, ER Diagrams, and Normalization techniques.	02

Self-Study:

The self-study contents will be declared at the commencement of the semester. Around 10% of the questions will be asked from self-study content.

Suggested Readings/ References:

1. Balagurusamy, E, Object-oriented programming with C++, McGraw Hill
2. Jean-Paul Tremblay and Paul G. Sorenson, An Introduction to Data Structures with Applications, McGraw Hill
3. A. S. Tannenbaum, Modern Operating Systems, McGraw Hill
4. Silberschatz, Korth, Sudarshan, Database System Concepts, McGraw-Hill computer science series
5. Andrew Tanenbaum, Computer Networks, Pearson.