

Nirma University
Institute of Technology, School of Technology
M. Tech. Computer Science and Engineering (Data Science)
Semester – II

L	T	P	C
2	0	2	3

Course Code	3CS42D204
Course Title	Data and Knowledge Security

Course Learning Outcomes (CLOs):

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

1. comprehend the security requirements of data and knowledge
2. analyse the security requirements of the big data systems
3. suggest security solutions for big data systems

Syllabus:

Teaching Hours:

Unit I

Big Data Security Rationales: Finding threats faster vs. trusting the tool, Architecture of Business and IT, Requirement of Security in Big Data

3

Unit II

Big Data Security, Challenges and Failures: Frameworks and distributions, scope and CIA Model, Data Privacy

4

Unit III

Introduction to Data Security: Threat Model, Automation and Scale, Introduction to Network and System Security

4

Unit IV

Elements of Big Data Security: Data Protection, Vulnerability Management, Access Control

4

Unit V

Security Governance: Introduction, Duty of Care, Resilience, Security Culture, Governance Frameworks, Incident Management and Reporting

5

Unit VI

Security Risk Management: Regulations and Policies, Training and Implementation, Asset Areas, Privacy Preservation

8

Unit VII

Related case studies

2

Self-Study:

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

Laboratory Work:

Laboratory work will be based on above syllabus with minimum 5 experiments to be incorporated.

Suggested Readings[^]:

1. Talbot, Julian, and Miles Jakeman. Security risk management body of knowledge. Vol. 69. Hoboken, NJ: Wiley.
2. Fei Hu, Big Data: Storage, Sharing, and Security, CRC Press.
3. Onur Savas, Julia Deng, Big Data Analytics in Cybersecurity (Data Analytics Applications), CRC Press.
4. <https://mapr.com/big-data-security-6-elements/assets/big-data-security-6-elements.pdf>

L=Lecture, T=Tutorial, P=Practical, C=Credit

[^] this is not an exhaustive list