

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
NITK-Surathkal

Course Plan and Evaluation Plan
MTech (CSE)

1. **Course code** : CS814
2. **Course Title** : Principles of Information Security
3. **L-T-P** : [3-1-0]
4. **Credits** : 4
5. **Course Instructor** : Dr. Radhika B S
6. **Teaching Department** : Computer Science & Engineering
7. **Objectives of the Course:**
 1. To understand the basic principles of security
 2. To obtain practical knowledge of the challenges involved in securing a system
 3. To obtain in-depth understanding of various security measures and their evolution
 4. To gain knowledge of current security standards and regulations
 5. To inculcate security as one of the main components in designing and building systems

8. **Course Coverage:**

UNIT - I

Introduction: CIA Triad, CVE, CVSS, MITRE ATT&CK Framework, Types of Attacks, Threat Modeling.

UNIT - II

Cryptography: Symmetric and Asymmetric Cryptography, Hashing, Digital Certificates, VPN

UNIT - III

Network Security: Basics of Network, Security at different layers of the OSI Model (DNS Security, HTTPS, etc.), Use of tools like Wireshark and Zeek

UNIT - IV

Web Application Security: SQL Injection, XSS, CSRF

UNIT - V

AAA: Different Classes of Authentication, Access Control Models (DAC, RBAC, MAC, ABAC, SELinux), Auditing

UNIT VI:

Secure Coding: Code vulnerabilities, Stack overflow, Secure Coding Checklist

UNIT VII:

Operating System Security: The Reference Monitor Model, Evolution of OS Security, TCB, Security in Windows and Linux

UNIT VIII:

Standards and Regulations: Security Standards and Regulations, Privacy Standards and Regulations

Social Engineering: Significance of Psychology in Security, Attacks based on Psychology, Group Psychology

Case Studies

9. Reference Books:

- [1] Anderson, R., ***Security engineering: a guide to building dependable distributed systems***. John Wiley & Sons.
- [2] Bishop, Matt., ***Introduction to computer security***.
- [3] Schneier, Bruce., ***Beyond fear: Thinking sensibly about security in an uncertain world***. New York: Copernicus books.

10. Evaluation Plan:

End Sem Exam	40%
Mid Sem Exam	20%
Quizzes	15%
Project	15%
Assignments	10%