

Information Assurance and security

Course Name: Information Assurance and security

Course Code: ITF404

Credit hours: 3

Knowledge Domain: IT Foundations

Prerequisite(s): Web Engineering (2) (NWE405) –
Computer Networks (2) (NWE303)

Learning Objectives

Upon completion of this course, the student will be able to:

1. Grasp an integrated security view covering the computer, the operating system and the databases.
2. Grasp the basic elements of encryption and their use in digital signatures and authentication.
3. Grasp the basic concepts of IP and Web security.

Learning Outcomes:

1. Grasping the security of the different components of information systems.
2. Grasping encryption techniques & their applications in security.
3. Grasping basic IP and Web security protocols such as: IPsec., Secure Socket Layer and Secure Electronic Transactions.

Overview and Syllabus

Introduction. Computer security. Operating system Security. Database security and integrity. Encryption techniques. Digital signatures and authentication protocols. IP and Web security.

Course Outline

	Topic
1	<u>Introduction</u> Lesson 1: Security Threats in Information systems Lesson 2: Programs, operating system, and database security and integrity Lesson 3: Network security models
2	<u>Computer Security</u> Lesson 1: Hardware vulnerabilities Lesson 2: Virus and other malicious programs Lesson 3: Virus countermeasures Lesson 4: Intrusion techniques and detection Lesson 5: Password management

3	<p><u>Operating System security</u></p> <p>Lesson 1: Models of operating system security</p> <p>Lesson 2: User authentication</p> <p>Lesson 3: Design of secure operating systems</p> <p>Lesson 4: Operating system certification</p>
4	<p><u>Database security and integrity</u></p> <p>Lesson 1: Overview and policies for database security</p> <p>Lesson 2: Models for database access control</p> <p>Lesson 3: Information flow model</p> <p>Lesson 4: Authorization techniques Auditing and control</p>
5	<p><u>Encryption techniques</u></p> <p>Lesson 1: Block& stream encryption</p> <p>Lesson 2: Advanced Encryption Standard</p> <p>Lesson 3: Key distribution& random number generation</p> <p>Lesson 4: Public Key cryptography and RSA. Hash functions</p>
6	<p><u>Digital signatures and authorization protocols</u></p> <p>Lesson 1: Digital signature standards</p> <p>Lesson 2: Authentication services and protocols</p>
7	<p><u>IP and Web security</u></p> <p>Lesson 1: Authentication protocols</p> <p>Lesson 2: IP security architecture</p> <p>Lesson 3: IPSec protocol</p> <p>Lesson 4: Web security considerations</p> <p>Lesson 5: Secure Socket Layer and Transport layer Security</p> <p>Lesson 6: Secure Electronic Transactions</p>