

## **CIT 3102      INFORMATION SYSTEM SECURITY AND AUDIT**

**Prerequisite:** Data Structure and Algorithms, Computer Networks, databases

### **Course purpose**

The aim of this course is to build on learner knowledge of information security and auditing in the context of business.

### **Learning outcomes**

At the end of this unit, the learner should be able to:

- a) Analyse information systems and identify the security issues.
- b) Design security solution for information systems
- c) Plan and execute IS audits
- d) Explain business continuity and disaster recovery issues

### **Course description**

Security: principles, security management, security controls, security architecture and models, cyber security, operations security, database security, network security, cryptography, law and ethics, Audit: audit planning, IT governance and management, risk analysis, policy and procedures, business continuity and disaster, current and future security issues, IS security certification.

<b>Week</b>	<b>Course Content</b>
<b>1</b>	Overview of the Computer security <ul style="list-style-type: none"><li>- Basic Security Concepts</li><li>- Why Is Computer and Network Security Important</li><li>- Goals of security</li></ul>
<b>2</b>	Information security in computer and communication systems <ul style="list-style-type: none"><li>- Objectives of information systems security</li><li>- Common attack Methods</li><li>- Communication and Network Security</li></ul>
<b>3</b>	Security model and computer architecture Information Systems Security Management <ul style="list-style-type: none"><li>- Stages of management security</li></ul>
<b>4</b>	Gaining Access to Systems and Data and CAT 1 <b>Continuous Assessment Test II</b>
<b>5</b>	Security risks and hazards
<b>6</b>	Security control levels: <ul style="list-style-type: none"><li>- Identification,</li><li>- authentication and</li></ul>

	- authorization
<b>7</b>	Audit: audit planning, <ul style="list-style-type: none"> <li>- IT governance and management,</li> <li>- policy and procedures,</li> <li>- Security policies: <ul style="list-style-type: none"> <li>o Purpose</li> <li>o Characteristics of a Good Security Policy</li> </ul> </li> <li>- Internet Security Policy</li> </ul>
<b>8</b>	Audit: audit planning, <ul style="list-style-type: none"> <li>- Risk management <ul style="list-style-type: none"> <li>o Steps of a Risk Analysis</li> <li>o Criteria Are Used for Selecting Controls</li> <li>o Arguments For and Against Risk Analysis</li> </ul> </li> </ul>
<b>9</b>	Audit: audit planning, <ul style="list-style-type: none"> <li>- business continuity and disaster,</li> <li>- current and future security issues,</li> <li>- IS security certification.</li> <li>- <b>Continuous Assessment Test III</b></li> </ul>
<b>10</b>	Computer cryptosystems: <ul style="list-style-type: none"> <li>- Concepts of encryption</li> <li>- Cryptanalysis: how encryption systems are "broken"</li> <li>- Symmetric (secret key) encryption and the DES and AES algorithms</li> <li>- Asymmetric (public key) encryption and the RSA algorithm</li> </ul>
<b>11</b>	<b>Continuous Assessment Test II</b>
<b>12</b>	Computer cryptosystems: <ul style="list-style-type: none"> <li>- Key exchange protocols and certificates</li> <li>- Digital signatures</li> </ul> Cryptographic hash functions / Message digest
<b>13</b>	<b>REVISION</b>
<b>14&amp;15</b>	<b>EXAMINATION</b>

### Mode of Delivery

Face-to-Face Lectures, blended enhanced with ICT tools, Case Studies, Seminars, Presentations and Discussions.

### Instruction Materials and Equipment

Whiteboard, Projector, Handouts, Computer, Internet and Programming Software

### Course assessment

Continuous assessment test

20%

Practical assessments	10%
End of semester examination	<u>70%</u>
<b>Total</b>	<b>100%</b>

### **Course Textbooks**

- a) Kim, D., Solomon, M. G. (2021). Fundamentals of Information Systems Security. United States: Jones & Bartlett Learning.
- b) Banoth, R., Narsimha, G., Kranthi Godishala, A. (n.d.). A Comprehensive Guide to Information Security Management and Audit. United States: CRC Press.
- c) Cryptography and information security, third edition. (2019). (n.p.): PHI Learning Pvt. Ltd..
- d) Hingarh, V., & Ahmed, A. (2013). Understanding and Conducting Information Systems Auditing+ Website. John Wiley & Sons.
- e) Williams Stallings Cryptography and Network security: principles and Practice, prentice hall
- f) Hingarh, V., & Ahmed, A. (2013). Understanding and Conducting Information Systems Auditing+ Website. John Wiley & Sons.
- g) Pfleeger, C. P., & Pfleeger, S. L. (2012). Analyzing computer security: a threat/vulnerability/countermeasure approach. Prentice Hall Professional.
- h) Pfleeger, C. P., & Pfleeger, S. L. (2002). Security in computing. Prentice Hall Professional Technical Reference.
- i) Weber, R. A. (1998). Information systems control and audit. Pearson Education.
- j) Weber, R. A. (1998). Information systems control and audit. Pearson Education.

### **Journals**

1. International Journal of Information Security, ISSN: 1615-5262 (Print) 1615-5270 (Online)
2. Information Security Journal: A Global Perspective, ISSN 1939-3555 (Print), 1939-3547 (Online)
3. Computers & Security Journal