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***CS6404 Information Security***

**L-T-P-Cr: 3-0-0-3**

**Pre-requisites:** Prior knowledge of fundamentals of Computer Networks, Operating Systems, Database Management System

**Objectives/Overview:**

* Explaining the importance data warehousing and data mining.
* Learning the knowledge discovery process.
* Learning data mining tasks and study their well-known techniques.

**Course Outcomes:**

At the end of the course, a student should have:

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| **Sl. No.** | **Outcome** | **Mapping to POs** |
|  | To learn data mining tasks and pre-processing activities. | PO4, PO2 |
|  | Understandability of data warehouse, architecture, schema designs, OLAP operations and servers.  | PO2, PO3 |
|  | Learning market basket analysis and association rules, understanding multilevel and multi-dimensional rules and its generation techniques. |  PO3 |
|  | Understanding various data classification and prediction techniques. | PO3 |
|  | Learning various clustering techniques that are used in different types of data. | PO3 |

**UNIT I: Lectures: 4**

Core Information Security Principles, CIA (Confidentiality, Integrity, Availability),Information Security Management Governance, Security Policies, Procedures, Standards, Guidelines and Baselines, Organization Behavior and Security Models.

**UNIT II: Lectures: 6**

Classical Cryptography, Modern Cryptography, A Taxonomy of Cryptography and Cryptanalysis. Symmetric and Asymmetric key algorithms.

**UNIT III: Lectures: 8**

Information Risk Management – Concepts like Risk Acceptance, Risk Avoidance, Risk Mitigation, Risk Handling Strategies and Risk Assessment

Information Classification – Guidelines, Types, Criteria for data Classification, Data Classification procedures, Classification Controls.

**UNIT IV: Lectures: 8**

Threats, Vulnerabilities, Attack vectors and their counter measures, Identity Management – Identification, Authorization and Access Controls – Categories, Models, Challenges, Principles, Techniques and Practices, Concept of trust and trustworthiness.

**UNIT V: Lectures: 7**

Authentication Methods, Passwords, Biometrics, Challenge Response based authentication, Two-Factor Authentication, Single Sign-On and Web Cookies.

**UNIT VI: Lectures: 3**

Software Flaws, Malware, Operating System Security Functions, Trusted Operating System, Next Generation Secure Computing Base.

**UNIT VII: Lectures: 6**

Ethics – Basic Concepts, Professional code of Ethics, Common Computer Ethics Fallacies (responsible disclosure), (cross reference SP/Professional Ethics / Accountability, responsibility and liability), Hacking and Hacktivism

**Text/ Reference Books:**

1. Fundamentals of Information Systems Security By David Kim, Michael G. Solomon, Jones & Bartlett Learning
2. Information Security: The Complete reference By Mark Rhodes Ousley, 2nd Edition. McGraw Hill
3. Information Security Principles and Practice By Mark Stamp, Wiley Publication
4. Enterprise Information Security and Privacy; By C. Warren Axelrod, Jennifer L. Bayuk, Daniel Schutzer, Artech House Press
5. Handbook of Information Security, Threats, Vulnerabilities, Prevention, Detection, and Management; Hossein Bidgoli, John Wiley & Sons
6. The Basics of Information Security, 2nd Edition; J Andress, Syngress Press; 2014