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| **MAHENDRA ENGINEERING COLLEGE**  **(Autonomous)** | | | | | | | | | |
| **Syllabus** | | | | | | | | | |
| **Department** | **Artificial Intelligence And Data Science** | **Programme Code** | | | | **1161** | | | |
| **VII Semester** | | | | | | | | | |
| **Course code** | **Course Name** | | **Hourss/week** | | | **Credit** | **Maximum marks** | | |
| **22AI14702** | **DATA SECURITY** | | **L** | **T** | **P** | **C** | **100** | | |
| 3 | 0 | 0 | 3 |
| **Objective(s)** | **The student should be made to:**   * Learn the fundamental concepts related to Data Security * Know the legal, ethical and professional issues in Information Security * Become familiar with Digital Signature and Authentication * Equip the students’ knowledge on digital signature * Gain the fundamental concepts of email security and web security | | | | | | | | |
| **Outcome(s)** | **Upon completion of this course, students will be able to:**   * Identify the concepts of data and information security * Discuss the legal, ethical and professional issues in information security * Discribe the various authentication schemes to simulate different applications. * Apply various security practices and system security standards * Apply the Web security protocols for E-Commerce application | | | | | | | | |
| **UNIT-I** | **INTRODUCTION TO IMAGE FORMATION AND PROCESSING** | | | | | | | 9 | |
| History, What is Information Security?, Critical Characteristics of Information, NSTISSC Security Model, Components of an Information System, Securing the Components, Balancing Security and Access, The SDLC, The Security SDLC | | | | | | | | | |
| **UNIT-II** | **SECURITY INVESTIGATION** | | | | | | | 9 | |
| Need for Security, Business Needs, Threats, Attacks, Legal, Ethical and Professional Issues - An Overview of Computer Security - Access Control Matrix, Policy-Security policies, Confidentiality policies, Integrity policies and Hybrid policies | | | | | | | | | |
| **UNIT-III** | **DIGITAL SIGNATURE AND AUTHENTICATION** | | | | | | | 9 | |
| Digital Signature and Authentication Schemes: Digital signature-Digital Signature Schemes and their Variants- Digital Signature Standards-Authentication: Overview- Requirements Protocols - Applications - Kerberos -X.509 Directory Services | | | | | | | | | |
| **UNIT-IV** | **E-MAIL AND IP SECURITY** | | | | | | | | 9 | |
| E-mail and IP Security: Electronic mail security: Email Architecture -PGP – Operational Descriptions- Key management- Trust Model- S/MIME.IP Security: Overview- Architecture - ESP, AH Protocols IPSec Modes – Security association - Key management | | | | | | | | | | |
| **UNIT-V** | **WEB SECURITY** | | | | | | | | 9 | |
| Web Security: Requirements- Secure Sockets Layer- Objectives-Layers -SSL secure communication-Protocols - Transport Level Security. Secure Electronic Transaction- Entities DS Verification-SET processing. | | | | | | | | | | |
| **TOTAL HOURS** | | | | | | | | | **45** | |

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| **TEXT BOOKS :** | |
| 1 | Michael E Whitman and Herbert J Mattord, “Principles of Information Security, Course Technology, 6th Edition, 2017 |
| 2 | Stallings William. Cryptography and Network Security: Principles and Practice, Seventh Edition, Pearson Education, 2017. |
| **REFERENCES:** | |
| 1 | Harold F. Tipton, Micki Krause Nozaki,, “Information Security Management Handbook,  Volume 6, 6th Edition, 2016. |
| 2 | Stuart McClure, Joel Scrambray, George Kurtz, “Hacking Exposed”, McGraw- Hill, Seventh Edition, 2012 |
| 3 | Matt Bishop, “Computer Security Art and Science, Addison Wesley Reprint Edition, 2015 |
| 4 | Behrouz A Forouzan, Debdeep Mukhopadhyay, Cryptography And network security, 3rd Edition, . McGraw-Hill Education, 2015 |

**COs Vs POs and PSOs Mapping**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course Outcomes** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** | **PSO1** | **PSO2** | **PSO3** |
| **CO1** | 3 | 2 | 3 | 1 | - | - | - | - | 1 | 3 | 1 | 2 | 3 | 1 | - |
| **CO2** | 1 | 3 | 3 | 3 | 2 | - | - | - | 1 | 2 | 2 | 2 | 2 | 1 | - |
| **CO3** | 2 | 3 | 3 | 3 | 1 | - | - | - | 1 | 3 | 1 | 2 | 1 | 2 | - |
| **CO4** | 2 | 3 | 2 | 2 | 1 | - | - | - | 2 | 2 | 1 | 2 | 1 | 3 | - |
| **CO5** | 3 | 3 | 1 | 1 | 2 | - | - | - | 2 | 2 | 2 | 2 | 2 | 2 | - |
| **Average** | **3** | 3 | **2** | **2** | **2** | **-** | **-** | **-** | **2** | **2** | **2** | **1** | **2** | **2** | **-** |

**1 - Low, 2 - Medium, 3 - High, ‘-“- No Correlation**