

# GUJARAT TECHNOLOGICAL UNIVERSITY

## Master in Computer Application (Integrated MCA)

### Year IV – (Semester-VIII) (W.E.F. December 2016)

**Subject Name:** Cyber Security and Forensics (CSF)

**Subject Code:** 4480608

#### 1. Learning Objectives:

- To understand the major concepts of Cyber Security and Forensics and to create the awareness through simple practical tips and tricks and to educate the students to learn how to avoid becoming victims of cyber crimes.
- The subject and the course content will help to the student who wish to take up cyber forensics as career as well as those who want to seek careers in cyber security.
- To gain experience of doing independent study and research in the field of cyber security and cyber forensics.

2. **Prerequisites:** Basic fundamental knowledge of Networking, Web Application, Mobile Application and Relational Database Management System

#### 3. Course Contents:

Unit No.	Course Content	No of Lectures
1	<b>Introduction to Cybercrime</b>  Introduction, Classifications of Cybercrimes: E-Mail Spoofing, Spamming, Cyber defamation, Internet Time Theft, Newsgroup Spam/Crimes from Usenet Newsgroup, Industrial Spying/Industrial Espionage, Hacking, Online Frauds, Pornographic Offenses, Software Piracy, Password Sniffing, Credit Card Frauds and Identity Theft. Cyber offenses: How Criminals Plan that attack, Categories of Cybercrime, How Criminals Plan the Attacks: Passive Attack, Active Attacks, Scanning/Scrutinizing gathered Information, Attack (Gaining and Maintaining the System Access), Social Engineering, Cyberstalking, Cybercafe and Cybercrimes, Botnets: The Fuel for Cybercrime, Attack Vector and Cloud Computing.	8
2	<b>Cybercrime: Mobile and Wireless Devices</b>  Introduction, Proliferation of Mobile and Wireless Devices, Trends in Mobility, Credit Card Frauds in Mobile and Wireless Computing Era, Security Challenges Posed by Mobile Devices, Registry Settings for Mobile Devices, Authentication Service Security, Attacks on Mobile/Cell Phones, Mobile Devices: Security Implications for Organizations,	5

	Organizational Measures for Handling Mobile, Organizational Security Policies and Measures in Mobile Computing Era and Laptops.	
3	<b>Tools and Methods Used in Cybercrime</b> Introduction, Proxy Servers and Anonymizers, Phishing, Password Cracking, Keyloggers and Spywares, Virus and Worms, Trojan Horses and Backdoors, Steganography, DoS and DDoS Attacks, SQL Injection, Buffer Overflow, Attacks on Wireless Networks. Phishing and Identity Theft: Introduction, Phishing, Identity Theft (ID Theft): Types of Identity Theft, Techniques of ID Theft, Identity Theft-Countermeasures, How to Protect your Online Identity.	12
4	<b>Cybercrimes and Cybersecurity: The Legal Perspectives</b> Introduction, Why Do We Need Cyberlaws: The Indian Context, The Indian IT Act, Challenges to Indian Law and Cybercrime Scenario in India, Consequences of Not Addressing the Weakness in Information Technology Act , Amendments to the Indian IT Act, Cybercrime and Punishment, Cyberlaw, Technology and Students: Indian Scenario.	5
5	<b>Understanding Computer Forensics</b> Introduction, Historical Background of Cyberforensics, Digital Forensics Science, The Need for Computer Forensics, Cyberforensics and Digital Evidence, Forensics Analysis of E-Mail : RFC282, Digital Forensics Life Cycle, Chain of Custody Concept, Network Forensics, Approaching a Computer Forensics Investigation, Setting up a Computer Forensics Laboratory: Understanding the Requirements, Computer Forensics and Steganography, Relevance of the OSI 7 Layer Model to Computer Forensics, Forensics and Social Networking Sites: The Security/Privacy Threats, Challenges in Computer Forensics, Special Tools and Techniques, Forensics Auditing and Antiforensics.	10
6	<b>Forensics of Hand-Held Devices</b> Introduction, Hand-Held Devices and Digital Forensics, Toolkits for Hand-Held Device Forensics: EnCase, Device Seizure and PDA Seizure, Palm DD, Forensics Card Reader, Cell Seizure, MOBILedit!, ForensicSIM, Organizational Guidelines on Cell Phone Forensics: Hand-Held Forensics as the Specialty Domain in Crime Context .	6

#### 4. Text Book:

1. Nina Godbole, Sunit Belapur, "Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives", Wiley India Publications, April, 2011

#### 5. Other Reference Book:

1. James Graham, Richar Howard, Ryan Olson, "Cyber Security Essentials", CRC Press, Tailor and Francis Group, 2011
2. Robert Jones, "Internet Forensics: Using Digital Evidence to Solve Computer Crime", O'Reilly Media, October, 2005
3. Chad Steel, "Windows Forensics: The field guide for conducting corporate computer investigations", Wiley India Publications, December, 2006

4. Nelson Phillips and Einfinger Stuart, “Computer Forensics and Investigations”, Cengage Learning, New Delhi, 2009.
5. Kenneth J. Knapp, “Cyber Security and Global Information Assurance: Threat Analysis and Response Solutions”, IGI Global, 2009.
6. Peter Wayner, “Disappearing Cryptography – Information Hiding: Steganography & Watermarking”, Morgan Kaufmann Publishers, New York, 2002.

**Chapter Wise Coverage from Text Book:**

Unit	Topics/ Subtopics
1	1.1 to 1.5, 2.1 to 2.8
2	3.1 to 3.12
3	4.1 to 4.12 , 5.1, 5.2, 5.3
4	6.1, 6.3, 6.4, 6.5, 6.6, 6.8, 6.9, 6.10
5	7.1 to 7.14, 7.16, 7.17, 7.18, 7.19
6	8.1, 8.3, 8.4, 8.8

**Cybercrime: Illustrations, Examples and Mini-Cases, Scams  
(Only for the referential context should not be asked in the examination)**

**Real-Life Examples**

- Example 1: Official Website of any Private/Government organization Hacked
- Example 2: E-Mail Spoofing Instances
- Example 3: I Love You Melissa – Come Meet Me on the Internet
- Example 4: Ring-Ring Telephone Ring: Chatting Sessions Turn Dangerous Example 5: Young Lady’s Privacy Impacted
- Example 6: Indian Banks Lose Millions of Rupees
- Example 7: “Justice” vs. “Justice”: Software Developer Arrested for Launching Website Attack
- Example 8: Parliament Attack
- Example 9: Pune City Police Bust Nigerian Racket

**Mini-Cases:**

- Mini-Case 1: Cyberpornography Involving a Juvenile Criminal
- Mini-Case 2: Cyberdefamation: A Young Couple Impacted
- Mini-Case 3: Internet Used for Murdering
- Mini-Case 4: Social Networking Victim – The MySpace Suicide Case
- Mini-Case 5: NASSCOM vs. Ajay Sood and Others

**Online Scams:**

- Scam No. 1 – Foreign Country Visit Bait
- Scam No. 2 – Romance Scam
- Scam No. 3 – Lottery Scam
- Scam No. 4 – Bomb Scams
- Scam No. 5 – Charity Scams
- Scam No. 6 – Fake Job Offer Scam

**Financial Crimes in Cyber Domain:**

- Financial Crime 1: Banking Related Frauds
- Financial Crime 2: Credit Card Related Frauds