



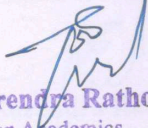
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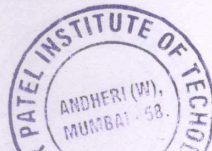
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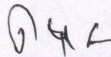
Course Code	Course Name	Teaching Scheme (Hrs/week)			Credits Assigned			
		L	T	P	L	T	P	Total
ETL921	Digital Forensic	4	-	-	4	--	-	4
		Examination Scheme						
		ISE	MSE	ESE	Total	20	20	60

Pre-requisite Course Codes		
After successful completion of the course, student will be able to		
Course Outcomes	CO1	Describe the fundamentals of Digital Forensic and systematic process of collection of digital evidences.
	CO2	Analyze and use various forensics toolkits.
	CO3	Analyze perspectives of digital forensic investigation in various applications/portable devices like Windows/Unix/Android system, networks based etc.
	CO4	Generate legal evidences and supporting investigation reports.

Module	Topics	Ref.	Hrs
1	Introduction to Digital Forensics: computer crimes, evidence, extraction, preservation, etc. Overview of hardware and operating systems: structure of storage media/devices; windows/Macintosh/ Linux -- registry, boot process, file systems, file metadata.	1,2	8
2.	Data recovery: identifying hidden data, Encryption/Decryption, Steganography, recovering deleted files. Digital evidence controls: uncovering attacks that evade detection by Event Viewer, Task Manager, and other Windows GUI tools, data acquisition, disk imaging, recovering swap files, temporary & cache files Computer Forensic tools: Encase, Helix, FTK, Autopsy, Sleuth kit Forensic Browser, FIRE, Found stone Forensic ToolKit, WinHex, Linux dd and other open source tools.	1,2	12
3.	Network Forensic: Collecting and analyzing network-based evidence, reconstructing web browsing, e-mail activity, and windows registry changes, intrusion detection, tracking offenders, etc. Mobile Network Forensic: Introduction, Mobile Network Technology, Investigations, Collecting Evidence, Where to seek Digital Data for further Investigations, Interpretation of Digital Evidence on Mobile Network.	1,2,4	10


Dr. Surendra Rathod
Dean Academics




Dr. Prachi Gharpure
Principal



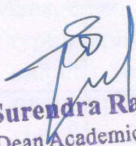
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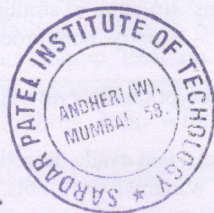
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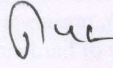
4.	Software Reverse Engineering: defend against software targets for viruses, worms and other malware, improving third-party software library, identifying hostile codes-buffer overflow, provision of unexpected inputs, etc.		5
5.	Computer crime and Legal issues: Intellectual property, privacy issues, Criminal Justice system for forensic, audit/investigative situations and digital crime scene, investigative procedure/standards for extraction, preservation, and deposition of legal evidence in a court of law.	1,2,3	7
		Total	42

Reference Books:

1. **Digital Forensics with Open Source Tools.** Cory Altheide and Harlan Carvey, ISBN: 978-1-59749-586-8, Elsevier publication, April 2011
2. **Computer Forensics and Cyber Crime: An Introduction (3rd Edition)** by Marjie T. Britz, 2013.
3. **Network Forensics: Tracking Hackers Through Cyberspace**, Sherri Davidoff, Jonathan Ham Prentice Hall, 2012
4. **Digital Forensic**, Dr. Nilakshi Jain and Dr. D. Kalbande, Wiley Publications


Dr. Surendra Rathod
Dean Academics
Bharatiya Vidya Bhavan's
Sardar Patel Institute of Technology
Munshi Nagar, Andheri (W), Mumbai-58.




Dr. Prachi Gharpure
Principal
Bharatiya Vidya Bhavan's
Sardar Patel Institute of Technology
Munshi Nagar, Andheri (W),
Mumbai - 400 058.



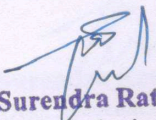
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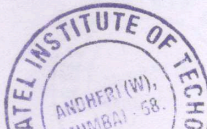
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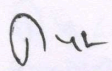
Course Code	Course Name	Teaching Scheme (Hrs/week)			Credits Assigned			
		L	T	P	L	T	P	Total
ETL922	Network Security	4	-	-	4	--	-	4
		Examination Scheme						
		ISE	MSE	ESE	Total	20	20	60

Pre-requisite Course Codes	
After successful completion of the course, student will be able to	
Course Outcomes	CO1 Describe security threats and apply security techniques using cryptosystems.
	CO2 Explain the key terms and concepts in cyber law, intellectual property and cyber crimes, trademarks and domain theft
	CO3 Build and configure firewall and intrusion detections systems' using GNU open source security tools.
	CO4 Incorporate approaches for incident analysis and response, for risk management and best practices and digital evidence collection, and evidentiary reporting in forensic acquisition

Module	Topics	Ref.	Hrs
1	Introduction to Network and Cybersecurity: Need for network security, Attacks and Their classification Network Vulnerabilities and control Security services and mechanisms, Impact of Security on Enterprises Risk Factors and Cost Analysis.	1,2,3	8
2.	Introduction to Cryptography Algorithms: Classical and modern cryptography, stream and block ciphers, Message digest, digital signature, digital certificate, certificate authority, cryptanalysis DES/AES/RSA/RC4/MD5/SHA algorithms Secure protocols SSL, IPsec, VPN, PKI Implementing security using symmetric and Public-Key cryptography. Steganography and DRM	1,2,3	12
3.	Ethical Hacking and Network defences Cybercrimes, Cybercriminals, Cyberoffences, Cybercrimes in Mobile and Wireless Devices, Tools and Methods used in Cybercrimes Network reconnaissance, scanning and sniffing, gaining access. Security Technologies: Firewall, IDS and Antivirus,	6,7	10


Dr. Surendra Rathod




Dr. Prachi Gharpure
Principal



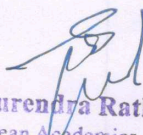
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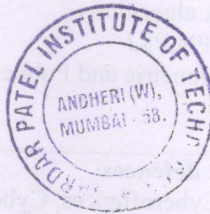
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
	Reverseproxy L7 content filtering firewall, NAT & reverse proxy, Firewaldeployment and limitations, selection of firewalls. Performance analysis of firewall. Signature and Anamoly based IDSs, IDS deployment, zone diagram, performance analysis of IDS, strengths and Limitations of IDS.		
4.	Advanced Security Techniques: Captcha, QR code, OTP, multi-factor authentication etc	8,9	5
5.	System Security and Case-Studies: Security Operations Center (SOC), Network Operations Center (NOC) Network Security Audit SET, Biometric Security, Digital Immune System	6	7
		Total	42

References:

- [1] Cryptography and Network Security by BehrouzForouzanMcGrawHill Publications
- [2] Security in Computing by Pfleeger and Pfleeger, Pearson Publications
- [3] Management of Information Security by M. Whitman Cengage Publications
- [4] Cryptography and Network Security by B. Menzanes, Elsevier
- [5] Computer Security by Matt Bishop, Pearson Publication
- [6] Cryptography and Network Security by William Stallings, Pearson publications.
- [7] Cyber Security by Nina Godbole, John Wiley Publications
- [8] <http://www.nacs.org/LinkClick.aspx?fileticket=D1FpVAvvJuo%3D&tabid=1426&mid=4802>
- [9] All about CAPTCHAS , Benjamin Boyter, Publisher amazon


Dr. Surendra Rathod
Dean Academics
Bharatiya Vidya Bhavan's
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Bharatiya Vidya Bhavan's
Sardar Patel Institute of Technology
Munshi Nagar, Andheri (W),
Mumbai - 400 058.