### Somaiya Vidyavihar University K. J. Somaiya College of Engineering, Mumbai -77 (A Constituent College of Somaiya Vidyavihar University)

Course Code	Course Title								
116h55C401	Cyber Security, Forensics & Cyber Law								
	TH			Р		TUT		Total	
Teaching Scheme(Hrs.)	03							03	
Credits Assigned	03							03	
	Marks								
Examination Scheme	CA ISE IA		ESE	TW	0	Р	P&O	Total	
	30	20	50					100	

# **Course prerequisites (if any):** Computer Organization & Architecture, Cryptography & System Security, Computer Networks.

**Course Objectives:** The objective of the course is to enable students to understand the basic principles of information security, computer crimes and methods of defence. The course introduces the process of digital forensic investigation, extraction of evidence using appropriate tools. It covers the techniques of data hiding, recovery, disk analysis, volatile data extraction. Further, it explores different network based attacks, tools to monitor/mitigate such attacks. Tools such as metasploit, interfaces to dark web and deep web explore the conducive environment for attackers. Cyber laws, IT Acts enable the student to understand the legal aspects of various cyber-crimes.

# **Course Outcomes:**

### At the end of successful completion of the course the student will be able to:

CO1	Identify various security goals, computer crimes & methods of defence.
CO2	Understand the fundamentals of digital forensics.
CO3	Analyze and interprete the results of disk forensic operations.
CO4	Apply forensic tools to extract and investigate the evidences from network.
CO5	Relate the corresponding computer security acts with the crimes.

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Module	Unit	Details	Hrs.	CO
<b>No.</b>	No.		0.2	<u> </u>
1	Introc	Introduction to information accurity accurity accurity	03	CO
	1.1	security services attacks & its types security		
		mechanism		
	1.2	Introduction to cyber security, cyber crimes, its origins.		
		classification of cyber crimes, cyberspace and cyber		
		profiling.		
2	Data l	Privacy and Theft	10	CO
	2.1	Data theft - Adwares, malwares, ransomwares, trojans,		
		spywares, keyloggers, phishing & its types, SQL		
		Healf Learning Data privacy law in India		
		#Sell Learning - Data privacy law in India.		
	2.2	Identity theft, its types, prevention techniques, software piracy.		
		#Self Learning – Case study on identity theft.		
	2.3	Data privacy, issues surrounding data privacy, guidelines		
		for data privacy, data privacy vs data security, data		
		privacy mechanisms, legislations on data privacy - local		
		and global.		
		#Sen Learning - GDPR Compnance		
3	Digita	l Forensics Fundamentals	10	CO
	3.1	Introduction, six A's of digital forensics, digital		
		incident response methodology		
	32	Classification of digital evidence - volatile and non-		
	0.2	volatile, rules and guidelines for extraction of digital		
		evidence, forensic duplicates, establishing chain of		
		custody, admissibility of evidence in the court of law.		
		#Self Learning – CERT and its role in digital		
		investigation.		
	3.3	Information retrieval and recovery, cloning techniques,		
		password cracking, data recovery from file systems and		
		investigation anti forensics		
4	Netwo	ork Forensics	12	СО
	4.1	Network based attacks - MITM, OWASP, ARP		
		spoofing, IP and MAC spoofing, DNS attacks, SYN		
		flooding attacks, port scanning, DOS, DDOS.		
	4.2	Sources of Digital Evidence from Emails, Web usage, Network Traffic, Email forensic and investigations.		
		Network Forensic Tools & Applications – Browser		
		forensics, Nmap, Nessus, Wireshark, Metasploit, Kali-		
		Linux, Deep-Web, Dark-Web.		
		#Self Learning : Criminal cases strongly based on		
		digital evidences		

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5	Cyber	r Law	10	CO
	<b>5.1</b> Fundamentals of Cyber Law-Legislative, Judicial, Quasi-			
		judicial, Investigative and International Cyber Law		
		Framework.		
		<b>#Self learning : Cyber crime cases studies- sample list</b>		
		but not limited to: Shreya Singhal v Union Of India, Syed		
		Asifuddin v The State of Andhra Pradesh, Chambers v.		
		Director of Public Prosecutions (UK), Riley v California (US),		
		US v Ross William Ulbricht Carpenter v US, Packingham v		
		North Carolina, Reno v ACLU, In Re: Nickelodeon		
		Consumer Privacy Liugation, III Ke: Google IIIC. Cookie Decoment Consumer Privacy Litigation Memorandum of		
		Decision - Google warrant case		
	5.2	Intellectual Property Issues & Cyberspace - Computer		
	0.2	Software & Copyright Law Software Licenses		
		Computer Databases & the Law Domain Names & the		
		Law Trademark issues in Cyberspace and		
		Semiconductor Layout & Design Law		
	5.3	Cyber Crime Law in India- Cyber Frauds Computer		
	0.0	Source Code, Cyber Pornography, Cyber Terrorism, Data		
		Privacy & confidentiality. Digital Signature. Freedom of		
		speech Information & Traffic Data Intermediaries		
		Malware Unauthorised Access and Violation of privacy		
		#Self Learning, A Clobal Protocol on Cybersecurity		
		and Cybercrime		
			45	
		Total	45	

# Students should prepare all Self Learning topics on their own. Self-learning topics will enable students to gain extended knowledge of the topic. Assessment of these topics may be included in IA and Laboratory Experiments.

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# **Recommended Books:**

Sr. No.	Name/s of Author/s	Title of Book	Name of Publisher with country	Edition and Year of Publication
1.	Bill Nelson, Amelia Phillips, Christopher Steuart.	Guide to Computer Forensics and Investigations.	Cengage Learning, USA.	3rd Edition paperback, 2002.
2.	Jason T. Luttgens, Mathew Pepe, Kevin Mandia	Incident Response and Computer Forensics.	Tata McGraw Hill Education	3rd Edition, 2014.
3.	Marie-Helen Maras	Computer Forensics: Cybercriminals, Laws and Evidences	Jones and Bartlett Learning	2nd Edition, 2014
4.	Davidoff Ham	Network Forensics Tracking Hackers through Cyberspace	Pearson India	1st Edition, 2013.
5.	Adv. Prashant Mali	Cyber Law and Cyber Crimes Simplified	Cyber Infomedia	January 2017.
6.	Asian School of Cyber	https://www.asianlaws.org/		