Course Details	**Program**	MCA	**Faculty Email ID**	sindhusingh@somaiya.edu
	Semester / Trimester	IV	**Faculty Contact Number**	9769614284
	Faculty Name	Dr. Sindhu Singh	**Students Contact Hours**	11 AM to 1 PM
	Course Name	Cyber Security	**Course Code**	117P05C401
	Max Marks	100	**Credits**	3
Course Objectives and Outcomes	**Course Objectives:** The major objective of this course is to understand key terms and concepts in cyber law, and cybercrimes, various forms authentications and cryptographic algorithms such as public key cryptographic algorithm, secret key cryptographic algorithm etc. The learner will develop an understanding of security policies (such as confidentiality, integrity, and availability), as well as protocols to implement such policies. Learners are introduced to various defense techniques and wireless and mobile security mechanisms. **Student learning outcomes from the course:** Students will learn importance of security over internet. They will be familiar with how the security is achieved using as various cryptographic algorithms such as public key cryptographic algorithm, secret key cryptographic algorithm, hashing algorithms etc. Students will have knowledge of different security protocols required for Email security and for secure electronic transactions as well as most important security threats.			
Pedagogy/Learning Methodology	Three lecture sessions of 1 hr 20 min duration in a week. Students are required to submit assignments, projects and presentations which are given from the syllabus.			

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Session Plan	Session No.	Topics to be Covered	Resources/Pre Readings/ Suggested Readings / Cases	Hrs
	1	**Introduction to Cyber Security:** Overview of Cyber Security, Security mind-set , Security Attacks	1 (Forouzan)	1.5
	2	Security Services and Security Mechanisms, CIA triad	1 (Forouzan)	1.5
	3	Types of cybercrimes, IT ACT 2000, National Cyber Security Policy 2013		1.5
	4	**Encryption & Hashing:** **Secret Key Cryptography:** Block Encryption, DES rounds, S- Boxes	6 (Forouzan)	1.5
	5	IDEA: overview, comparison with DES, Key expansion, IDEA rounds.	3 (Kaufman)	1.5
	6.	**Public Key Cryptography:** Introduction to modular arithmetic, RSA	9,10 (Forouzan)	1.5
	7	Digital Signature, Diffie-Hellman Key Exchange	13 (Forouzan)	1.5
	8	Elliptic Curve Cryptography	10 (Forouzan)	1.5
	9	**Hash Functions and Message Digests:** MD2, MD5, SHA	11(Stallings)	1.5
	10	**Access Control:** Types of Authentication- Password-based authentication, address-based authentication	14(Forouzan)	1.5
	11	cryptographic authentication, smart cards, biometrics, mutual authentications	14(Forouzan)	1.5
	12	reflection attacks, KDC-working, multi domain KDC	11 (Kaufman)	1.5
	13	**Digital Certificates and Public Key Infrastructure:** Digital Certificate-	13(Forouzan)	1.5

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		creation, verification, Certificate revocation, Cross-certification, Certificate Hierarchy		
	14	Internet Security Protocols: SSL, SET	17(Forouzan)	1.5
	15	IPSec, Email Security- PGP, PEM, S/MIME	16(Forouzan),18(Forouzan)	1.5
	16	**Firewall and Intrusion detection System:** Introduction to Firewalls, its types	19(Forouzan)	1.5
	17	Intrusion Detection: Methods and Modes, Response, Detection mechanism	19(Forouzan)	1.5
	18	**Wireless & Mobile Security:** Wireless security, Wireless network threats	18(Stallings)	1.5
	19	Wireless network measures, mobile device security	18(Stallings)	1.5
	20	Mobile security threats, mobile device security strategy	18(Stallings)	1.5

Reference Books:

1. Principles of Computer Security , Wm. Arthur Conklin, Gregory White, Dwayne Williams, Roger L. Davis & Chuck Cothren, McGraw Hill Education
2. Cryptography & Network Security, Behrouz A Forouzan, McGraw-Hill.
3. Cryptography and Network Security Principles and practice, William Stallings, Pearson, 7th Edition.
4. Network Security", Private Communication in a public world, Kaufman C., Perlman R., and Speciner, Prentice Hall.
5. Cybersecurity for beginners, Raef Meeuwisse, Hythe, Kent : Cyber Simplicity.
6. Certified Ethical Hacker Practice Exams, MATT WALKER, McGrawHill Education

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Assessment Criteria:

Component	Weightage	Description
Test	15	
Project	15	
Presentation	10	
Attendance	10	
Total(IA)	50	
End-Term Exam	50	
Total	**100**	

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