

SYSTEM SECURITY

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
III		Elective - I	5	7 5	5	7 5	0	0	3

COURSE OBJECTIVE

- To develop a basic understanding of cryptography, how it has evolved and some key encryption techniques used today.
- Students learn an understanding of security policies (such as authentication, integrity and confidentiality), as well as protocols to implement such policies in the form of message exchanges.

COURSE OUTCOME

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	To study the concepts of cryptography, digital signature and their Application	K2
CO2	To study the concepts of various authentications concept	K2
CO3	To learn about the principles of access control mechanism	K3
CO4	To Study about network security in various applications	K3
CO5	To learn and understanding of different methods of malicious software	K4

Knowledge Level – K1-Remember, K2- Understand, K3-Apply, K4-Analyze

MAPPING WITH PROGRAMME OUTCOME

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	S	M	M	M	S	S
CO2	M	S	M	S	S	M
CO3	S	S	S	L	M	S
CO4	S	M	S	M	S	L

CO5	S	M	S	M	S	M
-----	---	---	---	---	---	---

S-Strong

M- Medium,

L-Low

SYLLABUS

UNIT 1: CRYPTOGRAPHIC TOOLS

15 hrs

Confidentiality with Symmetric Encryption, Message Authentication and Hash Functions, Public-Key Encryption, Digital Signatures and Key Management, Random and Pseudorandom Numbers, Practical Application: Encryption of Stored Data.

UNIT 2: USER AUTHENTICATION

15 hrs

Means of Authentication, Password-Based Authentication, Token-Based Authentication, Biometric Authentication, Remote User Authentication, Security Issues for User Authentication, Practical Application: An Iris Biometric System, Case Study: Security Problems for ATM Systems.

UNIT 3: ACCESS CONTROL

15 hrs

Access Control Principles, Subjects, Objects, and Access Rights, Discretionary Access Control, Example: UNIX File Access Control, Role-Based Access Control, Case Study: RBAC System for a Bank.

UNIT 4: DATABASE SECURITY

14 hrs

The Need for Database Security, Database Management Systems, Relational Databases, Database Access Control, Inference, Statistical Databases, Database Encryption, Cloud Security.

UNIT 5: MALICIOUS SOFTWARE

16 hrs

Types of Malicious Software (Malware), Propagation– Infected Content– Viruses, Propagation–Vulnerability Exploit–Worms, Propagation–Social Engineering–SPAM E-mail, Trojans, Payload–System Corruption, Payload–Attack Agent–Zombie, Bots, Payload– Information Theft– Key loggers, Phishing, Spyware, Payload–Stealth–Backdoors, Rootkits, Countermeasures.

Distribution of Marks: Theory: 80% and Application: 20%

TEXT BOOKS

S.No	Author	Title	Publisher	Year of Publication
1	M. Stamp	Information Security: Principles and Practice	2 nd Edition, Wiley, ISBN: 0470626399,	2011

REFERENCES BOOK

S.No	Author	Title	Publisher	Year of Publication
1	M. E. Whitman and H. J. Mattord	Principles of Information Security	4 th Edition, Course Technology, ISBN: 1111138214	2011
2	M.. Bishop	Computer Security: Art and Science	Addison Wesley, ISBN: 0 -201-44099-7	2002
3	G. McGraw	Software Security: Building Security In	Addison Wesley, ISBN: 032135670	2006
4	C. P. Pfleeger, S. L. Pfleeger	Security in Computing	Prentice Hall of India,	2006
5	W. Stallings	Network Security Essentials: Applications and Standards	4 th edition, Prentice Hall of India	2010
6	D. Bertsekas, R. Gallager,	Data Networks	2nd edition, Prentice Hall of India	1992

7	M. Merkow, J. Breithaupt,	Information Security Principles and Practices	Pearson Education	2005
8	G.R.F. Snyder, T. Pardoe	Network Security	Cengage Learning	2010

WEB RESOURCES

1. https://www.tutorialspoint.com/computer_securitys/index.htm
2. <https://www.javatpoint.com/computer-network security-tutorial>

TEACHING METHODOLOGY

- Class room teaching.
- Group discussions
- Seminars
- Demo using systems
- Chart/Assignment, Simulation Model
- Smart Class room

SYLLABUS DESIGNER

1. Mrs. G.Sangeetha Lakshmi, Assistant Professor and Head, Dept of Computer Applications.
2. Mrs. B.Arulmozhi , Assistant Professor and Head, Department of Computer Science
3. Dr. R. Hamsaveni, Assistant Professor, Department of Computer Science.

