

TEACHING PLAN (TP)

Academic Year: 2025-26

Institute Code and Name: 0078- K. K. Wagh Polytechnic, Nashik

Programme and Code: Information Technology (IF)

Course and Code: Information Security (INS)

Name of Faculty: Ms. S. P. Chivate

Scheme: K

CLASS: SYIF (Cray)

Semester: Fourth

Course Index: 404

Course Code: 314319

Allocated Hrs. 45

COURSE LEVEL LEARNING OUTCOMES (COS)

- CO1 - Identify types of attacks which causes threat to Information Security.
- CO2 - Apply multi-factor user authentication and access control mechanisms on file, folder, device and applications.
- CO3 - Apply basic encryption / decryption techniques for a given text.
- CO4 - Apply various encryption algorithms used for information security.
- CO5 - Implement security techniques to prevent internet threats.

TEACHING-LEARNING & ASSESSMENT SCHEME

Course Code	Course Title	Abbr	Course Category	Learning Scheme						Credits	Paper Duration	Assessment Scheme									Total Marks
				Actual Contact Hrs./Week			SLH	NLH	Theory				Based on LL & TSL Practical				Based on SL				
				CL	TL	LL			FA-TH			SA-TH	Total		FA-PR		SA-PR		SLA		
													Max	Min	Max	Min	Max	Min	Max	Min	
314319	Information Security	INS	AEC	3	-	2	1	6	3	3	30	70	100	40	25	10	25 @	10	25	10	175

Total IKS Hrs. for Sem.: 2 Hrs.

Abbreviations: CL- Classroom Learning , TL- Tutorial Learning, LL-Laboratory Learning, SLH-Self Learning Hours, NLH-Notional Learning Hour FA -Formative Assessment, SA -Summative assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment Legends: @ Internal Assessment, # External Assessment, *# On Line Examination , @\$ Internal Online Examination

SUGGESTED COS - POS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO- 1	PSO- 2
CO1	2	-	-	-	1	1	2	1	1
CO2	1	1	1	1	2	2	2	2	2
CO3	1	2	2	2	2	1	2	2	2
CO4	1	2	2	2	2	1	2	2	2
CO5	1	1	1	2	2	1	3	3	2

Legends :- High:03, Medium:02,Low:01, No Mapping: -

*PSOs are to be formulated at institute level

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Unit No. (Allotted Hrs.)	CO (Mention only Number)	TLO Mention only Number	Unit Name and Learning Content Title/Details	Plan No. of Lecture		Actual Execution		Teaching method/Media	Remark		
				From	To	From	To				
1(9)	CO 1		Unit - I Introduction to Information Security						Chalk, Board, PPT, Learn Live, Videos, Google Classroom		
		TLO 1.1, TLO 1.2, TLO 1.3	1.1 Information Security Overview: Introduction to information, need of information security	3 Lectures							
			1.2 Information classification, Criteria for information classification	16/12/2025	18/12/2025						
			1.3 Basic principles of information security: Confidentiality, Authentication, Integrity, Availability, Access Controls, Repudiation								
TLO 1.4	1.4 Type of Attacks: Active and Passive attacks, Denial of Service, DDOS, Backdoors and Trapdoors, Sniffing, phishing, Spoofing, Man in the Middle, Replay, TCP/IP Hacking, Encryption attacks, Social Engineering	2 Lectures									
		23/12/2025	24/12/2025								
TLO 1.5, TLO 1.6	1.5 Types of Malwares and their impact on security and prevention: - Virus, Worms, Trojan	4 Lectures									
		1.6 Threat and Risk Analysis: Introduction to assets, vulnerability, threats, risks, relation	25/12/2025	31/12/2025							

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				From	To	From	To		
2(8)	CO 2		Unit - II User Authentication and Access Control					Chalk, Board, PPT, Learn Live, Videos, Google Classroom	
		TLO 2.1	2.1 Identification and Authentication methods : Electronic user authentication, username and password,multi-factor authentication, token-based authentication	2 Lectures					
				01/01/2026	06/01/2026				
		TLO 2.2, TLO 2.3, TLO 2.4	2.2 Guessing password, Password attacks : Piggybacking, Shoulder surfing, Dumpster diving 2.3 Biometrics : Finger prints, Hand prints, Retina scan patterns, Voice patterns 2.4 Authorization : Introduction to authorization, goals of authorization	4 Lectures					
				07/01/2026	07/01/2026				
		TLO 2.5	2.5 Access controls : Access control principles, Access rights and permission Access control policies : Discretionary access control(DAC), Mandatory access control (MAC), Role-based access control (RBAC)	2 Lectures					
				13/01/2026	15/01/2026				

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				From	To	From	To				
3(10)	CO 3	Unit - III Fundamentals of Cryptography							Chalk, Board, PPT, Learn Live, Videos, Google Classroom		
		TLO 3.1, TLO 3.2	3.1 Introduction : Plain text, Cipher text, Cryptography, Cryptanalysis, Encryption, Decryption	3 Lectures							
			3.2 Symmetric and Asymmetric cryptography : Introduction, working, key management, asymmetric cryptography	20/01/2026	22/01/2026						
		TLO 3.3	3.3 Substitution techniques : Caesar cipher, Playfair cipher, Vigenere cipher, Vernam cipher (One-time pad)	3 Lectures							
				03/02/2026	05/02/2026						
		TLO 3.4	3.4 Transposition techniques : Rail fence technique, Simple columnar technique	2 Lectures							
				06/02/2026	10/02/2026						
TLO 3.5	3.5 Steganography : Introduction and working of steganography	2 Lectures									
		11/02/2026	12/02/2026								
4(8)	TLO 4.1,4.2	Unit - IV Encryption Algorithms									
		4.1 DES (Data Encryption Standard)	2 Lectures								
			13/02/2026	17/02/2026							
		4.2 AES algorithm									

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Unit No. (Allotted Hrs.)	CO Mentioned only Number	TLO Mentioned only Number	Unit Name and Learning Content Title/Details	Plan No. of Lecture		Actual Execution		Teaching method/ Media	Remark
				From	To	From	To		
4(8)	CO 4	TLO 4.3, TLO 4.4	4.3 RSA algorithm 4.4 Diffie-Hellman key exchange algorithm, Man-in-middle attack	2 Lectures				Chalk, Board, PPT, Learn Live, Videos, Google Classroom	
				18/02/2026	19/02/2026				
		TLO 4.5	4.5 Hash Function : Introduction, Features of Hash Functions, MD5 and SHA algorithm	2 Lectures					
				24/02/2026	25/02/2026				
		TLO 4.6, TLO 4.7	4.6 Digital Signature : Introduction and working of digital signature 4.7 Threats to mobile phone and its security measures	2 Lectures					
				26/02/2026	03/03/2026				
5(10)	CO 5	Unit - V Internet Security and Cyber Law							
		TLO 5.1	5.1 Firewall : Need of firewall, Types of firewalls : Packet filters, Stateful packet filters, Application gateways, Circuit gateways	2 Lectures				Chalk, Board, PPT, Learn Live, Videos, Google Classroom	
				04/03/2026	05/03/2026				
		TLO 5.2, TLO 5.3	5.2 Firewall policies, Configuration, Limitations, Demilitarized zone 5.3 Intrusion Detection System(IDS) : Network-based IDS, Host-based IDS, Honeypots	2 Lectures					
10/03/2026	11/03/2026								

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Chap No. (Allotted Hrs.)	CO Mention only Number	TLO Mention only Number	Unit Name and Learning Content Title/ Details	Plan No. of Lecture		Actual Execution		Teaching method/ Media	Remark
				From	To	From	To		
5(10)	CO 5	TLO 5.4	5.4 E-mail security : Simple mail transfer protocol(SMTP), Pretty good privacy (PGP), S/MIME	2 Lectures				Chalk, Board, PPT, Learn Live, Videos, Google Classroom	
				12/03/2026	17/03/2026				
		TLO 5.5, TLO 5.6	5.5 Cyber-crime: Introduction, Hacking, Digital forgery, Cyber stalking/Harassment, Cyber pornography, Identity theft & fraud, Cyber terrorism, Cyber defamation, OS fingerprinting	4 Lectures					
18/03/2026	26/03/2026								
			5.6 Cyber Laws: Introduction, Need, Categories: Crime against individual,						

ASSESSMENT METHODOLOGIES/TOOLS

A. Formative assessment (Assessment for Learning) (FA-TH)

- Two-unit tests (MCQs) of 30 marks will be conducted and average of two-unit tests considered. Formative assessment of self-learning of 25 marks should be assessed based on self-learning activity such as UNICEF Certification(s)/Micro project/assignment/activities. (60 % weightage to process and 40 % to product)

B. Summative Assessment (Assessment of Learning)

- End semester examination, Lab performance, Viva voce

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SUGGESTED LEARNING MATERIALS / BOOKS

Sr. No	Author	Title	Publisher with ISBN Number
1	Atul Kahate	Cryptography and Network security Third Edition	McGraw-Hill; Fourth edition ISBN-13: 978-9353163303
2	William Stallings, Lawrie Brown	Computer Security Principles and Practice, Third Edition	Pearson. ISBN-13: 978-0-13-377392-7
3	Nina Godbole	Information Systems Security Second Edition	John Wiley ISBN-13: 978-8126564057
4	Mark Merkow, JimBreithaupt	Information Security Principles and Practices	Pearson. ISBN 978-81-317-1288-7
5	V. K. Pachghare	Cryptography and Information Security	Prentice Hall India ISBN:978-81-203-5082-3
6	Harish Chander	Cyber Laws and IT Protection Second Edition	PHI Publication , ISBN : 9789391818463 eBook ISBN : 9789391818517

LEARNING WEBSITES & PORTALS

Sr.No	Link / Portal	Description
1	https://www.youtube.com/watch?v=NlpnJE0m-NU	Simulation of Intrusion Detection System in MANET using NetSim
2	https://archive.nptel.ac.in/courses/106/106/106106129/	NPTEL course on Introduction to Information Security
3	https://onlinecourses.swayam2.ac.in/cec22_cs15/preview	Swayam course on Information Technology
4	https://www.youtube.com/watch?v=T9c5ZpT2FV0	Firewall configuration
5	https://cse29-iiith.vlabs.ac.in/List%20of%20experiments.html	Virtual lab for cryptography

Ms. S. P. Chivate
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Ms. M. S. Karande
(Name & Signature of HOD)