GOAPAL KRISHNA COLLEGE OF ENGINEERING AND TECHNOLOGY
GOURAHARI VIHAR, PO: RANIPUT, JEYPORE – 764 005

LESSON PLAN

Name of the Subject: **IT Fundamentals for Cyber security – II (3-0-0)**

Session : 2025-26
Name of the Faculty: Er. Pranati Nayak
Semester: 4th **Branch:** Computer Sc.& Engg.
Semester From: February **No. of Weeks:** 15 Weeks

Week	Day	THEORY TOPICS	Classes
		Unit 1: **Network Security & Database Vulnerabilities**	**18Hrs**
1	1	Introduction to cyber security & networking basics.	50Min
	2	Basics of IP addressing (IPv4, IPv6, subletting)	50Min
	3	OSI Model overview	50Min
2	4	Deep dive into OSI layers	50Min
	5	TCP/IP framework	50Min
	6	OSI vs. TCP/IP + Quiz 1	50Min
3	7	Network devices (routers, firewalls, IDS/IPS)	50Min
	8	Routing basics	50Min
	9	Security implications in networks + Quiz 2	50Min
4	10	Introduction to databases (SQL vs NoSQL)	50 Min
	11	Database architecture (Oracle, MongoDB, CouchDB)	50 Min
	12	Common database threats	50 Min
5	13	SQL Injection basics	50 Min
	14	Advanced injection attacks	50 Min
	15	Prevention techniques + Quiz 3	50 Min
6	16	Tools for vulnerability testing	50 Min
	17	Case studies (real-world attacks)	50 Min
	18	Final Project + Peer Review + Quiz 4	50 Min
		Unit 2: **Generative AI in Cyber security**	**10Hrs**
7	19	AI & ML basics in cyber security & Generative AI concepts	50 Min
	20	Use cases in security	50 Min
	21	UEBA (User & Entity Behavior Analytics)	50 Min
8	22	Threat intelligence using AI	50 Min
	23	Report summarization & automation	50 Min
	24	SIEM basics & SOC workflows using AI	50 Min

9	25	AI threats (phishing, deep fakes, malware)	50 Min
	26	Prompt injection & NLP attacks	50 Min
	27	Final Project + Assessments 2 & 3	50 Min
		Unit 3: **Penetration Testing, Incident Response & Forensics**	
10	28	Introduction to penetration testing	50Min
	29	Phases of pen testing	50Min
	30	Tools overview + Quiz 1	50Min
11	31	Reconnaissance techniques	50Min
	32	Scanning & enumeration	50Min
	33	Practical lab + Quiz 2	50Min
12	34	Incident response lifecycle, Teams & Documentation & policies	50Min
	35	Forensic principle ,Evidence collection & Tools & case study	50Min
	36	Introduction to scripting (Python/Bash) & Automation in cyber security	50Min
13	37	Integrated case study	50Min
	38	Revision	50Min
	39	Final Assessment / Exam	50Min