



SILVER OAK UNIVERSITY
School of Technology, Design and Computer Application
Silver Oak College of Computer Application
Department of Computer Application
Master of Science Cyber Security & Digital Forensics
Course Name: Fundamentals of Cyber Security
Course Code: 1040147101
Semester: 1st

Prerequisite: Knowledge of Windows and Linux commands.

Course Objective: To develop skilled students with the technical knowledge required to protect and defend computer systems and networks. Students can identify, analyse, and remediate security breaches.

Teaching Scheme:

Teaching Scheme				
L	T	P	Contact Hours	Credit
3	1	0	4	4

Content:

Unit No.	Course Contents	Teaching Hours	% Weightage
1	Introduction to Cyber Security: Introduction to Computers, Computer History, Software, Hardware, Classification, Computer Input-Output Devices, Windows, DOS Prompt Commands, Linux/Mac Terminal and Commands, Basic Computer Terminology, Computer Security models, Computer Security Terms, Computer Ethics, Business and Professional Ethics, Need for cyber security	8	20
2	Python Basics: Python Basics, Variables and Types, Lists, Basic Operators, String Formatting, Basic String Operations, Conditions, Loops, Functions, Classes and Objects, Dictionaries, Modules and Packages	8	20
3	Encoding and SCADA & IoT: Encoding: Charset, ASCII, UNICODE, URL Encoding, Base64, Illustration: ISBN/QR Code/Barcode, Binary hamming codes and Binary Reed muller codes, Structure Properties Usage, Unicode and Legacy Encodings	10	23
4	SCADA & IoT: SCADA basic, IoT basics, system architecture, Industry set up Machine-to-Machine (M2M) communication, Radio Frequency	12	27

	Identification, Wireless Sensor Network, Human Machine Interface, Supervisory (computer) system, Remote Terminal Units (RTUs), Programmable Logic Controller (PLCs), Communication infrastructure, A history of the Internet of Things, how sensor nodes collect and communicate information, Data management and process management, Networking the IoT		
5	Cyber Security Compliance and Risk Management: Introduction to key regulatory requirements General Data Protection Regulation (GDPR), Health Insurance Portability and Accountability Act (HIPAA), and Payment Card Industry Data Security Standard (PCI DSS). Risk management frameworks and methodologies, including risk assessment, risk mitigation strategies, and the development of comprehensive risk management plans.	4	10

Course Outcomes:

Sr. No.	CO-Statement	Unit No
CO-1	Recognize cyber security concepts and terminology with foundational understanding.	1
CO-2	Learn basic Python programming for cyber security comprehension.	2
CO-3	Utilize cyber security principles for data encoding, SCADA security, and effective data management.	3
CO-4	Demonstrate comprehension of web and mobile application architecture, analyzing their structure and functionality.	4
CO-5	Apply regulatory compliance and risk management strategies to ensure organizational adherence to cyber security standards.	5

Teaching & Learning Methodology: -

1. The course includes a laboratory, where students have an opportunity to build an appreciation for the concepts being taught in lectures.
2. Projector and Computer
3. Experiments shall be performed in the laboratory related to course contents

List of Tutorials:

Total Hours: 14

Sr. No.	Tutorials Name
1.	Introduction to Kali Linux, understanding and implementing basic tools using KaliLinux.
2.	Understanding and Implementing with DOS Prompt / Linux/Mac Terminal and Commands. Use of Specific commands for cyber security.
3.	Accessing live Android devices using Ghost Framework.
4.	Finding sub domain using sub list
5.	Accessing directories using dir b

6.	Setting up Genymotion (android emulator)
7.	Conduct a compliance assessment for a hypothetical organization and implement measures to ensure adherence to regulatory requirements.
8.	Perform a risk assessment for a hypothetical organization and develop a comprehensive risk mitigation strategy.

Major Equipment:

1. Computer System
2. LAN cable

Books Recommended:

1. Langtangen H.P, “Python Scripting for Computational Science.”, Springer.
2. Forouzan, Behrouz A, “Data communication and Networking”, Tata McGraw-Hill
3. Kurose, James F. & Ross, Keith W “Computer Networking: A Top-Down Approach Featuring the Internet.”, Pearson Education.
4. Craig, B “Cyber Law: The Law of the Internet and Information Technology”, Pearson.
5. Sharma J. P. & Kanojia S, “Cyber Laws”, Ane Books Pvt Ltd-New Delhi

CO-PO-PSO MATRIX:

Co.No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO-1	2	2	1	2		2		3	2
CO-2	2	3	2	1	1			3	1
CO-3	1	2	3	1			1	2	2
CO-4	2	2	1	3				1	2
CO-5	1	2		1				3	2