

## A. Course Handout (Version 1.0)

Institute/School Name	Chitkara University Institute of Engineering and Technology		
Department Name	Department of Computer Science & Engineering		
Program Name	Bachelor of Engineering (B.E.), Computer Science & Engineering		
Course Name	Cyber Security, Tools, Techniques and Counter Measures	Session	2024-2025
Course Code	23GE004	Semester/Batch	3 <sup>rd</sup> /2023
L-T-P (Per Week)	2-0-0	Course Credits	0
Course Coordinator	Dr. Chetna		

<b>CLO01</b>	Acquire Information about Cyber Security essentials, risk models including confidentiality, integrity and availability.
<b>CLO02</b>	Acquire knowledge about the Windows and Linux firewalls, threats and attacks and exploit vulnerabilities.
<b>CLO03</b>	Acquire knowledge on Inspection Tools, Password Cracking and Brute Force tools.
<b>CLO04</b>	To gain knowledge on Cyber Security framework and operations.
<b>CLO05</b>	To Know about Internet Crime and Act, Intellectual Property rights.

### 1. Objectives of the Course

The course provides a wide scope of learning & understanding of the subject. The main objectives of the course are:

- It aims to provide a foundational platform for Cyber Security Aspirants by providing Cyber Security Awareness and Training that heighten the chances of catching a scam or attack before it is fully enacted, minimizing damage to the resources and ensuring the protection of information technology assets.
- It teaches learners to protect the confidentiality, availability and integrity of information and information systems that support modern organizations.
- It provides a range of career opportunities in Cyber Security Sectors as Network/Application Security Analyst, Cyber Security Analyst, Security Automation, Cyber Security Practitioner, Cyber Defense Analyst, Penetration Tester, Information Security Engineer in leading IT Industries and to act as Cyber Security Experts in in Governmental Organizations.

### 2. Course Learning Outcomes

After completion of the course, student should be able to:

	Course Learning Outcome	*POs	**CL	***KC	Sessions
<b>CLO01</b>	Acquire Information about Cyber Security essentials, risk models including confidentiality, integrity and availability.	PO1, PO2, PO3, PO5, PO9	K1	Factual Conceptual	<b>8</b>
<b>CLO02</b>	Acquire knowledge about the Windows and Linux firewalls, threats and attacks and exploit vulnerabilities.	PO1, PO2, PO3, PO4, PO5	K2	Factual Conceptual	<b>15</b>
<b>CLO03</b>	Acquire knowledge on Inspection Tools, Password Cracking and Brute Force tools.	PO1, PO2, PO3, PO4, PO5, PO7, PO8, PO10	K3	Conceptual Procedural	<b>9</b>

<b>CLO04</b>	To gain knowledge on Cyber Security framework and operations.	PO2, PO4, PO5, PO12	K4	Conceptual Procedural	<b>8</b>
<b>CLO05</b>	To Know about Internet Crime and Act, Intellectual Property rights.	PO4, PO5, PO11	K3	Factual Conceptual	<b>8</b>
<b>Total Contact Hours</b>					<b>48</b>

Revised Bloom's Taxonomy Terminology

\* PO's available at ([shorturl.at/cryzF](http://shorturl.at/cryzF))

\*\*Cognitive Level =CL

\*\*\*Knowledge Categories = KC

Course Learning Outcomes	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CLO01	M	M	M		M				M			
CLO02	M	M	M	M	M							
CLO03	M	M	M	M	M		M	M		M		
CLO04		M		M	M							M
CLO05				H	H						M	

H=High, M=Medium, L=Low

### 3. ERISE Grid Mapping

Feature Enablement	Level (1-5, 5 being highest)
Entrepreneurship	1
Research	4
Innovation	3
Skills	5
Employability	4

### 4. Recommended Books:

#### Text Books:

**B01:** Principles of Cyber Security Course Code: PGDCS-101 Published by Dr. Babasaheb Ambedkar Open University

**B02:** Cyber Security Techniques: PGDCS-103 Published by Dr. Babasaheb Ambedkar Open University

#### Reference Books:

**B03:** Cyber Security – Understanding Cyber Crimes, Computer Forensics and Legal Perspectives Author: Nina Godbole, Sunit Belapure, Publisher: Wiley India

**B04:** Information Systems Security – Security Management, Metrics, Frameworks and Best Practices Author: Nina Godbole, Publisher: Wiley India

#### E-Resources:

<https://library.chitkara.edu.in/subscribed-books.php>

## 5. Other readings and relevant websites:

Serial No	Link of Journals, Magazines, websites and Research Papers
1.	<a href="https://onlinecourses.swayam2.ac.in/nou24_ge65/course">https://onlinecourses.swayam2.ac.in/nou24_ge65/course</a>
2.	<a href="http://www.sophos.com/en-us/security-news-trends/security-trends/tips-to-reduce-web-threats.aspx">http://www.sophos.com/en-us/security-news-trends/security-trends/tips-to-reduce-web-threats.aspx</a>
3.	<a href="https://www.bigcommerce.com/articles/ecommerce/ecommerce-website-security/">https://www.bigcommerce.com/articles/ecommerce/ecommerce-website-security/</a>
4.	<a href="https://www.geeksforgeeks.org/intrusion-detection-system-ids/">https://www.geeksforgeeks.org/intrusion-detection-system-ids/</a>
5.	<a href="https://en.wikipedia.org/wiki/Social_engineering_(security)">https://en.wikipedia.org/wiki/Social_engineering_(security)</a>

## 6. Course Plan:

Lecture Number	Topics	Text Book
1	Detail Discussion of Course Handout (CHO)	B01
2-4	Cyber Security Essentials, Attack Vectors, Threat, Risk and Vulnerability	B01
5-8	Advanced Persistent Threat and Cyber Kill Chain, Cyber Security Framework	B01
9-12	Firewall and Packet Filters, Introduction to Windows and Linux Firewall	B02
13-16	Attacks on Wireless Networks, Scanning For Web Vulnerabilities Tools and HTTP Utilities	B02
17-20	Application Inspection Tools, Password Cracking and Brute-Force Tools	B02
21-24	Web Attack, Information Security Basics to Policy	B02
25-28	Web Attack, Information Security Basics to Policy	B01
29-32	Intrusion Detection System, IT Assets and Wireless Security	B01
33-36	Cyber Security Assurance Framework, Desktop Security and Malware	B01
37-40	E-Commerce and Web-Application Security	B01
41-44	Social Engineering	B02
45-48	Internet Crime and Act, Intellectual Property in the Cyber world	B02
ETE (Syllabus = (Lecture number 1-48)		

## 7. Delivery/Instructional Resources

Lecture No.	Topics	Web References	Audio-Video
1	Detail Discussion of Course Handout (CHO)		
2-4	Cyber Security Essentials, Attack Vectors, Threat, Risk and Vulnerability	<a href="https://onlinecourses.swayam2.ac.in/nou24_ge65/course">https://onlinecourses.swayam2.ac.in/nou24_ge65/course</a>	<a href="https://www.youtube.com/watch?v=ozVHt05Ez_Q">https://www.youtube.com/watch?v=ozVHt05Ez_Q</a>
5-8	Advanced Persistent Threat and Cyber Kill Chain, Cyber Security Framework	<a href="https://onlinecourses.swayam2.ac.in/nou24_ge65/course">https://onlinecourses.swayam2.ac.in/nou24_ge65/course</a>	<a href="https://www.youtube.com/watch?v=Jl3NYWNF7FU">https://www.youtube.com/watch?v=Jl3NYWNF7FU</a>
9-12	Firewall and Packet Filters, Introduction to Windows and Linux Firewall	<a href="https://onlinecourses.swayam2.ac.in/nou24_ge65/course">https://onlinecourses.swayam2.ac.in/nou24_ge65/course</a>	<a href="https://www.youtube.com/watch?v=Yi2HfNySPUK">https://www.youtube.com/watch?v=Yi2HfNySPUK</a>

13-16	Attacks on Wireless Networks, Scanning For Web Vulnerabilities Tools and HTTP Utilities	<a href="http://www.cybersecurity180.com/440/">http://www.cybersecurity180.com/440/</a>	<a href="https://www.youtube.com/watch?v=K78YOmbuT48">https://www.youtube.com/watch?v=K78YOmbuT48</a>
17-20	Application Inspection Tools, Password Cracking and Brute-Force Tools	<a href="https://stytch.com/blog/top-10-password-cracking-techniques/">https://stytch.com/blog/top-10-password-cracking-techniques/</a>	<a href="https://www.youtube.com/watch?v=f9GCXvr1jAU">https://www.youtube.com/watch?v=f9GCXvr1jAU</a>
21-24	Web Attack, Information Security Basics to Policy	<a href="https://www.geeksforgeeks.org/cyber-security-policy/">https://www.geeksforgeeks.org/cyber-security-policy/</a>	<a href="https://www.youtube.com/watch?v=cMOWZkYVleg">https://www.youtube.com/watch?v=cMOWZkYVleg</a>
25-28	Web Attack, Information Security Basics to Policy	<a href="https://www.geeksforgeeks.org/cyber-security-policy/">https://www.geeksforgeeks.org/cyber-security-policy/</a>	<a href="https://www.youtube.com/watch?v=cMOWZkYVleg">https://www.youtube.com/watch?v=cMOWZkYVleg</a>
29-32	Intrusion Detection System, IT Assets and Wireless Security	<a href="https://www.geeksforgeeks.org/intrusion-detection-system-ids/">https://www.geeksforgeeks.org/intrusion-detection-system-ids/</a>	<a href="https://www.youtube.com/watch?v=dfVAi87BSEs">https://www.youtube.com/watch?v=dfVAi87BSEs</a>
33-36	Cyber Security Assurance Framework, Desktop Security and Malware	<a href="https://www.geeksforgeeks.org/malware-and-its-types/">https://www.geeksforgeeks.org/malware-and-its-types/</a>	<a href="https://www.youtube.com/watch?v=b4-ZZb_4Zr4">https://www.youtube.com/watch?v=b4-ZZb_4Zr4</a>
37-40	E-Commerce and Web-Application Security	<a href="https://www.geeksforgeeks.org/e-commerce-and-security-threats-to-e-commerce/">https://www.geeksforgeeks.org/e-commerce-and-security-threats-to-e-commerce/</a>	<a href="https://www.youtube.com/watch?v=fWQy3W5mGL4">https://www.youtube.com/watch?v=fWQy3W5mGL4</a>
41-44	Social Engineering	<a href="https://en.wikipedia.org/wiki/Social_engineering_(security)">https://en.wikipedia.org/wiki/Social_engineering_(security)</a>	<a href="https://www.youtube.com/watch?v=v7VTJhkJUUY">https://www.youtube.com/watch?v=v7VTJhkJUUY</a>
45-48	Internet Crime and Act, Intellectual Property in the Cyber world	<a href="https://enhelion.com/blogs/2022/09/01/role-of-intellectual-property-in-cyber-law/">https://enhelion.com/blogs/2022/09/01/role-of-intellectual-property-in-cyber-law/</a>	<a href="https://www.youtube.com/watch?v=-FyDsc5hqMI">https://www.youtube.com/watch?v=-FyDsc5hqMI</a>

## 8. Evaluation Scheme & Components:

	Type of Component	No. of Assessments	Weightage of Component	Mode of Assessment
Component 1	Self-Learned Mode And Certificate Submission	01	100%	Online
<b>Total</b>		<b>100%</b>		

## 9. Syllabus of the Course:

S.No.	Topic (s)	No. of Sessions	Weightage %
1	Cyber Security Essentials, Attack Vectors, Threat, Risk and Vulnerability, Advanced Persistent Threat and Cyber Kill Chain, Cyber Security Framework, Firewall and Packet Filters, Introduction to Windows and Linux Firewall, Attacks on Wireless Networks, Scanning for Web Vulnerabilities Tools and HTTP Utilities.	17	35%

2	Application Inspection Tools, Password Cracking and Brute-Force Tools, Web Attack, Information Security Basics to Policy, Intrusion Detection System, IT Assets and Wireless Security	16	33%
3	Cyber Security Assurance Framework, Desktop Security and Malware, E-Commerce and Web-Application Security, Social Engineering, Internet Crime and Act, Intellectual Property in the Cyber world	15	32%
End Term (Covering (35%+ 33%+ 32%=)100% syllabus)			

This Document is approved by:

Designation	Name	Signature
Course Coordinator	Dr. Chetna	
Head-Academic Delivery	Dr. Mrinal Paliwal	
Dean	Dr. Rishu Chhabra	
Dean Academics	Dr. Monit Kapoor	
Date	26.6.2024	