Mandsaur University

Subject Name	L	T	P	Credits
Cyber Crime & Law	3	-		3

Course Objectives:

1. To introduce the cyber world and cyber law in general
2. To explain about the various facets of cyber crimes
3. To enhance the understanding of problems arising out of online transactions and provoke them to find solutions
4. To clarify the Intellectual Property issues in the cyber space and the growth and development of the law in this regard
5. To educate about the regulation of cyber space at national and international level.

UNIT-I

Introduction-Cyber Security, Issues and Challenges of Cyber Security, Architecture of Cyberspace, Intervention Strategies: Redundancy, Diversity and Autarchy, Cyberspace: Definition, Overview of Communication and Web Technology, Internet, World Wide Web , Advent of Internet, Nature of Internet, Internet Infrastructure for Data Transfer, Internet and Society, Need of cyber law, Regulation of Cyberspace, Key Regulatory issues in India, Regulation via Software, Regulation via Hardware, Application of Common Law Principles for Internet Regulation, Private Regulation, Human Rights in Cyberspace, Freedom of Expression, Privacy, Anonymity, Harassment and defamation, Economic Rights, IPR, Jurisdiction, Protecting Human Dignity in the Digital Age, Commercialization of the Internet.

UNIT- II

Legal Perspectives of Cybercrimes and Cyber security,Originand state of cyber crime, Cybercrime and the Legal Landscape around the World, Need Cyber laws, The Indian IT Act and its Amendments, Challenges to Indian Law and Cybercrime Scenario in India, Consequences of IT Act, Weakness in Information Technology Act, Digital Signatures and the Indian IT Act, Cybercrime and Punishment, Data Privacy, Data Security,Big Data Security: issues and challenges, General Data Protection Regulations (GDPR), Personal Data Protection Bill and its Compliance,Data Protection Principles, Data Protection Officer, Incident Management and Business Continuity, Contract Act, Trademark Act, Copyright, Patents

UNIT- III

Cybercrime Targeting Computer Systems – Data Diddling, Attacks, Spy Ware, Logic Bombs, Email Scam and Phishing, Theft, Obscene Content, Cyber bullying, Cyber grooming, Online job

fraud, Online sextortion, Vishing, Sexting, Smshing, Sim Swap scam, Debit/Credit card fraud, Impersonation and identity theft, Data breach, Denial of services /distributed dos, Website defacement, Cyber-squatting, Pharming, Cryptojacking (crypto Currency), Online Drug Trafficking, Espionage Act, Cyber Law in perspective Advanced Technology: IOT, AI, Machine Learning, BlockChain and Social Media & Social Defamation

UNIT- IV

Law for DarkNet,Cybercrime Against Persons- Child Pornography/ Child Sexually Abusive Material (CSAM), Cyber Stalking and Its Type, Phishing and Its Type, Ethics And Its Important, Legal Developments, Cyber Security In Society, Online Cyber Crime Reporting,

UNIT- V

Cybercrime Targeting Countries – Cyber Terrorism, International Response to Cybercrime, Digital Evidence and Computer Forensics, Regulation and Jurisdiction for global Cyber security, Copy Right- Source of Risks, Pirates, Internet Infringement, Fair Use, Postings, Criminal Liability, Malware Analysis: -Spamming, SMSware, Malware, Adware, Ransomware, Virus, Worms &Trojans

Course Outcomes:

1. Understanding concepts related to cyber world and cyber law in general
2. Develop competitive edge on various facets of cyber crimes
3. Problems arising out of online transactions and provoke them to find solutions
4. Intellectual property issues in the cyber space and the growth and development of the law

Text Books:

1. Sunit Belapure and Nina Godbole, Cyber Security: Understanding Cyber Forensics And Legal Perspectives, Wiley India Pvt. Ltd, 2011.Crimes, Computer
2. Mark F Grady, Fransesco Parisi, “The Law and Economics of Cyber Security”, Cambridge University Press, 2006
3. Jonathan Rosenoer, “Cyber Law: The law of the Internet”, Springer-Verlag, 1997.

Reference Books:

1. Kumar K -Cyber Laws: Intellectual Property & E Commerce, Security, Dominant Publisher
2. Information Security Policy & Implementation Issues, NIIT, PHI
3. Marine R.C.- Cyber Crime Impact in the New Millennium, Auther Press

Mandsaur University

Subject Name	L	T	P	Credits
Principles of Virtualization	3	-	-	3

Course Objectives:

- Providing knowledge about Server virtualization
- Learn the deployment and management of virtualized servers, deploying desktop, application and network virtualization.
- Understand the basic concepts of Cloud Data Security.
- Provides the basics of virtualization and Cloud Security.
- Providing knowledge in Cloud Trust Protocol & Transparency and Cloud Controls Matrix.

Unit-1:
Understanding Virtualization, Need of Virtualization and Virtualization Technologies: Server Virtualization, Storage Virtualization, I/O Virtualization, Network Virtualization, Client Virtualization, Application virtualization, Desktop virtualization, Understanding Virtualization Uses: Studying Server Consolidation, Development and Test Environments, Helping with Disaster Recovery.

Unit-II:
Configure the BIOS to support hardware virtualization; Install and configure Windows Virtual
PC: installing Windows Virtual PC on various platforms (32-bit, 64-bit), creating and managing virtual hard disks, configuring virtual machine resources including network resources, preparing host machines; create, deploy, and maintain images.

Unit-III
Prepare and manage remote applications: configuring application sharing, package applications for deployment by using RemoteApp, installing and configuring the RD Session Host Role Service on the server.

Unit-IV
Access published applications: configuring Remote Desktop Web Access, configuring role based
application provisioning, configuring Remote Desktop client connections. Configure client settings to access virtualized desktops: configuring client settings.

Unit-V
List of virtualization Software available. Vmware- introduction to Vsphere, ESXi, CenterServer and Vsphere client. Creating Virtual Machine. Introduction to HYPER-V role. Create Virtual Machines. Create Hyper-v virtual networking, Use virtual Machine Snapshots. Monitor the performance of a Hyper-v server, Citrix XENDesktop fundamentals

Reference Books:

1. Virtualization with Microsoft Virtual Server 2005 by TwanGrotenhuis, RogierDittner, Aaron Tiensivu, Ken Majors, Geoffrey Green, David Rule, Andy Jones, Matthijs ten Seldam, Syngress Publications, 2006
2. Virtualization--the complete cornerstone guide to virtualization best practices, Ivanka Menken, Gerard Blokdijk, Lightning Source Incorporated, 2008
3. Virtualization: From the Desktop to the Enterprise, Chris Wolf, Erick M. Halter, EBook, 2005

Course Outcomes:

- Basics of virtualization and Cloud Security
- Knowledge in Cloud Trust Protocol & Transparency and Cloud Controls Matrix.
- Understanding Legal Aspects in impacting Cloud Security And Privacy.

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Subject Name	L	T	P	Credit
Introduction to Python	3	1	4	6

Course Objectives:

- Basics of Python programming.
- Decision Making and Functions in Python.
- Object Oriented Programming using Python.
- Files Handling in Python.
- GUI Programming and Databases operations in Python.

UNIT-I

Introduction, Origin, Comparison, Comments, Operators, Variables and Assignment, Numbers, Strings, Lists and Tuples, Dictionaries, if Statement, while Loop, for Loop and the range(),String and regular expressions. Module: Importing Module, Math Module, The sys Module, Random Module, and Package.

UNIT-II

Functions: Defining a function, calling a function, Types of functions, Function Arguments, Anonymous functions, Built-in functions, Lists and Tuple: Introduction to List and Tuple, Accessing List and Tuple, Operations, working with List and Tuple, Function and Methods. Dictionaries: Working with dictionaries, properties and functions.

UNIT-III

Object oriented programming and classes in Python - creating classes, instance objects, accessing members, Data hiding (the double underscore prefix), Built-in class attributes, Garbage collection: the constructor, Overloading methods and operators, Inheritance-implementing a subclass, overriding methods, Exceptions: try Statement, Exception Propagation, Except Clause, Try, Finally Clause, User Defined Exception, The raise statement.

UNIT-IV

Creating files, Operations on files (open, close, read, write), File object attributes, file positions, Listing Files in a Directory, Testing File Types, Removing Files and Directories, Copying and Renaming Files, Splitting Path names, Creating and Moving to Directories, Traversing Directory Trees, Illustrative programs: word count, copy file.

UNIT-V

Tkinter module, widgets and basics, Component, layout options, Button, Label, Entry, Listbox, Radio button, Check button, Scrollbar, Container Widgets: Frame, Event handling, Keyboard events, Mouse events etc. Introduction to MySQL, PYMYSQL Connections, using connect, cursor, execute & close functions, reading single & multiple results of query execution, executing different types of statements, understanding exceptions in database connectivity.

Reference Books:

1. Python Essential by David M. Beazly.
2. Python Pocket by Mark Lutz.
3. Barry, Paul, Head First Python, 2nd Edition.
4. Python: The Complete Reference.

Course Outcomes:

- Describe the Numbers, Math functions, Strings, List, Tuples and Dictionaries in Python.
- Implement application using list, set operation and using python.
- Apply Object Oriented Programming using Python.
- Understand and summarize different File handling operations.
- Develop GUI based applications and database connectivity programming using python.

List of Experiments

1. Write a program to convert temperature from Fahrenheit to Celsius depending upon user choice.
2. Write a program to use dictionary and its functions in python.
3. Write a program to check whether given no is prime or not.
4. Write a program to implement list and use its methods.
5. Write a program to implement tuple and use its methods.
6. Write a program to import module and use it.
7. Write a user defined function to implement factorial of a given no.
8. Write a program to show the use of anonymous functions.
9. Write a program to calculate area of rectangle and circle using class.
10. Write a program to implement single level inheritance.
11. Write a program to overriding method.
12. Write a program to implement double underscore methods.
13. Write a program to implement Exception Handling.
14. Write a program for user defined exception.
15. Write a program to copy a file.
16. Write a program to count no. of words in a file.
17. Write a program to make Login GUI in Tkinter.
18. Write a program to make registration form GUI in Tkinter.
19. Write a program to connect with database and perform insert operation.

20. Write a program to perform select operation on database.
21. Write a program to perform delete operation on database.
22. Write a program to perform update operation on database.

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Subject Name	L	T	P	Credit
Web App Pentesting	3	1	4	4

Course Objectives:

- To acquire knowledge on standard algorithms used to provide confidentiality, integrity and authenticity.
- To design security applications in the field of Information technology.
- To understand the fundamentals of database design, DB security and SQL extensions to security.
- To learn the basic concepts of Penetration testing.

Unit-I Introduction to Web Applications

HTTP/S Protocol Basics, HTTP RequestHTTP Response, HTTP, Header Field Definitions, HTTPS, Charset, ASCII, Unicode, Charset vs. Charset Encoding, Unicode Encoding, HTML Encoding HTML Entries, URL Encoding (percent encoding), Base64, Same Origin: Origin definition, what does SOP protect from?How SOP works, Exceptions, Windows.location, Document. domain, Cross window messaging, Cross Origin Resource Sharing, **Cookies:** Cookies Domain, specified cookie domain, Unspecified cookie domain, Internet Explorer Exception, Inspecting the Cookie Protocol, Login, Set-Cookie, Cookie, Cookie Installation, Correct cookie installation, Incorrect cookie installation, **Sessions:** Web Application Proxies, Burp Suite, OWASP ZAP

Unit-II Information Gathering

Information Gathering: Gathering information on your target, Finding owner, IP, and emails, **Whois**: Command line, Web-based tool, DNS, Nslookup, Find target ISP, Netcraft, Infrastructure, Fingerprinting the web server, Netcat, What Web, Wappalyzer, Web server modules, Enumerating subdomains, Netcraft, Google, Subbrute, Dnsrecon, The Harvester, Zone transfer, Finding virtual hosts, Fingerprinting frameworks and applications, Third party add-ons, Mapping results, Fingerprinting custom applications, Burp target crawler, Creating a functional graph, Mapping the attack surface, Client side validation, Database interaction, Ile uploading and downloading, Display of user-supplied data, Redirections, Access control and login-protected pages, Error messages, Charting, Enumerating resources, Crawling the website, Finding hidden files, Back up and source code, Enumerating users accounts, Map, Relevant information through misconfigurations, Directory listing, Log and configuration files, HTTP verbs and file upload, Google hacking, Search operators, Shodan HQ

Unit-III Cross-Site Scripting

Cross-Site Scripting, Basics, Anatomy of an XSS Exploitation, the three types of XSS, Reflected XSS, Persistent XSS, DOM-based XSS, Finding XSS, Finding XSS in PHP code, XSS Exploitation, XSS and Browsers, XSS Attacks, Cookie Stealing through XSS, Defacement, XSS for advanced phishing attacks, BeEF, Mitigation, Input Validation, Context-Aware output encoding, never trust user input

Unit-IV Penetration Testing

-Principles and concepts, PT work flows and examples, blind tests, ethical hacking techniques, synthetic transactions, interface testing and fuzzing, SDLC phases and security mandates

Unit-V Authentication and Authorization

Introduction, Authentication vs. Authorization, Authentication factors, Single-factor authentication, Two-factor authentication, Common Vulnerabilities, Credentials over unencrypted channel, Inadequate password policy, Dictionary attacks, Brute force attacks, Defending from inadequate password policy Strong password policy, Storing hashes Lockout/Blocking requests, User enumeration, Via error messages, Via website behavior, Via timing attacks, Taking advantage of user enumeration, Default or easily-guessable user accounts, The remember me functionality, Cache browser method, Cookie method, Web storage method, Best defensive techniques

Reference Books

1. The Web Application Hacker's Handbook: Finding and Exploiting Security Flaws 2nd Edition **by** Dafydd Stuttard.
2. Penetration Testing: A Hands-On Introduction to Hacking 1st Edition by Georgia Weidman
3. Practical Web Penetration Testing by Gus Khawaja, O'Reilly publications

Course Outcomes:

At the end of the course, student will be able to

- Explain threats, vulnerabilities and breaches to design database
- Discuss Relational Data Model and concurrency controls and locking, SQL extensions to security
- Demonstrate the Browser security principles.
- How to provide software centric security and mobile web browser security in real time applications
- Construct the penetrating testing workflows with example

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Subject Name	L	T	P	Credits
Server Operating System - II	-	-	8	4

Course Objectives:

- Provides the knowledge and skills necessary to plan and implement a Windows Server 2012 and Windows Server 2012 R2 environment.
- It provides Students the most important job tasks for Server Administrators who are responsible for the planning, operations, and day-to-day maintenance of Windows Server 2012 and Windows Server 2012 R2 servers in the enterprise
- Network foundation from which you can centrally manage settings on your computers that are based on the Windows® operating system.
- The students will have the functional knowledge of configuring core network services and the active directory of Windows Server.

List of Experiments

- Hyper-V – Creating and configuring virtual machines
- Hyper-V – Creating and configuring virtual machine storage
- Hyper-V – Creating and configuring virtual networks
- Configure Network Load Balancing (NLB)
- Configure failover clustering
- Manage Virtual Machine (VM) migration
- Configure advanced file services
- Implement Dynamic Access Control (DAC)
- Configure and optimize storage
- Configuring Windows server backup tool
- Bare metal recovery
- Understanding Windows booting and troubleshooting booting issues
- Configuring Hyper-V site level fault tolerance
- Active Directory Forest trust relationship
- Active Directory sites and services
- Active Directory Certificate services
- Active Directory Rights Management Services (ADRMS)
- Configuring CA backup and recovery
- Design an automated server installation strategy

- Understanding virtual server deployment

Course Outcomes:

- Configuring Hyper V for virtual machines, virtual network, virtual network.
- Plan about the server infrastructure and key aspects of the implementation, management and maintenance of Active Directory and Network Infrastructure.
- Install and configure windows server 2012.
- Configure local storage and other services like file sharing.
- Learn about configuring Active Directory.