

M.Sc. in Cyber Security (MSCS)

Duration: 02 Years

Total credit: 72

1st Semester (MSCS)			
Theory			
Course Code	Course Title	(T-L-P)	Credit
CSP-10	Operating System Basics	T	02
CSP-11	Data Communication & Networking	T	04
CSP-12	Information Security	T	04
Total Theory Credits			10
Project / Laboratory			
CSPL-10	Operating System Basics Lab	L	02
CSPL-11	Data Communication & Networking Lab	L	02
CSPL-12	Information Security Lab	L	02
Total Project / Laboratory Credits			06
TOTAL SEMESTER CREDITS			16

2nd Semester (MSCS)			
Theory			
Course Code	Course Title	(T-L-P)	Credit
CSP-13	Application Cyber Security	T	04
CSP-14	Network Cyber Security	T	04
CSP-15	Web Technology	T	02
Total Theory Credits			10
Project / Laboratory			
CSPL-13	Application Cyber Security Lab	L	02
CSPL-14	Network Cyber Security Lab	L	02
CSPL-15	Web Technology Lab	L	02
Total Project / Laboratory Credits			06
TOTAL SEMESTER CREDITS			16
TOTAL CUMULATIVE CREDITS			32

3rd Semester (MSCS)			
Theory			
Course Code	Course Title	(T-L-P)	Credit
CSP-16	White Hat Hacking	T	04
CSP-17	Security Analysis and Reporting	T	04
CSPE-01	Application development using PHP	T	02
Total Theory Credits			10
Project / Laboratory			
CSPL-16	White Hat Hacking Lab	L	02
CSPL-17	Security Analysis and Reporting Lab	L	02
CSPEL-01	Application development using PHP Lab	L	02
CSPP-04	Project Work	P	04
Total Project / Laboratory Credits			10
TOTAL SEMESTER CREDITS			20
TOTAL CUMULATIVE CREDITS			52

4th Semester (MSCS)			
Theory			
Course Code	Course Title	(T-L-P)	Credit
CSP-18	E-Governance & Case Studies	T	04
CSP-19	Cyber law and Regulation of Cyberspace	T	04
CSPE-02	Programming in Java	T	04
CSPE-03	Programming in Python	T	02
Total Theory Credits			14
Project / Laboratory			
CSPL-18	E-Governance & Case Studies Lab	L	02
CSPEL-02	Programming in Java Lab	L	02
CSPEL-03	Programming in Python Lab	L	02
Total Project / Laboratory Credits			06
TOTAL SEMESTER CREDITS			20
TOTAL PROGRAMME CREDITS			72

1st Semester

Theory Syllabus

CSP-10 : OPERATING SYSTEM BASICS (2 Credit)	
Block-1	Windows Operating System
Unit-1	Introduction, Operating System Concept and its Types, Function of OS, Evolution of Operating Systems, Introduction to Windows, Version of Windows, Operating System Administrator, My Computer, Recycle Bin, Desktop, Drives, create a directory/folder, rename/change to a directory/folder, creating a file in a directory/folder, Make the file read only, Make the file/directory hidden, Editing a file in a directory/folder, Delete a file in a directory/folder.
Unit-2	Listing the files in the directory, Create a file, Copy a file from one directory to the other, Deleting all files from a directory/folder, Deleting a director/folder, Formatting a hard disk and loading operating system, Domain, workgroup, Active Directory, User Management, Network Setting, Services, IIS Configuration
Block -2	Linux Operating System
Unit -1	Introduction, History of Linux, Distributions of Linux, Devices and drivers, File system Hierarchy, The components: Kernel, Distribution, XFree86, Sawfish, Gnome, The command line commands, File, management commands, Working with nano, Working with help (man).
Unit -2	SSH and X-forwarding, Managing compressed archives with zip and tar, Working with GNU screen, How to add users and groups, working with su, working with sudo, Changing user password, Printing, Installing software with Yum, Yast, Rpm, Installing webmin.

CSP-11 : DATA COMMUNICATION & NETWORKING (4 Credit)	
Block-1	Introduction to Data communication and Networking
Unit-1	Fundamentals of data communication and networking
Unit-2	Network Reference Models: OSI and TCP/IP Models
Unit-3	Transmission media and network devices
Block -2	Physical and data link layer functionalities
Unit -1	Analog and Digital Signals
Unit -2	Encoding
Unit -3	Multiplexing and Switching: FDM,TDM,WDM,SDM, Message Switching and Circuit Switching and Packet Switching
Unit -4	Data Link Control Protocols: Token Passing, CSMA/CD,CSMA,CSMA/CA
Block -3	Internet Protocols and Services
Unit-1	Network Layer : Internetworking, and IP addressing, ARP, RARP,ICMP,IGMP
Unit-2	Transport Layer protocols: TCP& UDP
Unit-3	Application Layer protocols: HTTP, HTTPs, SMTP, POP, DNS, TELNET, FTP
Unit-4	Internet and its Services: Intranet, Extranet, www, Email

CSP-12 : INFORMATION SECURITY (4 Credit)

Block-1	Information Security Concepts and Cryptography
Unit-1	Information Security Concepts: Information security issues, goals, architecture, Attacks, Security Services and Mechanisms.
Unit-2	Introduction to Cryptography: Network security model, Cryptographic systems, Cryptanalysis, Steganography. Types of Cryptography: Symmetric key and Asymmetric Key Cryptography, Encryption and Decryption Techniques.
Unit-3	Cryptographic Algorithms: Cryptographic hash, Message Digest, Data Encryption Standard, Advanced Encryption Standard, RSA(Introductory concepts only)
Block-2	Security Threats and Vulnerabilities
Unit-1	Overview of Security threats and Vulnerability: Types of attacks on Confidentiality, Integrity and Availability. Vulnerability and Threats.
Unit-2	Malware: Viruses, Worms, Trojan horses
Unit-3	Security Counter Measures; Intrusion Detection, Antivirus Software
Block-3	Ethical Issues in Information Security & Privacy
Unit-1	Information Security, Privacy and Ethics
Unit-2	Cyber Crime and Cyber Terrorism
Unit-3	Hacking: Ethical issues, Ethical Hacking

Practical Syllabus (MSCS)

1st Semester

CSPL-10: OPERATING SYSTEM BASICS LAB (2 Credit)			
Windows OS			Linux OS
1	Windows 7 installation	16	Red Hat Linux Installation
2	File and folder management in Windows	17	Linux Installation using Ubuntu
3	Create a file in windows	18	Linux Installation using Open Suse
4	Create a folder in Windows	19	Working with Linux Graphical User Interface
5	Copy a file to a folder	20	Working with terminal mode
6	Move a file to a folder	21	Basic Linux commands used in terminal Mode
7	Rename a file/ folder	22	Creating a file using Nano
8	Delete a file / folder	23	Working with the su command
9	Make a file read only	24	Working with sudo
10	Hide the file and unhide the file in Win 7	25	User and group management
11	Working with the command prompt	26	Working with Permissions
12	Steps to create user accounts	27	Installing Software with Rpm
13	Changing Your Password	28	Working with Yum
14	Changing Your Picture	29	Yast
15	Creating a Password-Reset Disk	30	Webmin
		31	Data compression in Linux

CSPL-11 : DATA COMMUNICATION & NETWORKING LAB (2 Credit)	
Expt-1	To study about different physical equipment's used for networking
Expt-2	To study different internetworking devices in a computer network
Expt-3	To study the working of Basic Networking Commands
Expt-4	To assign IP address to the PC connected to the internet
Expt-5	To connect the computers in Local Area Network
Expt-6	Creating a Network topology using CISCO packet tracer software

CSPL-12 : INFORMATION SECURITY LAB (2 Credit)	
Expt-1	To study the Private Key and Public Key cryptographic systems.
Expt-2	To study the classical encryption techniques: substitution and transposition
Expt-3	To analyze the encryption and decryption of RSA – Public Key Cryptography Algorithm
Expt-4	To study working of Intrusion detection System (IDS) tool
Expt-5	To study the prevention mechanisms to avoid Virus and other Malware in one's PC
Expt-6	To study the prevention mechanisms to protect one's PC from Hackers