Appendix B

B.Sc.IT (Cyber Security)-IV Detailed Syllabus

Ganpat University ॥ विद्या समाजोत्कर्षः ॥	**GANPAT UNIVERSITY**

FACULTY OF COMPUTER APPLICATIONS				
Programme	B.Sc.IT (Cyber Security)	**Branch/Spec.**	Computer Applications	
Semester	IV	**Version**	1.0.0.0	
Effective from Academic Year	2020-21	**Effective for the batch Admitted in**	June 2019	
Subject Code	U64A1WSS	**Subject Name**	WINDOWS SYSTEM SECURITY	

Teaching scheme					Examination scheme (Marks)			
(Per week)	Lecture (DT)		Practical (Lab.)		Total		CE	SEE	Total
	L	TU	P	TW				
Credit	3	-	2	-	5	Theory	40	60	100
Hours	3	-	4	-	7	Practical	20	30	50

Objective:

To aware students about windows file system, registry and internet internals which will be helpful for identifying security breaches and forensic purpose.

Pre-requisites:

Basic concepts of Windows Operating System, File Operations and Internet Basic Terminology.

Learning Outcome:

After completing this course, students should be able to learn:
- ✓ Data structure of NTFS file system
- ✓ All user activity traces on operating system
- ✓ Hidden data and deleted data identification
- ✓ Internals of Windows Registry and its values
- ✓ User activity traces over internet and security fundamentals for internet

Content:

Unit		Hrs
1	**Windows Booting and File System:** Booting Process of Windows OS, Introduction to File System, Types of File System, Overview of NTFS File System, NTFS Internal Files, Master File Table (MFT), Standard Information Attribute, Filename Attribute (FNA), Data Attribute, NTFS File Deletion, File System Metadata, Resident and Non-resident Files	9
2	**User Activity Aircraft:** System Logging and Logoff Activity, Windows Event Logging, Link Files, Prefetch	10

	Files, Installed Programmes, Thumbnail Cache Files, Printer Files, Recycle Bin, Connection of External Devices, Pagefile.sys and Hiberfil.sys, Add/Remove Hardware Activity		
3	**Deletion, Destruction of Data and Hiding the Data** Data Destruction, Defragmentation, File Deletion, Slack Space, Hiding the Data into Slack Space	8	
4	**Windows Registry Fundamentals:** Windows Registry, Registry Usages, Process Control, Registry Data Types, Local Structure, Trouble shooting, Registry Problems, Registry Internals, Services, Applications, User Accounts, Service Control Manager, Windows Management, Group User Policy, Windows Log Analysis, Command line Utility	9	
5	**Internet Activity Analysis and Security:** Understanding different data stores in various Web-browsers: Cache Files, Stored Passwords, Cookies, Downloads, History, Bookmarks. Stored Data of Instant Messenger Applications : Skype Stored Data, Windows Live Messenger Stored Data	9	

Practical Content:

List of programs specified by the subject teacher based on above mentioned topics

Reference Books:

1	File System Forensic Analysis – By Brian Carrier, Addison Wesley Professionals
2	Handbook of Digital Forensics and Investigation – By Eoghan Casey, Elsevier Academic Press

MOOC

1	https://www.edx.org/course/windows-10-security-features-2
2	https://www.edx.org/course/planning-a-security-incident-response-2

Question Paper Scheme:

University Examination Duration: 3 Hours

Note for Examiner: -

Q-1 must be common from any topics from syllabus.

Q-2 and onwards must be from specific topics and internal choice or option can be given.

SECTION – I

Q-1 (Attempt any Five Out of Seven: each question must be 6 marks) – 30

   Questions must be covered all possible section.

SECTION – II

Q-2 (Must be from topics: 1 and 2 (6+6))

Q-3 (Must be from topics: 3 and 4(6+6))

Q-4 (Must be from topic: 5(6))

GANPAT UNIVERSITY

FACULTY OF COMPUTER APPLICATIONS

Programme	B.Sc. IT(Cyber Security)	Branch/Spec.	Computer Applications
Semester	IV	Version	1.0.0.0
Effective from Academic Year	2020-21	Effective for the batch Admitted in	July 2019
Subject Code	U64A2ADS	Subject Name	ADVANCE DATABASE MANAGEMENT SYSTEM

Teaching scheme					Examination scheme (Marks)			
(Per week)	Lecture (DT)		Practical (Lab.)		Total		CE	SEE	Total
	L	TU	P	TW				
Credit	3	-	2	-	5	Theory	40	60	100
Hours	3	-	4	-	7	Practical	20	30	50

Objective:

To learn the advance concepts of Relational Database Management System. This course provides a practical hands-on introduction of PL/SQL and various Oracle Objects.

Pre-requisites:

One should have Basic Knowledge of SQL and Database.

Learning Outcome:

After completing this course, students should be able to learn:
- ✓ Advance database concepts necessary for Transaction Management and Distributed Database
- ✓ PL/SQL Language with various control structures and use of all types of cursor in PL/SQL Block
- ✓ Use of various Oracle Objects
- ✓ Moving Data with the use of various options of Import/Export Command
  SQL *Loader facility with various loading methods

Content:

Unit		Hrs
1	**Transaction Management and Distributed Database:** Recovery :Introduction, Transactions, Transaction Recovery, System Recovery, Two-phase Commit Concurrency:Introduction, Three Concurrency Problems, Locking, The Three Concurrency Problems Revisited, Deadlock Security:Introduction, Discretionary Access Control, Mandatory Access Control, Data encryption Distributed Database:Introduction, Some Preliminaries, The Twelve Objectives, Problems of Distributed Database Systems	10
2	**PL/SQL Part – I:** Introduction to PL/SQL, Advantages of PL/SQL, The Generic PL/SQL block, The PL/SQL execution environment, PL/SQL Control Structure (Conditional, Iterative	10

	and Sequential Controls), PL/SQL Transactions: Oracle Transactions, Closing transactions, Introduction to Cursor, Implicit Cursor, Explicit Cursor, Cursor for loops, Parameterized cursor		
3	**PL/SQL Part – II:** Procedure and Function : Introduction and Advantages, Procedure Creation, Function Creation Package : Introduction and use of Package, Components of Package, Overloading of Procedure and Function through Package Trigger : Introduction and use of Triggers, Types of Trigger, use of Raise_Application_Error Procedure Exception and Error handling : Oracle's Named Exception Handlers, User Named Exception Handlers, User Defined Exception Handlers	10
4	**Moving Data:** Objectives of moving data, Moving Data: General Architecture, Directory Object: Overview, Creating Directory Objects, Data Pump: Overview, Data Pump: Benefits, Data Pump Export and Import: Overview, Data Pump Utility: Interfaces and Modes(3), Fine-Grained Object Selection, Advanced Feature: Sampling, Export Options: Files, Data Pump File Locations	7
5	**SQL *Loader:** Introducing SQL*Loader, Understanding the SQL*Loader Control File, Specifying the input file, Loading data into nonempty tables, Specifying the table to load, Describing fixed-width columns, Using SQL*Loader Data types, Describing delimited columns, Understanding the SQL*Loader Command, Loading Methods	8

Practical Content:	
List of programs specified by the subject teacher based on above mentioned topics	

Reference Books:	
1	Introduction to Database System by C. J. Date (8th edition)- Low Price Edition
2	SQL, PL/SQL: The Programming Language of Oracle by Ivan Bayross (3rd and 4th Edition) BPB Publications
3	Database System Concepts By Henry F. Korth (3rd Edition) TMH
4	Database System Using Oracle - A Simplified to SQL and PL/SQL by Nilesh Shah(2nd Edition)

MOOC	
1	https://nptel.ac.in/courses/106105175/
2	https://nptel.ac.in/courses/106104135/

Question Paper Scheme:	
	University Examination Duration: 3 Hours Note for Examiner: - Q-1 must be common from any topics from syllabus. Q-2 and onwards must be from specific topics and internal choice or option can be given. **SECTION – I** Q-1 (Attempt any Five Out of Seven: each question must be 6 marks) – 30 Questions must be covered all possible section. **SECTION – II** Q-2 (Must be from topics: 1 and 2 (6+6)) Q-3 (Must be from topics: 3 and 4(6+6)) Q-4 (Must be from topic: 5(6))

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FACULTY OF COMPUTER APPLICATIONS

Programme	B.Sc.IT(Cyber Security)		Branch/Spec.	Computer Applications	
Semester	IV		Version	1.0.0.0	
Effective from Academic Year		2020-21	Effective for the batch Admitted in		June 2019
Subject Code	U64A3WAD		Subject Name	WEB APPLICATION DEVELOPMENT AND SECURITY	

Teaching scheme					Examination scheme (Marks)			
(Per week)	Lecture (DT)		Practical (Lab.)		Tota l		CE	SEE	Total
	L	TU	P	TW					
Credit	3		2	-	5	Theory	40	60	100
Hours	3		4	-	7	Practical	20	30	50

Objective:

To learn about open source technologies used in web application development. Student will learn PHP, jQuery and web pentesting in PHP.

Pre-requisites:

One should have basic knowledge of JavaScript, HTML, CSS

Learning Outcome:

After completing this course, students should be able to:
- Create webpages in PHP.
- Work with MySQL database.
- Implement jQuery effects and animation methods to animate a web page.
- Implement security aspects in web application.

Content:

Unit		Hrs
1	**jQuery Basics** What is jQuery?, Why jQuery?, jQuery Syntax, jQuery Selectors, Event Handling, jQuery Effects, Animations, jQueryCallback functions, jQuery get/set Content and attributes, jQuery Add/remove Elements, jQuery Get and Set CSS classes, jQuery CSS method, jQuery Dimensions	9

2	**Introduction to PHP**	9
	Web-Technologies, Server side technologies, Web-server, Web-browser, Introduction to PHP, Future of PHP, Installation of PHP, adding PHP to HTML Syntax and variable, control and function, Passing information between page, String, Array and Array Function, Date Function.	
3	**Advance concept in PHP**	9
	File and File system Function, Session, Cookies, Exception and Error Handling	
4	**Database Connectivity using MySQL**	9
	PHP/MySQL Connection, PHP/MySQL Connection and function, Display Query in tables, Building forms from queries	
5	**Pen Testing on PHP**	9
	Introduction of Pentesting, Tools of Pentesting, Cross Site Scripting, Directory traversal, Test Upload of Unexpected File Types, Modify Form Fields, SQL Injection testing, Testing for Click jacking, PHP Code Injections	

Practical Content:

List of programs specified by the subject teacher based on above mentioned topics

Reference Books:

1	PHP 5 and MySQL Bible 1st edition by Tim Converse, Joyce Park, Clark Morgan Published by Wiley Publishing, Inc
2	Beginning PHP and MySQL 4th edition by W. Jason Gilmore, APress Publication
3	Head First jQuery by Ryan Benedetti, Ronan Cranley, O'Reilly Media Publisher
4	The Web Application Hacker's Handbook: Discovering and Exploiting Security Flaws 2nd edition by dafyddstuttard, Marcus pinto – Wiley Publishing, Inc

MOOC

1	https://www.udemy.com/course/php-mysql-tutorial/
2	https://www.coursera.org/learn/web-applications-php

Question Paper Scheme:

University Examination Duration: 3 Hours
Note for Examiner: -
Q-1 must be common from any topics from syllabus.
Q-2 and onwards must be from specific topics and internal choice or option can be given.
SECTION – I
Q-1 (Attempt any Five Out of Seven: each question must be 6 marks) – 30
    Questions must be covered all possible section.
SECTION – II
Q-2 (Must be from topics: 1 and 2 (6+6))
Q-3 (Must be from topics: 3 and 4(6+6))
Q-4 (Must be from topic: 5(6))

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FACULTY OF COMPUTER APPLICATIONS

Programme	B.Sc.IT(Cyber Security)		Branch/Spec.	Computer Applications	
Semester	IV		Version	1.0.0.0	
Effective from Academic Year		2020-21	Effective for the batch Admitted in		June 2019
Subject Code	U64A4CN2		Subject Name	COMPUTER NETWORK – II	

Teaching scheme					Examination scheme (Marks)			
(Per week)	Lecture (DT)		Practical (Lab.)		Total		CE	SEE	Total
	L	TU	P	TW				
Credit	3	-	-	-	3	Theory	40	60	100
Hours	3	-	-	-	3	Practical	-	-	-

Objective:

To learn about computer network and protocols with various types of services. The aim is to provide the knowledge of network administration and configuration.

Pre-requisites:

Types of Computer Network, OSI and TCP/IP Reference Model with Protocols and Basic Knowledge of Operating System.

Learning Outcome:

By the end of this module students should be able to
- ✓ Get the idea about of the windows 2019 server administration and management.
- ✓ Study about Mobile IP addressing in computer network communication.

Content:

Unit		Hrs
1	**Basics of Computer Networking** Work group model (Peer-to-peer Networks), Domain Model(Server-Based Networks), Types of Servers,FTP Server, Telnet, Remote Assistance, Remote Desktop Sharing,IP Allocation, Crimping,LAN creation in work group, Firewall, Basic Networking Command.	9
2	**Proxy Server and Router Configuration Protocols** Introduction to Proxy Server, Types of Proxies, Introduction to VLAN and types of VLANs, Intra Domain Routing Protocol: Distance Vector (RIP), Link State (OSPF), IGRP, Inter Domain Routing Protocol: Path Vector (BGP), Default routing, Static routing, Dynamic routing.	9
3	**Managing and Maintaining Windows Server 2019** Installation of windows server 2019, Introduction of server rolls, Features of active	9

		directory, DNS, managing users and managing group in active directory, DHCP,Group policy, Introduction to Domains, Domain controller and forests.	
4	**Managing Server 2019 services and Virtualization**		9
	Active directory lightweight directory services, Active directory certificate services, Active directory rights management services, Active directory federation services, Server virtualization, Backup and recovery in windows 2019 server.		
5	**Mobile Computers and Private Networks**		9
	Architecture of Mobile IP technology, Mobile IP addressing, Introduction to the Agents, Mobile host phases, Introduction to the Private Network, Virtual Private Network(Types of VPN, VPN Protocols), Network Address Translation(NAT).		

Reference Books:	
1	Microsoft Server 2008: Beginner 's Guide Marty Matthews, published by McGraw Hill
2	Cisco Certified Network Associate Study Guide (CCNA), SybexInc; Second Edition
3	TCP/IP Protocol Suite : B. A. Forouzan Fourth Edition

MOOC	
1	https://nptel.ac.in/courses/106105081/
2	https://nptel.ac.in/courses/106/105/106105183/

Question Paper Scheme:

University Examination Duration: 3 Hours

Note for Examiner: -

Q-1 must be common from any topics from syllabus.

Q-2 and onwards must be from specific topics and internal choice or option can be given.

SECTION – I

Q-1 (Attempt any Five Out of Seven: each question must be 6 marks) – 30

    Questions must be covered all possible section.

SECTION – II

Q-2 (Must be from topics: 1 and 2 (6+6))

Q-3 (Must be from topics: 3 and 4(6+6))

Q-4 (Must be from topic: 5(6))

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FACULTY OF COMPUTER APPLICATIONS

Programme	B.Sc. IT(Cyber Security)	Branch/Spec.	Computer Applications
Semester	IV	Version	1.0.0.0
Effective from Academic Year	2020-21	Effective for the batch Admitted in	July 2019
Subject Code	U64A5PSS	Subject Name	PRIVACY AND SECURITY IN SOCIAL MEDIA

Teaching scheme						Examination scheme (Marks)			
(Per week)	Lecture (DT)		Practical (Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	3	-	-	-	3	Theory	40	60	100
Hours	3	-	-	-	3	Practical	20	30	50

Objective:

The course intends to provide a good understanding of privacy and security issues on all main social media platforms.

Pre-requisites:

One should have Basic Knowledge internet.

Learning Outcome:

After completing this course, students should be able to learn:
- ✓ Basic privacy issues on social media.
- ✓ Advance security options on social media platforms.
- ✓ Various security concerns on social media platforms.

Content:

Unit		Hrs
1	**Social Media Platforms:** Basic of Digital marketing, Importance of Social media, Polish your profile, Business account, Social group, Forum, Social platform integration, Event Creation, Marketplace listing.	10
2	**Privacy Issues:** Fundamental of Social media privacy, General account settings, Basic and advanced privacy settings, Privacy protection guidelines, Trust, credibility and reputations in social systems	10

3	**Social media features:** Advertisement, insights, Post Job, New follow topics, Free and Paid Advertisement ,Collecting data from Online Social Media, challenges, opportunities, and pitfalls in online social networks	10
4	**Group and Forum:** Social networks, Media sharing network, discussion forum, Engagement rate, Social media marketing,	7
5	**Security:** Basics security of Social media, Cyber crime and Social media, Account hacking and impersonation, Stalking and harassment, Phishing & Identifying fraudulent entities in online social networks, Passwords and login, Advanced Security options.	8

Reference Books:	
1	Complete Guide to Internet Privacy, 2nd edition by Anonymity & Security Kindle Edition
2	Social Media Security: Leveraging Social Networking While Mitigating Risk : 2nd edition by Michael cross
3	Security and Privacy in Social Networks :YanivAltshuler, Yuval Elovici
4	Privacy in the Age of the Hacker: Balancing Global Privacy and Data Security Law : Cunningham, McKay
MOOC	
1	https://swayam.gov.in/nd1_noc20_cs31/preview
2	https://nptel.ac.in/courses/106106146/

Question Paper Scheme:
University Examination Duration: 3 Hours Note for Examiner: - Q-1 must be common from any topics from syllabus. Q-2 and onwards must be from specific topics and internal choice or option can be given. **SECTION – I** Q-1 (Attempt any Five Out of Seven: each question must be 6 marks) – 30   Questions must be covered all possible section. **SECTION – II** Q-2 (Must be from topics: 1 and 2 (6+6)) Q-3 (Must be from topics: 3 and 4(6+6)) Q-4 (Must be from topic: 5(6))

GANPAT UNIVERSITY

FACULTY OF COMPUTER APPLICATIONS

Programme	B.Sc. IT(Cyber Security)			Branch/Spec.		Computer Applications	
Semester	IV			Version		1.0.0.0	
Effective from Academic Year		2020-21		Effective for the batch Admitted in			June 2019
Subject Code	U64B6SQA		Subject Name		SOFTWARE QUALITY ASSURANCE		

Teaching scheme						Examination scheme (Marks)			
(Per week)	Lecture (DT)		Practical (Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	3	-	-	-	3	Theory	40	60	100
Hours	3	-	-	-	3	Practical	-	-	-

Objective:

To learn fundamentals of software testing. Students will learn testing tools and techniques, methods, defect management and reporting.

Pre-requisites:

One should have basic knowledge of software development life cycle, software quality.

Learning Outcome:

By the end of this module students should be aware about
- Fundamental of software testing and testing life cycle
- Different testing techniques
- Automation in testing with testing tools
- Defect management

Content:

Unit	Content	Hrs.
1	**Fundamental of Testing** Software Testing Overview, Advantages of Testing, Verification and Validation, Independent Verification and Validation, Static Vs. Dynamic Testing, Scope of Testing, Role of Tester, V-Model of Software Testing, Software Testing Life Cycle, Requirement Analysis and Prioritization, Ambiguity Review, Requirement Traceability Matrix, Requirement Based Testing.	9
2	**Testing Techniques** Levels of Testing, Alpha and Beta Testing, Black box Testing, White Box Testing, Functional and Non Functional Testing, Form level Validation, Field Level Validation, Inter Form Dependencies, Web Based Testing.	8

3	**Different Testing Types** Performance Testing, Volume, Stress and Load Testing, User Acceptance Testing, Security Testing, Usability Testing, Localization Testing, Documentation Testing, Regression Testing, Database Testing, Exploratory Testing, Mobile Application Testing.	9
4	**Test Management and Automation** Testing Guidelines, Test Strategy, Test Case Design, Test Design, Test Planning, Status Reports, Test Management, TPI, Test Execution Cycles. Test Automation,Skills Required for Automation, Challenges in Automation, Overview of Test Automation Tools, Advantages of Automation Tools, Working with Automation Tools.	10
5	**Defect Management and Reporting** Software Quality, Defect Overview, Origins of Defect, Taxonomy of Defect, Defect Life Cycle, Defect Management Process, Preparing Defect Report, Advantages of Good Defect Report, Defect Report Template, Defect Prevention, Test Matrix and Measurements.	9

Reference Books:	
1	Software Testing-Principles and Practices - By SrinivasanDesikan and Gopalswamy Ramesh, Perason Education
2	Effective Methods of Software Testing (3rd Edition) - By William E, Software Perry Wiley, India

MOOC	
1	https://nptel.ac.in/courses/106105150/
2	https://swayam.gov.in/nd1_noc19_cs71/preview

Question Paper Scheme:	
	University Examination Duration: 3 Hours **Note for Examiner:-** Q-1 must be common from any topics from syllabus. Q-2 and onwards must be from specific topics and internal choice or option can be given. **SECTION – I** Q-1 (Attempt any Five Out of Seven: each question must be 6 marks) – 30 Questions must be covered all possible section. **SECTION – II** Q-2 (Must be from topics: 1 and 2 (6+6)) Q-3 (Must be from topics: 3 and 4(6+6)) Q-4 (Must be from topic: 5(6))