

**SEMESTER- I**

Name of Program- M.Sc. Cyber Forensics

Subject Code	Category	SUBJECT NAME	Teaching & Evaluation Scheme								
			Theory			Practical		Th	T	P	Credits
			End Sem University exam	Two term	Teacher Assessment	End Sem University exam	Teacher Assessment				
MSCFN101	Computory	Basics of Cyber Crime and Investigation Tactics	60	20	20	0	0	5	0	0	5

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

\***Teacher Assessment** shall be based following components: Quiz/Assignment/Project/Participation in Class, given that no component shall exceed more than 10 marks.

**Learning Objectives:**

This course focusses on two aspect of cybercrime and its investigation.

Discuss about the basic of digital evidence and its management.

**Learning outcomes:**

Discuss data and identify data sources

Describe and discuss digital evidence

Compare and contrast the differences between digital evidence and traditional evidence

Discuss the ways in which digital evidence is authenticated

Describe and critique digital forensics process models

Critically evaluate standards and good practices for digital evidence and digital forensics

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## **UNIT-I**

### **Introduction to operating system**

Basics of operating system, memory structure, concurrency, scheduling, synchronization and memory management examples of operating systems-Windows and Linux. File system and networking. Introduction to file system, FAT12, FAT16, FAT32, NTFS, EXT2, EXT3, HFS, Basics of networking- types of topologies, LAN, MAN, WAN.

## **UNIT-II**

### **Cyber Crime -I**

Definition and types of computer crimes. Distinction between computer crimes and conventional crimes. Reasons for commission of computer crimes. Breaching security and operation of digital systems. Computer virus, and computer worm – Trojan horse, trap door, super zapping, logic bombs.

## **UNIT-III**

### **Cyber Crime - II**

Types of computer crimes – computer stalking, pornography, hacking, crimes related to intellectual property rights, computer terrorism, hate speech, private and national security in cyber space. An overview of hacking, spamming, phishing and stalking.

## **UNIT-IV**

### **Cyber Forensic Investigation I**

Seizure of suspected computer. Preparation required prior to seizure. Protocol to be taken at the scene. Extraction of information from the hard disk. Treatment of exhibits. Creating bitstream of the original media. Collection and seizure of magnetic media. Legal and privacy issues. Examining forensically sterile media. Restoration of deleted files. Password cracking and E-mail tracking. Encryption and decryption methods. Tracking users

## **UNIT-V**

### **Cyber Forensic Investigation II**

Introduction to Cyber forensic, Cyber forensic steps (Identification, Seizure, Acquisition, Authentication, Presentation, Preservation), Computer forensic expert, Cyber forensic

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investigation process, The goal of the forensic investigation, Internet usage exceeds norm, Using email inappropriately, Use of internet, email, or PC in a non-work-related manner, Theft of information, Violation of security policies or procedures, Intellectual property infractions, Electronic tampering), Establishing a basis or justification to investigate, Determine the impact of incident, Auditing V/s Cyber forensic investigations.

### **Suggested Reading:**

1. Digital Evidence and Computer Crime, Third Edition Eoghan Casey. Published by Elsevier Inc. All rights reserved.
2. Digital Evidence and Computer Crime, 2nd ed. :Eoghan Casey
3. Computer Forensics: Principles and Practices : Linda Volonino, Reynaldo
4. Computer Forensic Investigating Data and Image files by Ec-council
5. Computer forensic Nathan Clarke

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			End Sem	Univer	sity exam	Two term	Teacher	Assesse				
MSFSN101	Compulsory	Introduction to Forensic Science and Police Administration	60	20	20	0	0	5	0	0	5	

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

\***Teacher Assessment** shall be based following components: Quiz/Assignment/Project/Participation in Class, given that no component shall exceed more than 10 marks.

### Learning Objectives:

1. Organizational set up of a Forensic Science Laboratory.
2. Report writing and crime scene Management.
3. Different types of offences and Indian Penal system.
4. Organizational structure of police station and duties of police.

**Learning Outcomes:** after learning this subject student will be able to understand:

1. Organizational set up of a Forensic Science Laboratory.
2. Report writing and crime scene Management.
3. Different types of offences and Indian Penal system.
4. Organizational structure of police station and duties of police.

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## **UNIT I**

### **Forensic Science**

Introduction, Need, Scope, Concepts and Significance of Forensic Science, History and Development of Forensic Science, Laws and Basic principles of Forensic Science, Branches of forensic science, Organizational set-up of a Forensic Science Laboratory Investigative strategies. Expert testimony and eye-witness report.

## **UNIT II**

### **Crime Scene Management:**

The crime scene. Documentation, sketching, field notes and photography. Searching, handling and collection, preservation and transportation of physical evidences. Chain of custody and Reconstruction of scene of crime .Report writing.

## **UNIT III**

### **Criminal Law I**

Introduction to Indian Penal Code, IPC sections-240, 53, 63, 73, 76-79,84-86, 95-106, 279, 299-309, 375-377, 390-402, 420.

Introduction to Criminal Procedure Code, CrPC sections-2, 6-35, 41-60, 61-90,154-176,293-294.

## **UNIT IV**

### **Criminal Law II**

Bailable/non-bailable offences, cognizable/non cognizable, summon case and warrant cases. Indian Evidence Act: sections-3, 24-30, 45,135-138,141, Expert testimony.

NDPS Act, Food and Adulteration Act, Drugs and Cosmetic Act, Arms Act, Explosives Act.

## UNIT V

### Police Administration

History and development of police administration, Police duties, responsibilities and powers, Organizational structure of police station, maintenance of crime records and accountability of police to law, NCRB and BPR&D, People and society, Custodial deaths, Police and Human Rights.

### Reference Books:

1. Houck, M.M & Siegel, J.A; Fundamentals of Forensic Science, Academic Press, London, 2006.
2. Sharma, B.R; Forensic Science in Criminal Investigation & Trials, Universal Publishing Co., New Delhi, 2003
3. Nanda B.B and Tewari, R.K; Forensic Science in India-A Vision for the Twenty First Century, Select Publisher, New Delhi, 2001.
4. James, S. Hand Nordby, J.J; Forensic Science –An Introduction to Scientific and Investigative Techniques, CRC Press, USA, 2003.
5. Saferstein; Criminalistics-An Introduction of Forensic Science, Prentice Hall Inc, USA, 2007.
6. Barry, A.J .Fisher; Techniques of Crime Scene Investigation, 7th Ed, CRC Press, New York, 2003.
7. Nordby, J.& Reckoning, D; The Art of Forensic Detection, CRC Press New York, 2003.
8. G.R. Chatwal; Analytical Spectroscopy 2<sup>nd</sup> Edn, Himalaya Publishing House New Delhi, 2002.
9. Aitken and Stoney; The Use of Statistics in Forensic Science, Ellis Horwood, New York, 1991.
10. Robertson and Vignaux; Interpreting Evidence, John Wiley, New York, 1995.
11. H.L. Blitzer and J .Jacobia; Forensic Digital Imaging and Photography, Academic Press, London, 2002

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Name of Program- M.Sc. Cyber Forensics

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			Theory			Practical		Th	T	P	Credits
			End Sem University	Two term exam	Teacher Assessment	End Sem University	Teacher Assessment				
MCA 102	Compulsory	Computer Organization and Design	60	20	20	0	0	3	1	0	4

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

Q/A – Quiz/Assignment/Attendance, MST - Mid Sem Test.

**\*Teacher Assessment** shall be based on following components:

Quiz/Assignment/Project/Participation in class (Given that no component shall be exceed 10 Marks)

**Course Objectives:**

- To create basic understanding of Computer System Organization.
- To understand basic concept of Computer System architecture.
- To understand internal working, structuring, and implementation of a computer system.

**Course Outcomes:** After completion of this syllabus students will be able

- To understand computer organization structure and behaviour of a computer system.
- To understand how exactly all the units in the system are arranged and interconnected.

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- To understand functionalities of a Computer System Architecture in terms of instructions, addressing modes and registers.
- To understand internal working, structuring, and implementation of a computer system.

### **UNIT - I :**

Digital Computer and its types, Configuration(functional units) of Computer System, basic operational concepts, Capabilities, Limitations and applications of computers. Introduction of Number Systems like Binary, Octal and Hexadecimal number systems, Character Codes (BCD, ASCII, EBCDIC).

### **UNIT – II:**

Instruction formats, Instruction Cycle, Organization of Central Processing Unit, Hardwired & micro programmed control unit, Single Organization, General Register Organization, Addressing modes, data transfer & Manipulation, I/O Organization, Bus Architecture. Digital logic circuits: digital computer Logic gates, Boolean Algebra and its examples, K-map simplification.

### **UNIT – III**

Combinational circuit: Half Adder, Full Adder, concept of Flip-Flop. Digital components: integrated circuits, Decoders, Encoders, Multiplexer, De-multiplexers, Registers, Counters (synchronous & asynchronous), ALU, Micro Operation.

### **UNIT-IV**

Memory Organization: introduction to Memory units, memory Hierarchy design and its characteristics, types of main memory (RAM/ROM chips), types of RAM and ROM, Auxiliary memory (Hard Disk Drive), Associative memory, Cache memory, Virtual Memory.



## **UNIT-V**

Peripheral devices, I/O interface, Modes of Transfer, Priority Interrupt, Direct Memory Access, Input- Output Processor and Serial Communication. I/O Controllers, Asynchronous data transfer. Concept of 8-bit micro Processor (8085) and 16-bit Micro Processor (8086).

### **Text Books:**

1. David Patterson and John Hennessy, Computer Organization and Design: The Hardware/Software Interface, RISC-V Edition, Morgan Kaufmann / Elsevier, 13th April 2017.
2. Stallings, Computer Organization & Architecture :Designing for performance, Tenth Edition, Pearson Education, 2016.
3. Carl Hamacher, Zvonko Vranesic, Safwat Zaky and Naraig Manjikian, Computer Organization and Embedded Systems, Sixth Edition, Tata McGraw Hill, 2012.

### **Reference Books:**

1. John P. Hayes, Computer Architecture and Organization, Third Edition, Tata McGraw Hill, 2012.
2. John L. Hennessey and David A. Patterson, Computer Architecture – A Quantitative Approach, Morgan Kaufmann / Elsevier Publishers, Fifth Edition, 2012.
3. William Stallings, Computer Organization and Architecture – Designing for Performance, Eighth Edition, Pearson Education, 2010.

## SEMESTER- I

Name of Program- M.Sc. Cyber Forensics

Subject Code	Category	SUBJECT NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BCCA304	Compulsory	Operating Systems	3	1	0	4	60	20	20	0	0

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; Q/A – Quiz/Assignment/Attendance, MST - Mid Sem Test.

**\*Teacher Assessment** shall be based on following components: Quiz/Assignment/Project/Participation in class (Given that no component shall be exceed 10 Marks)

**Course Educational Objectives (CEOs):** The course is designed to make students:

- Familiar with design of operating systems as resource manager of a computer system
- Aware about the basic concepts of operating system architecture
- Understand about the concepts of processor management and memory management techniques
- Familiar with deadlock handling and inter-process communication
- Understand the device management.

**Course Outcomes (Cos):**

- The student will be able to understand the internal design of operating system.
- The student will be able to demonstrate operating system structure.
- The student will be able to demonstrate the scheduling and memory management techniques.
- The student will be able to understand the IPC and other techniques.
- The student will be able to understand device management system of computer.

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## UNIT I

Introduction to Operating System:- Objectives, functions and the services provided by Operating System. Evolution of operating system:-Batch processing, Multiprogramming, Multithreading, Time- sharing systems, Real Time, Distributed systems. Operating system structure:-System calls and system programs.

## UNIT II

Process Management: -Process concept, Process Control Block, Process states, Process scheduling, CPU scheduling: - Basic concept and scheduling criteria, Long term, medium term , short term schedulers, various Scheduling algorithms, Measurement of performance of processor.

## UNIT III

Memory management:-Logical and physical address spaces, Memory management without Swapping or Paging, Swapping and paging, Contiguous, allocation and its drawbacks, Non-contiguous allocation. Virtual memory: - Demand paging and its need, Performance of demand paging, Page replacement and its need, Thrashing and allocation of frames.

## UNIT IV

**Deadlocks:** - Characterization of deadlock, Methods of handling prevention, detection and avoidance, Recovery from deadlock.

**Case Study of Linux:** History, Features, Architecture of Unix and Linux, Linux Shell and kernel, Linux file system, simple shell commands, Editors, using Vi editors, working with files, absolute and relative paths.

## UNIT V

I/O system: - Various I/O devices, Device drivers, structure of I/O software, Transforming I/O request of h/w operation. Secondary storage structure:- Disk structure, Disk Scheduling algorithms ( First come first serve, shortest seek time first, SCAN, C-SCAN, LOOK and C-LOOK algorithms ), Disk management, Swap space management and Disk reliability.

### Text Books:

1. Silberschatz Galvin, Operating System concept, 5th edition.
2. D. M. Dhamdhare, System Programming and operating system, Tata McGraw Hill, 2nd edition.
3. Milan Milenkovi'c, Operating System concept and design, Tata McGraw Hill.
4. Tanenbaum, A.S. "Modern Operating System", Prentice Hall of India Pvt. Ltd..
5. William Stallings "Operating Systems" , Prentice Hall of India Pvt. Ltd.
6. Joshi R.C. "Operating System" Wiley Indi

## SEMESTER- I

Name of Program- M.Sc. Cyber Forensics

Subject Code	Category	SUBJECT NAME	Teaching & Evaluation Scheme									
			Theory				Practical		Th	T	P	Credits
			End Sem	Universit	Two term	Teacher Assessme	End Sem	Universit				
MSCFN1021	Elective	Cyber Psychology	60	20	20	0	0	4	0	0	4	

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

\***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

### Learning Objectives:

1. The Basic Psychological Qualities of Cyberspace
2. The Psychology of the Individual in Cyberspace
3. The Psychology of Cyberspace Relationships

**Learning outcomes:** upon completion of the subject student will be able to know the

1. The Basic Psychological Qualities of Cyberspace
2. The Psychology of the Individual in Cyberspace
3. The Psychology of Cyberspace Relationships
4. Group Dynamics in Cyberspace

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## **UNIT-I**

### **The Basic Psychological Qualities of Cyberspace**

Cyberspace as a psychological space - basic psychological features of cyberspace-Networks as "mind" and "self"-Presence. The online disinhibition effect -Psychology of avatars and graphical space- Cyberspace as dream world-Two Paths of Virtual Reality-The black hole of cyberspace Online lingo-Internet demographics -Cyberspace humor -Coping with spam -Social Psychology of Cyberspace: Self and community in the age of Internet.

## **UNIT-II**

### **The Psychology of the Individual in Cyberspace**

Identity management in cyberspace -Personality types in cyberspace-Unique roles in cyberspace-Transference to computers and cyberspace-Addiction to computers and cyberspace Regressive behavior in cyberspace-Online gender-switching-Adolescents in cyberspace-Wizards: The heart of an online community-On being a "god"-Y2K and apocalyptic thinking- Integrating online and offline living. An online psycho-educational program – Media transitions – Computer and Cyberspace addiction.

## **UNIT-III**

### **The Psychology of Cyberspace Relationships**

In-person versus cyberspace relationships-Transient and long term online relationships-The psychology of text relationships -Hypotheses about online text relationships-E-mail communication and relationships – Transference among people online – How to resolve conflict online – Cyberspace romances – Subtlety in multimedia chat. Assistive and augmentive technologies - Media: games, entertainment, and education - The future: the ultimate human-computer interface

## **UNIT-IV**

### **Group Dynamics in Cyberspace**

Social psychology of online groups-Developmental stages of mailing lists-Making virtual communities work-Early history of an online community-Wizards: The heart of an online community-Therapy and support groups in cyberspace-Unique groups in cyberspace-TextTalk: Communicating with typed text chat-A decision-making method for e-mail groups-Extending a work group into cyberspace - Using

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discussion boards in teaching-Group games using avatars-Geezer Brigade: Studying an online group- Managing deviant behavior in online groups – Online photo-sharing communities (flickr).

## **UNIT-V**

### **Research Methods and Computer therapies in Cyber psychology**

Publishing online - Case studies of digital life forms - One of Us: Participant observation research - Steps in studying an online group - Ethics in cyberspace research - Studying full cyberspace immersion - Computer mediated Therapy, Towards cyber psychology – theory and methods - Theoretical approaches: models and metaphors; Research: modes and methods; Sensory-motor interfaces: input and output; Learning and memory, transfer and interference; Cognitive psychology: thinking and problem solving; Interpersonal relations. Abnormal behavior and cyber therapies

### **Suggested reading**

1. Cyberpsychology, An Introduction to Human-Computer Interaction, University of Maryland, College Park.
2. Towards Cyber Psychology: Mind, Cognitions and Society in the Internet Age Amsterdam, IOS Press, © 2001, 2002, 2003

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**Semester-I (M.Sc.)****Name of Program M.Sc. (Cyber Forensic)**

Course Code	Course Name	TEACHING & EVALUATION SCHEME								
		THEORY			PRACTICAL		L	T	P	Credits
		End Sem University Exam	Two Term Exam	Teachers Assessment*	End Sem University Exam	Teachers Assessment*				
MSCFN1022	Cyber Criminology	60	20	20	0	0	4	0	0	4

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C -Credit;

**\*Teacher Assessment shall be based following Components: Quiz / Assignment / Project / Participation in Class, given that no component shall exceed more than 10 marks**

**Learning Objectives:** After studying this paper the students will know–

1. Sociological and Criminological Perspectives and theories of Cyber Criminology
2. Understand the contemporary forms of crimes
3. Basic concepts of Criminology
4. The role of the Criminal Justice System and victims in the prevention of cyber crimes

**Unit 1 :****Principles and Concepts of Cyber Criminology**

Crime, Tort, Misdemeanor, Cyber Space, Cyber Crime, Cyber Criminology, Information Security, Penetration Testing, Incident Response, GRC - Conventional crimes vs Cyber Crimes.

**Unit 2:****Contemporary Forms of Crimes**

White Collar Crimes, Economic Offences, Organized Crimes, Terrorism, Crime and Media and other contemporary forms of crimes.

**Unit 3 : Cyber Crime – Sociological and Criminological Perspectives**

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Causes of Cyber Crimes - Criminological Theories and Cyber Crime – Routine Activity Theory, Social Learning Theory, Differential Association Theory, Differential Opportunity Theory, Media and Crime and latest theories and other related theories.

#### **Unit 4: The Role of Police and Cyber Crimes**

Organizational structure of Police in India – Different wings in the States and Districts and their functions - Police & Law Enforcement – F.I.R. – cognizable and non-cognizable offences, bailable and non-bailable offences – arrest, search, seizure – Interrogation of suspects and witnesses – charge sheet – Intelligence system- Gathering intelligence, gathering evidence – oral, documentary and circumstantial – Police Act, 1861 – National Police Commission Reports (Modernization of Police) - Cybercrime cells – structure & functions, issues and problems in the investigation of cybercrimes cases – Important Case Studies.

#### **Unit 5: The Role of Judiciary and Cyber Crimes**

Judiciary- Different types of courts – Cyber Appellate Court / Tribunals / Powers – Proceedings in the court before trial, after trial, plea of guilty, sentencing, Cyber Crime Victims – Impact of Cyber Crimes on Victims, The Role of Victims of Cyber Crimes in the Criminal Justice Administration

#### **REFERENCES:**

1. Cyber Criminology: Exploring the internet crimes and criminal behaviour by K. Jaishankar, Illustrated Edition, CRC Press, 2011.
2. Cyber Law: Law of Information Technology and Internet by Anirudh Rastogi, L.L.M Harvard, 1st Edition, Lexis nexis Publication, 01 Sep 2014.
3. Computer Forensics and Cyber Crime by Britz M T, 3rd Edition, Pearson Education Publication, 2013
4. Cyber Crime: Issues, Threats and management by Jain Atul, 1st Edition, Isha books Publication, 15 Nov 2014.

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**Semester-I (M.Sc.)****Name of Program M.Sc. (Cyber Forensic)**

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MSFSN1052	E	Quality Management & Research Methodology	60	20	20	0	0	4	0	0	4

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

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**Course Objectives:** The course aims to provide the students with

1. To equip the students with the concept and Methods of Research.
2. To plan and Design Research using Scientific and Statistical Methods.

**Course Outcomes:** After studying this course, the students will

1. Be able to know the basics of Research
2. Be able to select research problem.
3. Be able to perform basic statistics used in research

**Unit 1: Quality Management System**

Quality Management System: Quality, Total Quality, Quality assurance, Quality Control, Quality Planning, and Quality Audit: Internal and External Audit, Accreditation, NABL, ISO, IEC, BIS.

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**Technical Requirements for testing and calibration of laboratories:** Test and calibration methods and their validation, measurements, standards and reference material, traceability, sampling.

### **Unit 2: Introduction to Research Methodology**

Meaning of Research, Objectives Of Research, Types Of Research, Significance Of Research, Problems Encountered By Researchers In India.

**Research problem:** Definition, Necessity and Techniques of Defining Research Problem, Research Proposal, Literature Search, Hypothesis, Report Writing.

### **Unit 3: Research Design:**

Meaning, Need and Features Of Good Research Design, Types Of Research Design, Basic Principles of Experimental Designs, Design Of Experiments, Synopsis Design For Research Topic.

**Sampling Design:** Sample Design, Census And Sample Surveys, Types Of Sampling Design, Sampling Errors Characteristics Of Good Sample Design.

### **Unit 4: Descriptive Statistics**

Types Of Data, Basic Concepts Of Frequency Distributions, Measure Of Central Tendency, Mean, Median And Mode, Measure Of Dispersion, Range, Mean Deviation And Standard Deviation. Correlation and Regression Analysis.

### **Unit 5: Methods of data collection**

Collection of Primary Data, Observation Method, Interview Method, Collection of Data through Questionnaire and Schedules, Other Methods. Collection Of Secondary Data, Selection Of Appropriate Method For Data Collection, Case Study Method , Guidelines For Developing Questionnaire, Successful Interviewing , Survey V/S Experiment.

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## **Suggested Readings:**

1. Garg, B.L., Karadia, R., Agarwal, F. and Agarwal, U.K., 2002. An introduction to Research Methodology, RBSA Publishers.
2. Sinha, S.C. and Dhiman, A.K., 2002. Research Methodology, Ess Ess Publications. 2 volumes.
3. Trochim, W.M.K., 2005. Research Methods: the concise knowledge base, Atomic Dog Publishing. 270p.
4. Wadehra, B.L. 2000. Law relating to patents, trademarks, copyright designs and geographical indications. Universal Law Publishing.
5. Malhotra Naresh K. (2008). Marketing Research. Pearson publishers, Latest Edition.
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7. Cooper Donald R and Schindler Pamela S. (2006). Business Research Methods. McGraw-Hill Education, Latest Edition. Shri Vaishnav Vidyapeeth Vishwavidyalaya Master of Technology (Computer Science and Engineering) Choice Based Credit System (CBCS)
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**SEMESTER- I****Name of Program- M.Sc. Cyber Forensics**

Subject Code	Category	SUBJECT NAME	Teaching & Evaluation Scheme								
			Theory			Practical		Th	T	P	Credits
			End Sem University exam	Two term exam	Teacher Assessment	End Sem University exam	Teacher Assessment				
MSCFN103	Compulsory	Lab-I	0	0	0	60	40	0	0	4	2

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

\***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

**PRACTICAL**

1. To recover data from any hard disk
2. To study different methods of encryption and decryption
3. To trace any e-mail and further examination
4. To perform cache forensics using NetScan Tool.
5. To perform forensic imaging using FTK imager
6. To perform file signature using Winhex
7. To perform autopsy forensics
8. To perform write-blocker using Winhex
9. To collection and seizure of magnetic media
10. Descriptive study of organizational structure of a forensic science laboratory.
11. Photography of crime scene using manual and digital camera.
12. Basics of crime scene sketching
13. To carry out sketching of indoor crime scene.
14. To carry out sketching of outdoor crime scene.
15. Methods for Searching of physical evidences at scene of crime.

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**SEMESTER- I**

Name of Program- M.Sc. Cyber Forensics

Subject Code	Category	SUBJECT NAME	Teaching & Evaluation Scheme								
			Theory			Practical		Th	T	P	Credits
			End Sem University exam	Two term exam	Teacher Assessment	End Sem University exam	Teacher Assessment				
MSCAN101	Compulsory	Lab-II	0	0	0	60	40	0	0	4	2

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical;

C - Credit; Q/A – Quiz/Assignment/Attendance, MST - Mid Sem Test.

\***Teacher Assessment** shall be based on following components: Quiz/Assignment/Project/Participation in class  
(Given that no component shall be exceed 10 Marks)

**Course Educational Objectives (CEOs):**

- To provide the knowledge of using different software packages including word processor, electronic spreadsheet, presentation s/w
- To develop an understanding of database management system
- To explain how to integrate the data stored in word processor, spreadsheet etc.
- To develop presentation skills using this software.
- To understand Linux operating system and execute the basic commands of Linux.

**Course Outcomes (COs): Students will be able to**

- To create word documents and to format them using various tools available
- To create tables and manipulate them
- To use mail merge, labels
- Creating spreadsheet for storing and managing data using functions
- Format, print spreadsheet
- Create power point presentation for different purposes using objects, animation
- To get the understanding of basic concepts and execution of basic Linux commands.

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## UNIT – I

**Word Processor:** Introduction, Word Processing, Advantages of word processing, Creating, Saving and editing a document: Selecting, Deleting, Replacing Text, Copying text to another file. Formatting Text and Paragraph: Using the Font Dialog Box, Paragraph Formatting using Bullets and Numbering in Paragraphs, Line spacing, Margins.

**Creating and Formatting Tables:** Changing Row height, inserting columns, Merging cells Calculations in a Table, Sorting Text, Toolbar using word art, Mail merge: Definition, a Practical Example of mail merge, creating charts.

## UNIT – II

**Defining Tabs:** Tabs Dialog Box, Enhancing a Document: Inserting page Breaks, Adding Border, Using Header and Footers in the Document.

**Spread sheet:** Introduction, Definition. Screen parts of worksheet, Entering information: Numbers, Formula, Editing Data in a cell, Using a Range with SUM, Moving and copying data, Inserting and Deleting Row and Columns in the worksheet, Using the format cells Dialog box.

## UNIT – III

**Presentation :** Introduction, Slide show, Formatting, Creating a Presentation, Inserting clip Arts, Adding Objects, Applying Transitions, Animation effects, formatting and checking text, Modifying Visual elements, Preparing a complete presentation, Case studies.

## UNIT – IV

**Overview of Linux :** What is Linux, Linux's, Common Linux Features, advantage of Linux, Overview of Unix and Linux architectures, Linux files system, hardware requirements for Linux, Linux Internals: Introduction, Process management, System Calls.

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## UNIT – V

**Linux File system :** Logging in, getting familiar with Linux desktop, shell interface, understanding Linux Shell, Types of Text Editors, using vi editor, prompt character, correcting typing errors, simple shell commands-date, cal, who, tty, uname, passwd, bc, script, echo, logging out, Environment variables, wild card characters, \*, ?, absolute and relative path, listing files and directories commands, navigating file system- pwd, cd, mkdir, rmdir, ls, pr, Handling ordinary files- cat, cp, mv, wc, rm, comm..., amp, diff, Basic files attributes – file permissions, changing permissions.

### List of Experiments:

1. To open and practice of OS – Folder related operations, My-Computer, window explorer, Control Panel,
2. To create, save and editing of Text files using word processor.
3. Formatting and printing of document ( setting of margins, size, orientation, different breaks etc. Checking of spelling and use of thesaurus)
4. Creating, inserting tables, header, footers, hyperlink, different objects in a document
5. Use of Charts in Word Processor.
6. Creating a mail merged documents, labels
7. Creating and manipulating spreadsheets. To create, save and editing of spreadsheets. Use of cell
8. references, sorting and filtering data in a spreadsheet, using formulae
9. Formatting and printing of spreadsheets (setting of margins, size, orientation, different breaks etc. What if analysis, mail merging

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10. Creating header, footers, hyperlink, different objects in a spreadsheet
11. Creating different types of graphs and printing
12. Creation, editing and formatting presentation slides.
13. Create presentation for different purposes using objects, animation
14. Study simple shell commands like date, cal, who, tty, uname, passwd. bc.
15. Study the use of commands pwd, cd, mkdir, rmdir, ls, pr.
16. Study how to use commands cat, cp, mv, wc, rm.
17. Study different types of text editors.
18. Study how to use vi editor.
19. Study how to correct typing errors.

#### **Text Books:**

1. Taxali R. K. "PC Software for Windows 98, Made Simple" TMH.
2. Saxena Sanjay, "MS Office 2000 "Vikas Publication House PVT LTD.
3. Busbby M. and Stultz R.A. "Microsoft Office 2000", BPB.
4. Jain S., Geetha M. and Kratika, "Microsoft Office-2007", BPB
5. Abraham Silberschatz, Peter Baer Galvin and Greg Gagne, "Operating System Principles", 7th edition, John Wiley & Sons Inc, 2006

#### **Reference Book:**

1. Microsoft Office – Complete Reference – BPB Publication.

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## SEMESTER- I

Name of Program- M.Sc. Cyber Forensics

COURSE CODE	Category	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM	Two Term	Teachers Assessment	END SEM	Teachers Assessment				
BTCS101		Computer Programming-I	-	-	-	30	20	-	-	2	1

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

\*Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class,given that no component shall exceed more than 10 marks.

### Course Objectives:

1. To introduce the fundamental concepts of computer programming.
2. To design programs in C involving different data types, decision structures, loops and functions, arrays and pointers.
3. To equip students with techniques for developing structured computer programs.
4. To equip students with sound skills in C/C++ programming language.

### Course Outcomes:

Upon completion of the subject, students will be able to:

1. Understand the basic terminologies used in computer programming.
2. Be proficient in using the basic constructs of C/C++, to develop a computer program.
3. Understand the use of functions, pointers, arrays and files in programming.
4. Understand the fundamentals of object-oriented programming and be able to apply it in computerprogram development.

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## UNIT I

**Introduction to Programming Languages** : What is a Programming Language; Types of Programming Languages – Machine-level, Assembly-level and High-level Languages, Scripting Languages, Natural Languages, Advantages and Limitations of programming language, High-level Programming Language Tools – Compiler, Linker, Interpreter, Intermediate Language Compiler and Interpreter, Editor, MATLAB, GUI, Overview of some popular High level Languages – FORTRAN, COBOL, BASIC, Pascal, C, C++, JAVA, LISP, Characteristics of a Good Programming Language.

## UNIT II

**Design of Program:** Introduction to Algorithms, Complexities and Flowchart, Introduction to Programming, Categories of Programming Languages, Program Design, programming language processing, Algorithm / pseudo code, program development steps, selecting a Language out of many Available Languages for Coding an Application, Subprograms and subroutines.

## UNIT III

**Basics of C language** : Introduction to C language, Basic Programming concepts, Program structure in C, header files, C preprocessor, Variables and Constants, Data types, User Defined Data Types – Structure and Union, Conditional statements, control statements, Functions, Arrays, Structures, pointers, strings, File Systems, c preprocessor and macro expansion.

Structure of C program, Expressions, type conversion, selection making decisions, initialization and updating, loops in C, Standard Library functions, Control Structures, Loop Structures, Functions, Scope Rule of Functions, Calling Convention, Advanced Features of Functions.

## UNIT IV

**C Programming** : Arrays - Pointers and arrays, two-dimensional arrays, arrays of pointer, String Manipulation functions, Structures & Unions, Processing and use of structures, arrays of structure.

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Pointers - Operations on Pointers, Pointers and Multidimensional Arrays, Array of pointers, pointers topointers, bitwise operators, and dynamic memory managements functions.

Files - File creation, File processing, Opening and closing a file, text files and binary files, streams,error handling.

## UNIT V

**C++ Programming:** Introduction to C++, Tokens, expressions and control structures, Functions in C++,Basic principles of Object Oriented Programming.

### **Textbooks:**

1. Fundamentals of Computers : E Balagurusamy, TMH
2. Fundamentals of Computers : V Rajaraman, PHI
3. Yashavant P. Kanetkar. “Let Us C”, BPB Publications, 2011.
4. Robert Lafore, “Object Oriented Programming in C++”, SAMS Publication.

### **References:**

1. Byron S Gottfried, “Programming with C”, Schaum’s Outlines, Second Edition, Tata McGraw-Hill,2006
2. Herbert Schildt, “The Complete Reference”, 4th Edition, MGH Publication.
3. Dromey R.G., “How to Solve it by Computer”, Pearson Education, Fourth Reprint, 2007

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**Practical"s List:**

1. Study of procedural programming paradigm and object-oriented programming paradigm.
2. To demonstrate use of data types.
3. Write a program on operators (Arithmetic Operator, Relational Operators and Conditional Operators etc.).
4. Write a program using decision making statements (switch case, if and if-else, nested structures).
5. Write a program using simple loops and nested loops.(For, While, Do-While Loop)
6. Write a program to user defined functions using C.
7. Write a program for recursive functions.
8. Write a program for array and multidimensional array (2-d arrays).
9. Write a program of pointers and strings (strings and pointers).
10. Write a program of dynamic memory allocation using call o c(), malloc() and realloc().
11. Write a program on structure and union.
12. Write a program in C++ using (i) if-then-else (ii) loops
13. Write a program illustrate Function in C++
14. Write a program for Operator overloading in C++
15. Write a program for nested function call.
16. Write a program of call by value using C++
17. Write a program of call by reference using C++
18. Write a program for Inline Function.
19. Write a program for Friend Function.
20. Write a program of dynamic memory management using new and delete.
21. Write a program on file handling using C++

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