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Shri Vaishnav Institute of Forensic Science
B.Sc. Hons. Digital & Cyber Forensics- Batch (2022-25)
SEMESTER-V

BDCF501 Mobile Security and Forensics

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*				
BDCF501	Major Core I	Smart Phone Forensics	60	20	20	60	40	4	0	4	6

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit; Th. - Theory
***Teacher Assessment** shall be based on following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

COURSE OBJECTIVES

The student will have ability to:

1. Understand wireless and mobile network security and its relation to the new security-based protocols.
2. Apply proactive and defensive measures to counter potential threats, attacks and intrusions.
3. Design secured wireless and mobile networks that optimize accessibility whilst minimizing vulnerability to security risks.

COURSE OUTCOMES

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

1. Know security and privacy problems in the realm of wireless networks and mobile computing.
2. Understand wireless and mobile network security and its relation to the new security-based protocols.
3. Apply proactive and defensive measures to counter potential threats, attacks and intrusions.
4. Learn to design secured wireless and mobile networks that optimize accessibility whilst minimizing vulnerability to security risks.

COURSE CONTENT

Unit I: Introduction To Wireless Threats

Wireless threats, vulnerabilities, and security: Wireless LANs, War Driving, War Chalking, War Flying, Common Wi-fi security recommendations, PDA Security, Cell Phones and Security, Wireless DoS attacks, GPS Jamming, Identity theft.

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Unit II: CIA Triad in Mobile Phones

CIA triad in mobile phones-Voice, SMS and Identification data interception in GSM: Introduction, practical setup and tools, implementation- Software and Hardware Mobile phone tricks: Netmonitor, GSM network service codes, mobile phone codes, catalog tricks and AT command set- SMS security issues.

Unit III: Mobile Phone Forensics

Mobile phone forensics: crime and mobile phones, evidence, forensic procedures, files present in SIM card, device data, external memory dump, evidence in memory card, operators systems-Android forensics: Procedures for handling an android device, imaging android USB mass storage devices, logical and physical techniques.

Unit IV: Introduction to Mobile Network Threats

Introduction To Mobile Network Techs, Vulnerabilities Threats, and Attack Entry Points. Categorization Of Attacks in Mobile Networks, Signaling Attacks.

Unit V: Threats and Attacks in 4G Networks

Threats And Attacks In 4g Networks- Attacks Against Security and Confidentiality, Ip-Based Attacks, Gtp-Based Attacks, Volte Sip-Based Attacks, Diameter-Based Attacks.

List of Practical:

1. Mobile Phone Acquisition.
2. SIM Analysis.
3. To acquire mobile cache memory image using forensic tool.
4. To perform mobile memory forensics practical using Magnet Forensics Tool.
5. Any other practical/ visit may be conducted based on the syllabus.

Suggested Reading:

1. Andrew Hoog, "Android Forensics: Investigation, Analysis and Mobile Security for Google Android", Elsevier publications, 2011
2. Angus M.Marshall, "Digital forensics: Digital evidence in criminal investigation", John - Wiley and Sons, 2008
3. Kia Makki, Peter Reiher, "Mobile and Wireless Network Security and Privacy", Springer, ISBN 978-0-387-71057-0, 2007.
4. Siva Ram Murthy.C, Manoj B.S, "Adhoc Wireless Networks Architectures and By Yulong Zou, Senior Member IEEE, Jia Zhu, Xianbin Wang, Senior Member IEEE, and Lajos Hanzo, Fellow IEEE
5. "A Survey on Wireless Security: Technical Challenges, Recent Advances, and Future Trends" Zou et al.: A Survey on Wireless Security: Technical Challenges, Recent Advances, and Future Trends

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BDCF503 Project

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME							CREDITS	
			THEORY			PRACTICAL		L	T		P
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BDCF503		Project	0	0	0	75	25	0	0	12	6

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

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Project

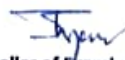
Every student will choose any topic for Project in cyber forensic/digital forensic of six month under the supervision of Supervisor/(s) (Internal/External). Every student will be required to do Research Work and submit it towards the end of the semester and should submit a report of the same presenting the work carried out by him/her in the semester. Every student will carry out Project under the supervision of Supervisor/(s) (Internal/External). The topic shall be approved by a committee constituted by the head of the concerned institute.



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BDCF502 Security, Risk, and Compliance

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*				
BDCF502	DSE1	Security, Risk and Compliance	60	20	20	0	0	4	0	0	4

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COURSE OBJECTIVES

Learning Objectives:

1. Different Information Assurance Standards
2. Auditing IT Infrastructures for Compliance
3. Audit Reporting
4. IT Audit: Purposes, Processes, and Practical Information

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

1. Understanding of Security Principles
2. Compliance Frameworks and Regulations
3. Risk Assessment and Management
4. Security Governance and Policies

UNIT-I: IT Audit and Assurance Standards

IT Audit and Assurance Standards, Guidelines and Tools and Techniques, Code of Professional Ethics and other applicable standards. Risk assessment concepts and tools & techniques used in planning, examination, reporting and follow-up.

UNIT-II Fundamentals of business Processes

Fundamentals of business processes: Purchasing, Payroll, Accounts payable, accounts receivable, Role of IS in these processes. Control Principles related to controls in information systems

UNIT-III Evidence Collection Techniques

Evidence Collection Techniques: Observation, Inquiry, Inspection, Interview, Data Analysis, Forensic Investigation Techniques, Computer-assisted audit techniques [CAATs] used to gather, protect and preserve audit evidence.

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UNIT-IV: Audit Reporting and sampling Methodologies

Sampling methodologies and substantive/data analytical procedures. Reporting and Communication techniques: Facilitation, Negotiation, Conflict Resolution, Audit report structure, issue writing, management summary, result verification. Audit Quality assurance (QA) systems and frameworks. Various types of audits: Internal, External, Financial, and methods for assessing and placing reliance on the work of other auditors and control entities.

UNIT-V: Information Auditing Standards

Introduction to information auditing standards, ISO 27000, ISO 27001 implementation, GDPR, HIPPA, PCI-DSS, process of auditing information systems, information security program development and incident management, Risk management and compliance, Introduction to Data privacy bill India PDPA. Audit WRT Forensics: investigating website hacking, Data Breach Investigation, Introduction to cyber security frameworks – SANS – CIS, NIST, Industry 4.0 & CSA.

References:

1. "IT Audit, Control, and Security" by Robert R. Moeller
2. "Human-Computer Interaction and Cybersecurity Handbook" edited by Abbas Moallem
3. Auditing Using Controls to Protect Information Assets, Third Edition by Mike Kegerreis, Mike Schiller, Chris Davis
4. Auditing IT Infrastructures for Compliance (Information Systems Security & Assurance) by Martin Weiss, Michael G. Solomon
5. "The Information Audit: A Practical Guide", Susan Henczel, Information Services Management Series
6. The Basics of IT

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