Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore
Shri Vaishnav Institute of Forensic Science

Choice Based Credit System (CBCS) in Light of NEP-2020
M.Sc. Cyber Forensics - III SEMESTER

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*				
MSCFN301		Mobile Security & Forensics	60	20	20	30	20	3	0	4	5

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

1. Gain in-depth knowledge on 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 -:

After studying this paper student will be able

1. The course deals with the security and privacy problems in the realm of wireless networks and mobile computing.
2. The subject is useful to researchers working in the fields of mobile and wireless security and privacy and to graduate students seeking new areas to perform research.

UNIT IOverview of Wireless Technologies and Security-I

Personal Area Networks, Wireless Local Area Networks, Metropolitan Area Networks, Wide Area Networks. 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

UNIT IIOverview of Wireless Technologies and Security-II

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

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UNIT III Mobile Phone Forensics
Mobile phone forensics: crime and mobile phones, evidences, forensic procedures,files present in SIM card, device data, external memory dump, evidences 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 Mobile Security-1
Introduction To Mobile Network Techs, Vulnerabilities Threats And Attack Entry Points. Categorization Of Attacks In Mobile Networks, Signaling Attacks.

UNIT IV Mobile Security-II
Threats And Attacks In 4g Networks- Attacks Against Security And Confidentiality, Ip-BasedAttacks, Gtp-Based Attacks, Volte Sip-Based Attacks, Diameter-Based Attacks

Experiments

1. Mobile Phone Acquisition (2 Nos.)
2. SIM Analysis (2 Nos)
3. To acquire mobile cache memory image using forensic tool (2 Nos.)
4. To perform mobile memory forensics practical using Magnet Forensics Tool (2 Nos)
5. Mobile Attacks (2 Nos)
6. Mobile Security (2 Nos)
7. Memory Forensics (2 Nos)
8. Network Forensics (2 Nos)

Reference Books-:

1. Gregory Kipper, "Wireless Crime and Forensic Investigation", Auerbach Publications, 2007
2. Iosif I. Androulidakis, " Mobile phone security and forensics: A practical approach", Springer publications, 2012
3. Andrew Hoog, " Android Forensics: Investigation, Analysis and Mobile Security for Google Android", Elsevier publications, 2011
4. Angus M.Marshall, " Digital forensics: Digital evidence in criminal investigation", John – Wiley and Sons, 2008
5. Kia Makki, Peter Reiher, "Mobile and Wireless Network Security and Privacy ", Springer, ISBN 978-0-387-71057-0, 2007.
6. 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
7. "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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MSCFN302		Fundamentals of Python Programming	0	0	0	30	20	0	0	4	2

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Course Objective:
1. Learn Syntax and Semantics and create Functions in Python.
2. Handle Strings and Files in Python.
3. Understand Lists, Dictionaries and Regular expressions in Python.
4. Implement Object Oriented Programming concepts in Python

Course Outcome:
After learning the course, the student will be able:
1. To develop proficiency in creating applications using the Python Programming Language.
2. To be able to understand the various data structures available in Python programming language and apply them in solving computational problems.
3. To be able to do testing and debugging of code written in Python.
4. To be able to draw various kinds of plots using PyLab.
5. To be able to do text filtering in Python

UNIT I Introduction of Python
Introduction: History of Python, Need of Python Programming, Running Python Scripts, Variables, Assignment, Operators and Expressions: Operators- Arithmetic Operators, Comparison (Relational) Operators, Assignment Operators, Logical Operators, Bitwise Operators, Membership Operators, Identity Operators, Expressions and order of evaluations.

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UNIT II Data Structures
Data Structures: Lists, Tuples, Sets, Dictionaries, Sequences. Control Flow - if, if-elif-else, for, while, break, continue. Functions - Defining Functions, Calling Functions, Passing Arguments. Modules: Creating modules, import statement, from ..import statement, name spacing.

UNIT III Python packages
Python packages, Introduction to PIP, Installing Packages via PIP, Using Python Packages

UNIT IV Object Oriented Programming
Object Oriented Programming OOP in Python: Classes, 'self variable', Methods, Constructor Method, Inheritance, Overriding Methods, Data Hiding.

UNIT V File Handling
File Handling: Types of Files, Creating and Reading Text Data, File Methods to Read and Write Data.

List of Experiments:
1. Develop programs to understand the control structures of python.
2. Develop programs to learn different types of structures (list, dictionary, tuples) in python.
3. Write a Python program to sum all the items in a list.
4. Write a Python program to get the largest and smallest number from a list.
5. Develop programs for data structure algorithms using python – searching and sorting.
6. Write a Python Program to perform Linear Search.
7. Write a Python Program to perform Binary Search.
8. Write a Python Program to perform Selection sort.
9. Write a Python Program to perform Insertion sort.
10. Write a Python Program to perform Merge sort.
11. Write a Python program to get a list, sorted in increasing order by the last element in each tuple from a given list of non-empty tuples: Sample List: [(2, 5), (1, 2), (4, 4), (2, 3), (2, 1)]Expected Result: [(2, 1), (1, 2), (2, 3), (4, 4), (2, 5)]
12. Write a Python program to check a list is empty or not.
13. Write a Python program to remove duplicates from a list.
14. Programs that take command line arguments (word count).
15. Write a Program that Reads a Text File and Counts the Number of Times a Certain Letter Appears in the Text File.
16. Write a Program to Read a Text File and Print all the Numbers Present in the Text File.
17. Write a Program to find the most frequent words in a text read from a file.
18. Implement Object Oriented Programming concepts in Python.
19. Write A Program to Append, Delete and Display Elements of a List Using Classes.
20. Write A Program to Create a Class and Compute the Area and the Perimeter of the Circle.

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21. Write A Program to Create a Class which Performs Basic Calculator Operations.
22. Write A Program to Create a Class in which One Method Accepts a String from the User and another prints it.
23. Learn to plot different types of graphs using PyPlot.

References:

1. John V Guttag. "Introduction to Computation and Programming Using Python", 2nd edition,Prentice Hall of India, 2013
2. Wesley J. Chun. "Core Python Programming" 2nd Edition, Prentice Hall, 2006
3. Michael T. Goodrich, Roberto Tamassia, Michael H. Goldwasser, "Data Structures and Algorithms in Python", Wiley, 2013
4. Kenneth A. Lambert, "Fundamentals of Python – First Programs", CENGAGE Publication, 1st edition, 2011

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MSCFN303		Project-2	0	0	0	60	40	0	0	18	9

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Every student will carry out project under supervision of supervisor (s) Internal/External. The topic shall be approved by a committee constituted by the head of the concerned Institute. Every student shall present two seminar talks, the first at the beginning of the project (Phase-1) to present the scope of the work and to finalize the topic, and towards the end of the seminar, presenting the work carried out by him/her in the semester.

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