CP5080 **ETHICAL HACKING** **L T P C**
3 0 2 4

OBJECTIVES:

- To learn about the importance of information security.
- To learn different scanning and enumeration methodologies and tools.
- To understand various hacking techniques and attacks.
- To be exposed to programming languages for security professionals.
- To understand the different phases in penetration testing.

UNIT I INTRODUCTION TO HACKING 9+6

Introduction to Hacking – Importance of Security – Elements of Security – Phases of an Attack – Types of Hacker Attacks – Hacktivism – Vulnerability Research – Introduction to Footprinting – Information Gathering Methodology – Footprinting Tools – WHOIS Tools – DNS Information Tools – Locating the Network Range – Meta Search Engines

UNIT II SCANNING AND ENUMERATION 9+6

Introduction to Scanning – Objectives – Scanning Methodology – Tools – Introduction to Enumeration – Enumeration Techniques – Enumeration Procedure – Tools

UNIT III SYSTEM HACKING 9+6

Introduction – Cracking Passwords – Password Cracking Websites – Password Guessing – Password Cracking Tools – Password Cracking Countermeasures – Escalating Privileges – Executing Applications – Keyloggers and Spyware

UNIT IV PROGRAMMING FOR SECURITY PROFESSIONALS 9+6

Programming Fundamentals – C language – HTML – Perl – Windows OS Vulnerabilities – Tools for Identifying Vulnerabilities – Countermeasures – Linux OS Vulnerabilities – Tools for Identifying Vulnerabilities – Countermeasures

UNIT V PENETRATION TESTING 9+6

Introduction – Security Assessments – Types of Penetration Testing- Phases of Penetration Testing– Tools – Choosing Different Types of Pen-Test Tools – Penetration Testing Tools

TOTAL: 45+30=75 PERIODS

OUTCOMES:

Upon completion of the course, the student will be able to

- Identify threats to computers.
- Defend hacking attacks.
- Protect data assets.
- Defend a computer against a variety of security attacks using various tools.
- Practice and use safe techniques on the World Wide Web.

REFERENCES:

1. EC-Council, “Ethical Hacking and Countermeasures: Attack Phases”, Cengage Learning, 2010.
2. Jon Erickson, “Hacking, 2nd Edition: The Art of Exploitation”, No Starch Press Inc., 2008.
3. Michael T. Simpson, Kent Backman, James E. Corley, “Hands-On Ethical Hacking and Network Defense”, Cengage Learning, 2013.
4. Patrick Engebretson, “The Basics of Hacking and Penetration Testing – Ethical Hacking and Penetration Testing Made Easy”, Second Edition, Elsevier, 2013.
5. RafayBoloch, “Ethical Hacking and Penetration Testing Guide”, CRC Press, 2014.

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5.	√		√	√	√	√	√	√	√

CP5079 DIGITAL IMAGE AND VIDEO PROCESSING L T P C
3 0 2 4

OBJECTIVES:

- To understand broad range of image processing techniques and their applications.
- To learn about video processing techniques and understand the video content.
- To appreciate various techniques used for acquisition, preprocessing, enhancement and analysis of image and video data.
- To appreciate the use of image& video processing in current technologies.
- To expose the students to real-world applications and case studies of the image& video processing.

UNIT I FUNDAMENTALS OF IMAGE PROCESSING 9+6

Introduction – Elements of visual perception, Steps in Image Processing Systems – Digital Imaging System – Image Acquisition – Sampling and Quantization – Pixel Relationships – File Formats – colour images and models – Image Operations

UNIT II IMAGE ENHANCEMENT AND RESTORATION 9+6

Image Transforms – Enhancement in the Spatial Domain –Enhancement in the Frequency Domain– Image restoration.

UNIT III IMAGE SEGMENTATION AND MORPHOLOGY 9+6

Detection of Discontinuities – Edge operators- Edge Linking and Boundary Detection – Thresholding – Region Based Segmentation – Motion Segmentation- Binary and Gray level morphology operations – Erosion, Dilation, Opening and Closing Operations Distance Transforms- Basic morphological Algorithms. Features – Textures – Boundary representations and Descriptions- Component Labeling – Regional Descriptors and Feature Selection Techniques.

UNIT IV BASICS OF VIDEO PROCESSING 9+6

Introduction – Video Sampling and Interpolation- Motion Detection and Estimation – Video Enhancement and Restoration

UNIT V VIDEO SEGMENTATION, TRACKING &APPLICATIONS 9+6

Video Segmentation- Motion Segmentation- Motion Tracking in Video-Video Quality Assessment-Case Studies –Image processing in Biometrics, Image Security, Steganography and Watermarking, Stereo vision, Object Segmentation and Tracking in the Presence of Complex Background in video , Forensic video analysis.

TOTAL: 45+30 :75PERIODS