Las Positas College
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Course Outline for CNT 68

COMPUTER FORENSICS I

Effective: Fall 2014

I. CATALOG DESCRIPTION:
CNT 68 — COMPUTER FORENSICS I — 3.00 units

A survey course in the detection, prevention and investigation of incidents involving computers and digital information, including cyber attacks and the use of computers to investigate crimes. The program will include introduction to computer forensics, incident response, methods of investigation, tracking persons and data, the secure analysis of hard drives and storage mediums, and IT security utilizing court-approved forensic software and tools.

3.00 Units Lecture

Strongly Recommended
CIS 50 - Intro to Computing Info Tech
with a minimum grade of C

Grading Methods:
Letter or P/NP

Discipline:

	MIN
Lecture Hours:	54.00
Total Hours:	54.00

II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: 1

III. PREREQUISITE AND/OR ADVISORY SKILLS:

Before entering this course, it is strongly recommended that the student should be able to:

A. CIS50

IV. MEASURABLE OBJECTIVES:

Upon completion of this course, the student should be able to:

A. demonstrate an understanding of basic computer forensic concepts;
B. evaluate proper investigative procedures relative to individual, corporate, and criminal rights, responsibilities and law;
C. formulate a basic incident response plan;
D. discuss the methods and techniques of forensic investigation;
E. use forensic software to secure and analyze various digital media;
F. evaluate and compare various forensic utilities and software;
G. describe and evaluate methods of hiding and accessing hidden data;
H. demonstrate an understanding of investigative techniques for various operating systems;
I. describe methods of reporting and presenting an analysis in a legal setting.

V. CONTENT:
A. Digital investigation / forensics careers
    1. Computer forensics
    2. History of digital investigation
    3. Forensic training and resources
    4. Code of conduct
B. The lab and forensic tools
    1. Lab certification and standards
    2. Physical requirements
    3. Workstation components
    4. Forensic software
    5. Evidence handling and storage
C. Operating systems and data storage basics
    1. Windows
    2. Macintosh/OS X
    3. Unix / Linux
    4. Hard drive storage concepts
    5. Investigation methods, tools and skills

D. Laws, regulations and standards
    1. SB1386
    2. Federal
    3. State and local
    4. Policy and procedures
E. Network fundamentals
    1. OSI model for forensics
    2. TCP/IP for forensics
    3. IP addressing for forensics
    4. Network devices and concepts
F. Evidence handling / investigative procedures
    1. Methods, tools and procedures
    2. Site plan
    3. Reception / Coverage
    4. Measurement and documentation
G. Data acquisition & forensic analysis
    1. Evidence seizure / chain of custody
    2. Imaging
    3. Backup and storage
    4. Analyzing files
    5. Procedures and documentation
H. Email investigations
    1. Internet fundamentals
    2. Crimes and violations
    3. Messages and logs
    4. Procedure and documentation
    5. Methods, tools, and skills
I. Images, files and Steganography
    1. Image file formats
    2. Encryption
    3. Steganography
    4. File recovery
    5. Password recovery
    6. Data hiding techniques
    7. Methods, tools, and skills
J. Forensics and security management
    1. Computer and investigative policy
    2. Disaster planning / business continuity
    3. Whitehat hacking
    4. Best Practices
    5. Intrusion detection
    6. Backup / data integrity
    7. Network monitoring / threat management
K. Reports and documentation
    1. Legal versus technical reports
    2. Analysis and conclusions
    3. Layout and presentation
    4. Verbal and written reports
    5. Fact versus opinion

VI. METHODS OF INSTRUCTION:

A. **Lecture** -
B. **Lab** -
C. **Research** -
D. **Audio-visual Activity** -
E. **Directed Study** -
F. **Demonstration** -

VII. TYPICAL ASSIGNMENTS:

A. Reading / listening to presentations and readings
    1. Presentations and lectures: Lecture on the use of writeblockers
    2. Selected current online reading: Example: http://www.nsrl.nist.gov/ (file hash libraries)
B. Search for relevant material and read
    1. Students use search engines to find readings relevant for each module Example: Find resources describing MD 5hash vulnerabilities, select three to read.
C. Performing lab esperiments using forensic software
    1. Use FTK to image the target USB drive and search for social security numbers
D. Answer comments and questions from fellow students and instructor
    1. Students must participate in group discussion. Example: Is it possible to recover data inserted in a graphic? Why or why not.

VIII. EVALUATION:

A. **Methods**

    1. Quizzes
    2. Other:
        a. Participation in discussion and interaction
        b. Group work
        c. Lab assignments
        d. Final project

B. **Frequency**

    1. 6-10 module assignments
    2. Weekly discussion of group work
    3. 6-10 module quizzes
    4. 6-10 labs
    5. 1 final project

IX. TYPICAL TEXTS:

1. Nelson, et al , Bill *Guide to Computer Forensics and Investigations.* 4 ed., Course Technology, 2010.

2. Association of Computing Machinery ACM.org student membership

X. OTHER MATERIALS REQUIRED OF STUDENTS:
   A. Students require access to a computer connected to the Internet, with word processing and browser software, and an email address.
   B. Association of Computing Machinery ACM.org student membership