CYS 672: Computer and Network Forensics
Online Syllabus
Fall 2014

INSTRUCTOR
Name:
Office:
Phone:
Email address:
Office Hours:

DESCRIPTION
The topics covered in this course include fundamentals of digital forensics, forensic duplication and analysis, network surveillance, intrusion detection and response, incident response, anti-forensics techniques, anonymity and pseudonymity, cyber law, computer security policies and guidelines, court report writing and presentation, and case studies. The course will include lecture and demonstrations, but is designed around a virtual lab environment and scenario that provides for robust and realistic hands-on experiences in dealing with a range of information assurance topic areas. Students will be provided numerous practical opportunities to apply information security practices and technologies to solve real-world cybersecurity problems.

COURSE RATIONALE
This course is a required course for the Master of Science Degree in CyberSecurity. Computer and Network Forensics is an introductory course that focuses on important and critically needed skill areas in information assurance and cybersecurity. The Computer and Network Forensics course also leverages key information assurance concepts and practices such as cyber-attack prevention, planning, detection, response, and investigation with the goals of counteracting cybercrimes, and making the responsible persons/groups accountable.

PREREQUISITE

GOALS and OBJECTIVES
1. To introduce students to basic concepts and best practices in computer and network forensics with focus on techniques used as the first responder in a forensic analysis to ensure proper care is completed and data is admissible in court.
2. To enable students gain knowledge, skill, and hands-on experience in working with a selected set of forensic tools, equipment and methods that are commonly used in the real world.

Measureable Objectives:
1. Describe the common techniques used in computer and network forensics acquisition.
2. Understand the legal and ethical implications of computer and network forensics.
3. Perform design, implementation, configuration and testing tasks associated with the tasks of the first responder.
4. To teach students how to conduct research and use resources such as journals and conference proceedings, information security web sites, standards, mailing lists, etc.
5. To guide students in carrying out labs and course projects in a logical and structured manner so that outcomes are more predictable and manageable.
6. To prepare students for active research at the forefront of computer and network forensics.
COURSE OUTLINE

- Module I: Digital Forensics: An Overview
- Module II: Forensics Basics and Criminalistics
- Module III: Basics of OS and Networking: A Review
- Module IV: Advanced Topics in Computer and Network Forensics
  - Forensic Modeling and Principles
  - Forensic Duplication
  - Forensics Analytics
  - File Carving
  - Cyber Forensics Tools
  - Mobile Device Forensics
  - Network Surveillance and Accountability
  - Network Attack Traceback and Attribution
- Module V: Intrusion and Online Fraud Detection
- Module VI: Steganography & Steganalysis
- Module VII: Anonymity/Pseudonymity/P3P
- Module VIII: Cyber Law, Security and Privacy Policies and Guidelines
- Module IX: Case Studies, and ethical issues
- Module X: Court Testimony and Report Writing Skills

VIRTUAL LAB ASSIGNMENTS

In addition to hands-on assignments that you will be required to complete you will have access to virtual lab exercises. These labs are comprised of VMware virtual machines and a lab document that focus on various Cybersecurity concepts. Each lab is designed to take between 1 and 3 hours to complete. Students should avoid rushing to complete these labs and take the time to understand the concepts being illustrated. Each student will be assigned to a server that will contain the VMware virtual machines for all of the labs assignments. Students will log into the virtual lab environment via a web browser. The instructions for completing the labs can be downloaded from Blackboard.

CREDIT

3 semester hours

TEXT


REFERENCES


Useful Online Resources:

- Scientific Working Group on Digital Evidence
- International Journal of Digital Evidence
- Department of Defense Computer Forensics Lab
- Digital Forensics Research Workshop
- National White Collar Crime Center
- Department of Justice CCIPS
- International Organization on Computer Evidence
- High Tech Crime Investigators Association
- UK National High Tech Crime Unit
- CERIAS Forensics Research
- University of Central Florida Digital Evidence Site
• Encase
• Seminal papers at Computer Security Archives Project at UC, Davis
• Committee on National Security Systems page (NSTISSI standards)

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<th>Range</th>
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<td>A</td>
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EVALUATION

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<td>Final Project</td>
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METHOD OF INSTRUCTION

The primary method of instruction will be lectures by the instructor with examples, demonstrations and drills. Students will also participate through class and group discussions in addition to the completion of virtual lab assignments.

RELATED UNIVERSITY-WIDE AND COURSE-SPECIFIC REQUIREMENTS

Students apply written and oral communication skills through assignments given during the course. This course emphasizes critical thinking.

OFFICE LOCATION

The Department of Computer Science is located in suite 320 Robinson Technology Center. The individual faculty offices are located within the suite.

CLASS ATTENDANCE POLICY

The Computer Science Department adheres to the University Policy on class attendance.

AMERICANS WITH DISABILITIES ACT (ADA) STATEMENT

In accordance with Section 504 of the 1973 Rehabilitation Act and the Americans with Disabilities Act (ADA) of 1990, we ask if you have a disability or think you have a disability, contact Supporting Students through Disability Services (SSDS) for information regarding programs and services to enhance student success.

Location: Student Services Building Suite 110, Room 110D
Contact Person: Janet Timberlake, Disability Services Assistant
Telephone: 757-823-2014 Email: jtimberlake@nsu.edu

ACADEMIC HONESTY

The Department of Computer Science employs a no tolerance policy on cheating. Cheating includes, but is not limited to, copying others work, misrepresenting the work of others as your own (including online sites), plagiarism, sharing when unauthorized, and the use of cellular phones and/or electronic media when unauthorized. The following outlines the departmental procedure if a student is suspected of cheating during his or her academic tenure with the Computer Science Department at Norfolk State University.

• Offense 1 – The student will receive a grade of zero on the assignment and a note will be placed in the student’s permanent departmental file.
• Offense 2 – The student will receive a letter grade of “F” for the course and the student will be reported to the Office of Student Rights and Responsibilities for adjudication.

UNIVERSITY ASSESSMENT

As part of NSU’s commitment to provide the environment and resources needed for success, students may be required to participate in a number of university-wide assessment activities. The activities may include tests, surveys, focus groups, interviews, and portfolio reviews. The primary purpose of the assessment activities is to determine the extent to which the university’s programs and services maintain a high level of quality and meet the needs of students. Students will not be identified in the analysis of results. Unless indicated otherwise by the instructor, results from University assessment activities will not be computed in student grades.

BLACKBOARD INSTRUCTIONS

For Blackboard log-on information go to www.nsu.edu/elearning/firstimeuser.html