CYS 697: Ethical Hacking and Penetration Testing
Online Syllabus
Fall 2014

IMPORTANT SEMESTER DATES
Semester Starting Date -------------- [Date]
Semester Ending Date -------------- [Date]
Last Date for Class Withdrawal ----- [Date]

PROFESSOR
Name: Dr. Aftab Ahmad
Office: Robinson Technology Center, Room 320-B
Phone: 757.823.8311
E-mail address: aahmad@nsu.edu
Class meets: Online
Meeting time: NA
Office Hours: [f2f office hours]
Cyber Office Hours: [online office hours]

TEXTBOOK

REFERENCES
Notes provided by instructor

DESCRIPTION
This course is designed for students pursuing a graduate degree in cyber security with particular interest in working as a white hat hacker. The students will be trained theoretically and practically in understanding vulnerabilities in network architectures, operating systems, database management systems and web servers. They will learn how exploits are designed by an adversary attacker to penetrate into vulnerable systems. The students will also learn how the hacker can move into a hacked system and remove her/his footprints. The course will expose students to a host of tools used for network scanning, finger printing and password cracking. These tools include Nmap, Nessus and Backtrack among others. There will be a thorough discussion on the emerging hack technology for wireless LANs and defenses against them.

COURSE RATIONALE
This course is required for the M.S. Cybersecurity degree program. It is designed with a career goal in mind, that of working as a penetration test expert.

COURSE DELIVERY METHOD
This course consists of lab and discussion sessions delivered entirely online via asynchronous activities deployed as required. The primary method of access to this course is the University Blackboard Learning Management System (LMS) and may be supplemented by other online resources. This course may also employ conferencing tools such as video conferences or Web conferences to facilitate communication and interaction with distant and local students. Although there is a required textbook for the course (see the section titled Textbook), I will use material from a variety of resources, including other textbooks and research papers; so the main source for the course will be my lecture notes.
PREREQUISITE
CYS 672: Computer and Network Forensics.

GOALS AND OBJECTIVES
Student will get expertise and training in network hacking tools and theory. The goals and objectives include:

- Understanding sources of vulnerabilities in network systems, operating system, web servers, and database systems.
- Know the available tools for penetration testing and their usage.
- Understand the relation between vulnerability, exploit and attack.
- Be familiar with the use of network tools for password cracking.

CORE COMPETENCIES
- Written and Oral Communication Assumed.
- Mathematical and Quantitative Reasoning Evaluated.
- Information Technology Literacy Evaluated.
- Scientific Reasoning Assumed.
- Critical Thinking Evaluated.

CREDIT HOURS
3 semester hours

ATTENDANCE POLICY
The Computer Science Department adheres to the University Policy on class attendance. For you to receive a passing grade, you must attend at least 80% of the class sessions. This means you must participate in at least 80% of the class activities.

EVALUATION

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Weekly discussion participation</td>
<td>25%</td>
</tr>
<tr>
<td>Examinations</td>
<td>50%</td>
</tr>
<tr>
<td>Homework/Laboratory Assignments</td>
<td>25%</td>
</tr>
</tbody>
</table>

The instructor reserves the right to revise the grading criteria as appropriate and will make reasonable attempts to notify students. I reserve the right to lower these grade range values if necessary. Class attendance, participation, and other contributions may be taken into consideration in the final calculation of the course grade, especially in the case of borderline grades (within a certain percentage of grade threshold). A case-by-case decision will be made whether to assign the next higher grade.

WRITTEN WORK CRITERIA
All written work is expected to reflect correct use of grammar, spelling, and organization of material. Work with errors of this nature will be penalized.

PROCTORING POLICY
Students who choose not to come on campus to take their exams, must have exams in online courses proctored. A proctored exam is one that is administered by an impartial individual (called a proctor) who monitors and supervises a student while that student is taking an exam. The proctor ensures the security and integrity of the exam process. Students will be required to submit an Online Course Proctor Identification Approval Form to each instructor. The form must be submitted and approved by the instructor within 30 days from the starting date of the semester. The instructor will not accept late forms (beyond the 30 day limit). Once the proctor has been approved by the instructor, the students will be required to present their Spartan Identification Card and photo identification to the proctor prior to students receiving the exam. Students are responsible for arranging a proctor for their exam(s) and all costs incurred for this service.

On-Campus Proctor Schedule for Midterm and Exams

<table>
<thead>
<tr>
<th>Time Date Room</th>
<th>Time</th>
<th>Date</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midterm</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Final Examination</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Range</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>90-100</td>
</tr>
<tr>
<td>B+</td>
<td>87-89.9</td>
</tr>
<tr>
<td>B</td>
<td>80-86.9</td>
</tr>
<tr>
<td>C+</td>
<td>77-79.9</td>
</tr>
<tr>
<td>C</td>
<td>70-76.9</td>
</tr>
<tr>
<td>F</td>
<td>0-69.9</td>
</tr>
</tbody>
</table>
METHOD OF INSTRUCTION

The primary method of instruction will be online, including labs. The instructional method of use will be inductive, going from specific to general. Online learners will acquire new knowledge through exposure to new material and ideas and will discuss these ideas and concepts on the discussion board.

The following instructional strategies and methods will be among those used to achieve the learning objectives:
1. Class discussions
2. Collaborative learning
3. Case study
4. Assigned readings
5. Blackboard (on-line delivery)
6. Virtual Machine used via the VPN

COMPUTER LITERACY REQUIREMENTS

To successfully complete this course you must possess:

- **A basic knowledge of computers.** For example, understanding files and folders to upload or download course content is absolutely essential. Basic computer literacy classes (CSC-150) are available on campus as elective courses. Students deficient in the necessary computer skills should consider taking such classes.
- **An understanding of the Web** and its resources, such as the library and online research tools accessed through a Web browser.
- **Familiarity with Microsoft Office applications**, such as Word and PowerPoint; this is absolutely essential for your academic success.
- **Familiarity with NSU's e-mail system** to guarantee effective communications with both the instructor and classmates. All NSU students have been assigned an e-mail account and are expected to access it regularly via the Web.
- **Knowledge of Blackboard** Learning Management System (LMS), which is mandatory for this course.

For those of you not familiar with the Blackboard LMS, an online orientation can be accessed by self-registering in Blackboard. The course name is "Blackboard Student Training." Additional assistance with Blackboard can be obtained through the Blackboard Central Help Desk at bttechsupport@nsu.edu or by phone at 757-823-2328 M - F 8AM - 6PM at the Lyman Beecher Brooks Library (LBBL).

Addressing your computer skills will greatly enhance your learning experience, reducing wasted time and frustration for yourself and your instructor. Please feel free to contact the Office of Information Technology (OIT) Client Services or the Office of Distance Education for advisement on how to receive assistance with your computer literacy instructional needs.

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.

COMMUNICATION

**BlackBoard Announcements Area**

The Blackboard announcements area is specifically designed for communicating with students in this course. Whenever there are special instructions to **all students in this class**, such as a chat-session cancellation, a change in schedule or assignments, etc. a message will be sent via the announcement page. Please note that the announcements area is a messaging system that relates only to the **members of this class**. Announcements for other courses will be contained in the respective courses announcements area.

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You can access your announcements by selecting the "announcements" button, located on the main page menu. You are required to check the announcements page daily for any new information. Any message that you need to send to your instructor in this class is best sent via Blackboard e-mail.

For Blackboard log-on information go to https://www.nsu.edu/sel/blackboard/index

E-mail Policy
NSU e-mail is the only e-mail system to be used for this course; private e-mail addresses cannot be used. Always title your messages; be sure the subject line reflects the topic of discussion. E-mail messages should always be courteous and follow etiquette protocols. You should be respectful to those who are receiving your e-mail; never send SPAM to other classmates. Remember that these documents are never deleted from the system and nothing is ever private. Also, always check your spelling before sending a message.

Discussion Boards
As part of your NSU online experience you will be using the Blackboard Discussion Forum. A good way of entering a discussion board or chat is to briefly introduce yourself. It is important to keep your questions and comments relevant to the topic of the discussion; when posting to a discussion board, you should read prior messages to get a sense of the flow and language of the discussion before posting your own message. If another person posts a comment or question that is off the subject, do not reply to the discussion board; if you want to reply, do so via a private e-mail directly to that person. When working in groups do not hijack the discussion. Keep paragraphs and messages short and to the point.

AMERICANS WITH DISABILITIES ACT (ADA) STATEMENT
In accordance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990, we ask if you have a disability or think you have a disability please make contact with the Disability Services Department.
Location: Student Service Center, Suite 110
Contact Person: Ms. Janet L. Timberlake
Phone: (757)823-8325

ACADEMIC HONESTY
All class assignments are to be done independently, unless specified. If in my judgment a student is found cheating on an examination, assignment, or quiz, the student will be penalized. I consider the person who did the work (examination, assignment, or quiz) and the person copying the work as both cheating. Students should save all developmental copies of their assignments so that individual assignment development can be verified to me if I think it is necessary.

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.
LIBRARY SUPPORT
Extensive library resources are available online, 24 hours a day, seven days a week at http://library.nsu.edu/. The Lyman Beecher Brooks Library (LBBL) at NSU provides research assistance in creating search strategies, selecting relevant databases, and evaluating and citing resources in a variety of formats via its Ask a Librarian service at http://library.nsu.edu/screens/askalibrarian.html. The Subject Guides area of the library’s Web site at http://library.nsu.edu/screens/databases_subject.html provides a listing of resource guides for each subject area, with each guide containing relevant databases, Web sites, books, and other resources along with technical and citation assistance. A guide to locating scholarly articles and using the LBBL’s databases is available at http://library.nsu.edu/screens/search_articles.html. LBBL allows users to simultaneously search for scholarly articles, books, and/or other research resources via a single search engine in most of the databases to which LBBL subscribes, either directly or as additional resources (http://library.nsu.edu/).