CSCI-E46: Applied Network Security

Course Schedule: January 27, 2016 – May 11, 2016
Meeting Time/Location: Wednesdays, 5:30-7:30pm @ 53 Church Street L01
Office Hours: before class or by appointment, TA sections to be announced

Instructor: David LaPorte
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Course Description
provides a practical overview of network security and related topics. General threat classifications are discussed as they relate to the CIA triad: eavesdropping (confidentiality), man-in-the-middle (integrity), and denial-of-service (availability). Real-world attack incidents and implementations are used to tie concept to reality. Defensive technologies and techniques, including authentication/authorization, access control, segmentation, log/traffic monitoring, reputation-based security, and secure protocol (SSH, TLS, DNSSEC) usage are discussed and demonstrated. Hands-on labs and exercises are used to reinforce lectures and provide practical implementation experience.

Prerequisites
CSCI-E45a and CSCI-E45b. Familiarity with Linux and Windows operating systems, basic understanding of IP networking.

Required Textbooks

Recommended Tools/Textbooks
Several very good texts, several of which contain required course reading, are available through Safari, a collection of on-line technical books accessible through the Harvard University Library. Safari is available at:


Additional Readings
Additional readings will be assigned on a weekly basis. These topical readings will provide additional information or relate our classroom activities to recent developments in the industry.

Course Schedule

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<th>Topic</th>
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<td>01/27</td>
<td>Introduction, Cryptography Primer</td>
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<td>01/28 – 02/03</td>
<td>Networking Primer</td>
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<td>3</td>
<td>02/04 – 02/10</td>
<td>Network Security and Architecture</td>
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<td>02/11 – 02/17</td>
<td>Enterprise Identity and Authentication</td>
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<td>02/18 – 02/24</td>
<td>(In)Secure Protocols</td>
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<td>02/25 – 03/02</td>
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<td>03/03 – 03/09</td>
<td>Reconnaissance and Social Attacks</td>
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<td>Spring Break</td>
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<td>03/24 – 03/30</td>
<td>Exploitation and Persistence</td>
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<td>03/31 – 04/06</td>
<td>Instrumenting the Network</td>
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<td>04/07 – 04/13</td>
<td>Intrusion Detection</td>
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<td>Firewalling and Access Control</td>
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<td>Cloud Security and Future Trends</td>
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<td>05/05 – 05/11</td>
<td>Final Exam</td>
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Course Objective
At the conclusion of this course students should be able to:
• Identify key concepts in network security
• Implement these concepts as security attacks/controls in a lab environment
• Relate course material to real-world events and situations

Course Methodology
Each week, you will be expected to:
• Review the week's learning objectives.
• Complete all assigned readings.
• Complete all lecture materials for the week.
• Participate in the discussion forum.
• Complete and submit all assigned work - assignments, tasks, labs, and tests

Grading/Evaluation Standards
Class Participation/Tasks 20%
Labs 20%
Assignments 20%
Midterm Exam 20%
Final Exam 20%

Unless permission has been explicitly granted in writing by the instructor, all work must be completed and submitted by prescribed due dates. Failure to do so will result in a 10% per day late penalty with a maximum 80% score. Any extension must be requested in writing at least three days in advance of the due date. Extensions will be granted at the sole discretion of the instructor.

Class Attendance and Participation
Class participation is worth 20% of your grade. Class participation will be evaluated based on completion of weekly technical tasks and weekly contributions to the topics posted to the Canvas discussion forum. Discussion forum posts should be well-written and demonstrate independent thinking on the part of the student, not just a reformulation of another student's response. As with all class work, posts must be in the student's own words and any external sources must be properly cited.

Canvas
Course content, announcements, and discussion forums will be available through the course Canvas site:

https://canvas.harvard.edu/courses/8096

Please review the site regularly to stay up-to-date on course announcements, assigned work, and discussion posts.

Plagiarism and Academic Integrity
Students are expected to maintain complete honesty in all academic work. Unless otherwise specified, all work must be completed independently. The Harvard Extension School Academic Integrity Policy is available on-line at:

https://www.extension.harvard.edu/resources-policies/student-conduct/academic-integrity

Special Accommodations
If you have specific disabilities that require accommodations for this course, please meet with me after class or during office hours to discuss appropriate adaptations and modifications that might be helpful to you. The Disability Services Office, located at 51 Brattle Street (617-495-0977) can provide you with information and other assistance to help manage any challenges that may affect your performance in your coursework. The Harvard Extension School requires that you provide documentation of your disabilities to DRC.

Moving Forward
Students should feel free to contact me by email or phone. If necessary, individual meetings can be scheduled by appointment. To gain the greatest value from this course interaction and sharing of experiences is essential. I strongly encourage students to support one another and provide input whenever possible.