ADCY630001 Network & Infrastructure Security [3 credits]
Boston College Summer Session
Summer 1, May 17 - June 23, 2016
Tuesday/Thursday 06:30 PM - 9:45 PM

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Office Hours: TWT 4:00-6:00 (advisable to email ahead of a visit)

Boston College Mission Statement
Strengthened by more than a century and a half of dedication to academic excellence, Boston College commits itself to the highest standards of teaching and research in undergraduate, graduate and professional programs and to the pursuit of a just society through its own accomplishments, the work of its faculty and staff, and the achievements of its graduates. It seeks both to advance its place among the nation’s finest universities and to bring to the company of its distinguished peers and to contemporary society the richness of the Catholic intellectual ideal of a mutually illuminating relationship between religious faith and free intellectual inquiry.

Boston College draws inspiration for its academic societal mission from its distinctive religious tradition. As a Catholic and Jesuit university, it is rooted in a world view that encounters God in all creation and through all human activity, especially in the search for truth in every discipline, in the desire to learn, and in the call to live justly together. In this spirit, the University regards the contribution of different religious traditions and value systems as essential to the fullness of its intellectual life and to the continuous development of its distinctive intellectual heritage.

Course Description
Course provides an understanding of the threats and vulnerabilities in Cybersecurity and an introduction to the concepts of layering defense and providing for defense-in-depth. Specific topics include operating system security, component lifecycle management, database security, server security, application security, mobile devices, BYOD, and end-point security. The course covers the roles of physical security, system hardening, firewalls, encryption, anti-virus, and malware defense. The course also introduces identity and access management, role-based access control (RBAC), intrusion detection, penetration testing, and incident response.

Textbooks & Readings (Required)
- Hacking Exposed, by Stuart McClure, Joel Scambray, & George Kurtz
- Applied Network Security Monitoring, by Chris Sanders & Jason Smith
- TCP/IP Illustrated, Volume 1, by W. Richard Stevens & Kevin Fall

Other (Required)
- Laptop computer with USB and Ethernet ports
Two (2) USB thumb drives of capacity 8 Gb or greater

Textbooks & Readings (Recommended)
- The Practice of Network Security Monitoring, by Richard Bejtlich

Canvas
Canvas is the Learning Management System (LMS) at Boston College, designed to help faculty and students share ideas, collaborate on assignments, discuss course readings and materials, submit assignments, and much more - all online. As a Boston College student, you should familiarize yourself with this important tool. For more information and training resources for using Canvas, click here.

Course Objectives
1. Students will demonstrate knowledge of, and skill applying, network security techniques across a range of use cases.
2. Students will demonstrate ethical competency pertaining to network defense and penetration testing as demonstrated by their consideration of ethical issues in various assignments, class projects, and test questions.
3. Students will be able to deploy a variety of software and technology related to network security.
4. Students will be able to communicate solutions to infrastructure security issues related to operating systems and databases, both orally and in writing.

Note that this is expected to be a lab-based course – it is critical to have the required texts, hardware, and a willingness to do hands-on security work in a simulated environment.

Grading
Grades will be based on:

- Class participation and exercises: 50%
- Homework: 10%
- Mid-term: 10%
- Final Exam/Paper: 30%

The undergraduate grading system for Summer Session is as follows:

A (4.00), A- (3.67)
B+ (3.33), B (3.00), B- (2.67)
C+ (2.33), C (2.00), C- (1.67)
D+ (1.33), D (1.00), D- (.67)
F (.00)

The graduate grading system for Summer Session is as follows:

A (4.00), A- (3.67)
B+ (3.33), B (3.00)
B- (2.67), passing but does not count toward degree
C (2.00), passing but not for degree credit
F (.00)

All students can access final grades through Agora after the grading deadline each semester. Transcripts are available through the Office of Student Services.
**Deadlines and Late Work**

No work will be accepted after the date of the final exam (excepting special arrangements made in advance if final must be missed). Homework can be 1 week late – late homework will have 10% or 20% deducted. Any deviation from this policy must be negotiated in advance of the original due date with the instructor.

**Course Assignments**

Students should expect to spend an additional 6 hours or more per week on reading and homework assignments. Students with a deeper background in cyber security entering the course may find they can spend less time than those to whom the material is completely new. Some weeks will require more time and others less time depending upon the subject matter and the nature of the assignment(s), but the average will be 6 or more hours per week.

**Course Schedule**

<table>
<thead>
<tr>
<th>Week/Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1: May 17, 19</td>
<td>TCP/IP Basics &amp; Sniffing</td>
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<tr>
<td>2: May 24, 26</td>
<td>Flows, BPF, nmap, and firewall basics</td>
</tr>
<tr>
<td>3: May 31, June 2</td>
<td>Vulnerability Scanning and IDS (1)</td>
</tr>
<tr>
<td>4: June 7, 9</td>
<td>Vulnerability Scanning and IDS (2)</td>
</tr>
<tr>
<td>5: June 14, 16</td>
<td>Web servers, database security</td>
</tr>
<tr>
<td>6: June 21, 23</td>
<td>Securing the O/S host, and incident response</td>
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</tbody>
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**Written Work**

Summer Session students are expected to prepare professional, polished written work. Written materials must be typed and submitted in the format required by your instructor. Strive for a thorough yet concise style. Cite literature appropriately, using APA, MLA or CLA style per your instructor’s requirements. Develop your thoughts fully, clearly, logically and specifically. Proofread all materials to ensure the use of proper grammar, punctuation and spelling. For writing support, please contact the Connors Family Learning Center.

**Attendance**

Attending class is an important component of learning. Students are expected to attend all class sessions. When circumstances prevent a student from attending class, the student is responsible for contacting the instructor before the class meets. Students who miss class are still expected to complete all assignments and meet all deadlines. Many instructors grade for participation; if you miss class, you cannot make up participation points associated with that class. Makeup work may be assigned at the discretion of the instructor. If circumstances necessitate excessive absence from class, the student should consider withdrawing from the class. N.B. A significant percentage of the final grade consists of participation points and in-class quizzes; you “must be present to win.”

Consistent with BC’s commitment to creating a learning environment that is respectful of persons of differing backgrounds, we believe that every reasonable effort should be made to allow members of the university community to observe their religious holidays without jeopardizing their academic status. Students are responsible for reviewing course syllabi as soon as possible, and for communicating with the instructor promptly regarding any possible conflicts with observed religious holidays. Students are responsible for completing all class requirements for days missed due to conflicts with religious holidays.
Accommodation and Accessibility
Boston College is committed to providing accommodations to students, faculty, staff and visitors with disabilities. Specific documentation from the appropriate office is required for students seeking accommodation in Summer Session courses. Advanced notice and formal registration with the appropriate office is required to facilitate this process. There are two separate offices at BC that coordinate services for students with disabilities:

- The Connors Family Learning Center (CFLC) coordinates services for students with LD and ADHD.
- The Disabilities Services Office (DSO) coordinates services for all other disabilities.

Find out more about BC’s commitment to accessibility at [www.bc.edu/sites/accessibility](http://www.bc.edu/sites/accessibility).

Scholarship and Academic Integrity
Students in Summer Session courses must produce original work and cite references appropriately. Failure to cite references is plagiarism. Academic dishonesty includes, but is not necessarily limited to, plagiarism, fabrication, facilitating academic dishonesty, cheating on exams or assignments, or submitting the same material or substantially similar material to meet the requirements of more than one course without seeking permission of all instructors concerned. Scholastic misconduct may also involve, but is not necessarily limited to, acts that violate the rights of other students, such as depriving another student of course materials or interfering with another student’s work. Please see the Boston College policy on academic integrity for more information.