Overview

Cybersecurity is rapidly changing a field with new threats and solutions introduced every day. Emerging challenges, such as the prevalence of smartphones and the Internet of Things, demonstrate that cybersecurity is an exciting field of study that spans to multiple disciplines. In this course students from different majors will be able to explore concepts of cybersecurity and how to apply them to their own program of study. Topics will include: cyber defense and current cyber threats, cybercrime and forensics analysis, risk assessment, scripting and data analysis for security, design of policies and mechanisms for security, and hands on experimentation with computer and network security tools.

Prerequisites: NA

Outcomes

After completing FYE-Cybersecurity students will be able to:

1. Research topics such as cyber threats and defenses and their global implications
2. Discover methods to protect their micro (personal, family) and macro (organization, country) systems through illustration of how attacks take place and different counter measures
3. Develop cyber defense mechanisms through simple scripting and installation of software tools and patches
4. Analyze types of attacks, adversaries, and targets
5. Assess the risks and benefits of taking cybersecurity into account for decision making and predict outcomes through use cases

Materials

Required book: “Future Crimes: Everything Is Connected, Everyone Is Vulnerable and What We Can Do About It”, Marc Goodman

Recommended book: “Ghost in the Wires: My Adventures as the World's Most Wanted Hacker”, Kevin Mitnick

Software:

1. Putty for Windows or terminal for Mac OS
2. Wireshark

Class Meeting times: Tuesday/Thursday 9:55 – 11:10 am
Location: Harbor Walk West 110

Office: Harbor Walk East, Room #312
Office Hours: Tues/Thurs 11:10 – 12:10 pm and 2:30 – 3:30 pm, or by appointment

Course Website: http://mountrouidoux.people.cofc.edu/FYE_CySec/index.html
We will use Oaks for assignment submission and grading
**Evaluation**

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<tbody>
<tr>
<td>Project</td>
<td>50%</td>
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<tr>
<td>Homework</td>
<td>40%</td>
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<tr>
<td>Participation</td>
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<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
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Your weighted average will result in a letter grade assigned according to the usual scale: A: 93%-100%  
A-: 90%-92%  
B+: 87%-89%  
B: 83%-86%  
B-: 80%-82%  
C+: 77%-79%  
C: 73%-76%  
C-: 70%-72%  
D+: 67%-69%  
D: 63%-66%  
D-: 60%-62%  
F: below 60%

**Note:** I do not round up grades unless there is a 0.1% difference with the next grade letter AND I have NOT offered extra credit opportunities during class

- **Homework**
  - Homework assignments will be: research essays or technical lab reports.
  - You will have one homework assignment every week or two weeks.
  - Labs will be completed by teams of two students.
  - Part of homework (10%) will be a reading assignment on the required reading for the class: “Future Crimes”.
- **Project**
  - The project will be completed by teams of three students.
  - The project topic will involve research on cybersecurity. You may develop an artifact, a short demo on a security topic, or perform a qualitative/quantitative survey on cybersecurity.
  - You will have multiple deliverables and presentations for your project.
- **Participation:**
  - Participation will be the average of your attendance in class (1/3), your seminar attendance (1/3), and active in class participation (1/3).
  - You need to actively answer and ask questions during class to earn active in class participation points.
  - The participation points are dependent on my discretion of your attention and active preparation/participation.

**Late Submissions**

- Deadlines are firm.
- You may submit up to two days late with 20% penalty for each day that you are late.
- *A score of zero will be assigned to any project/homework that has not been submitted within two days after the deadline.*
Re-grading

If you have a request for re-grading, you need to ask me to re-grade your exam or homework up to one week (five business days) after this has been returned to you. *There will be no re-grading if the test/project that is older than one week.* I reserve the right to re-grade the full test/project. This means that I will not re-grade only the part you have requested, but the whole exam/homework and add or reduce points accordingly.

Missed Exams/Presentation

If you miss an exam/presentation date, the only way to reschedule is to have an official document (ex. from doctor, coach) verifying the reason you had to miss the test AND to let me know with an email BEFORE the date of the exam/presentation. Please refer to the student handbook “Class attendance policies” for a more detailed description of excused absences. A reason to miss the test may be a health issue, a sports tournament you had to participate, or an important personal issue. I will consider rescheduling on a case-by-case basis.

Attendance

Regular attendance is expected of all students. I take attendance at the beginning of each class session. Participants are expected to attend all sessions, **be punctual**, and remain for the duration of each class. In the rare case where some absence is required, make up work will be assigned where it is practical to do so. Attendance is also part of the grading scale. Students may be withdrawn by the instructor if absences violate these guidelines.

Schedule

The schedule is tentative and *subject to change* during the semester.

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<thead>
<tr>
<th>Week</th>
<th>Topics</th>
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<tr>
<td>1</td>
<td>Intro</td>
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<td>Bits &amp; Bytes</td>
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<td>Binary lab</td>
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<td>3</td>
<td>Computer Architecture</td>
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<td>Command line lab</td>
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<td>4</td>
<td>Information Security Pillars CIANA</td>
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<td>Risks, Threats, Vulnerabilities</td>
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<td>5</td>
<td>Cybercrime, Cyberwar</td>
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<td>Laws and Policies lab</td>
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<td>6</td>
<td>Fighting back: cybersecurity design fundamentals</td>
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<td></td>
<td>File permissions and access controls lab</td>
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<td>7</td>
<td>Nuts and Bolts of Computer Networks</td>
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<td>Networks lab</td>
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IT System Components: workstations, servers, routers, switches, gateways

Components Lab

9  Spring Break
Spring Break

10  Cyber Threats
DDoS Lab

11  Malware
Malware analysis lab

12  Cyber Defense
Forensic Analysis, IDS, IPS lab

13  Cryptography
Crypto lab

14  Passwords & Hashing
Certificates & Authentication

15  IA Fundamentals: business, risk assessment, security lifecycle
Laws and Policies

16  Final Exam: Project Presentations

**Honor Code**

I expect you to abide by the Honor Code and the Student Handbook: A Guide to Civil and Honorable Conduct. If you have a question about how to interpret the Honor Code, ask before acting! I encourage collaboration, but you must document it. Thus, each student will submit their own homework and, when collaborating, provide a reference to those people and documents consulted.

What is plagiarism?
The unauthorized use or close imitation of the language and thoughts of another author and the representation of them as one's own original work, as by not crediting the author. *(Source: dictionary.com)*

As you noticed above, I am citing the Internet source from which I used my information. Plagiarism includes using material from the Internet without citing the website from which you got your material. Books, articles and any hard copy sources should be cited as well. Plagiarism is considered cheating.

Plagiarism and coding (what you can and cannot do!):

1. You may look up examples on the Internet.
2. You may NOT copy paste code from the Internet and present it as your own. Avoid copy pasting code from the internet and use this as a last resort ALWAYS with citation to the website that you used.
3. You may use libraries that are included in the Java API.
4. If you plan to use a library that is not on the Java API in a project, you will need to discuss this
with me.

Discussing solutions with other students: Make sure you apply the “empty hand policy”, i.e., do not copy or use material from the discussion, just interact, brainstorm. You cannot look at someone’s code and then type it. You cannot share the programs, write code on a paper and share it with someone, or in any form whatsoever share your programs.

Collaboration in teams is allowed only if I have explicitly described in the project/homework assignment. You may collaborate based on the principles of pair programming (see below) and only if I have authorized teams. The Honor Code applies to the team members.

My actions after I suspect a cheating:

1. Contact the student and discuss the issue.
2. Consult with the honors committee and proceed to submit the issue with sufficient evidence that the student has cheated.

**Pair Programming**

Programming projects can be performed in teams of two members. The goal is to learn pair programming principles and extreme programming techniques that are used in industry. This allows the students to learn from each other and learn to collaborate. The main responsibilities for such collaboration are:

1. All the members of the team need to have project ownership, i.e., participate equally in the design, development and documentation. The instructor will ask in depth questions to all members of the team.
2. **All programming must be done in the pair.** Do not continue programming outside the pair. If you can't finish in one session, meet again. If that's impossible, save a copy of the code you pair-programmed for separate submission. Then work alone to finish the code. Review the part you coded alone with the other team members.
3. You need to follow the rules of pair programming, switching roles from observer to driver every 15 minutes or so.
4. All members receive the same grade.
5. A team leader will make the assignment submission. This is just to maintain one submission per team and in no way the team leader should do less or more work than the rest of the team members.
6. Students need to bring up collaboration issues early (first week of assignment) in order to switch teams.

**Accommodations for Adults with Disabilities**

The College will make reasonable accommodations for persons with documented disabilities. Students should apply for services at the Center for Disability Services/SNAP located on the first floor of the Lightsey Center, Suite 104. Students approved for accommodations are responsible for notifying me as soon as possible and for contacting me one week before accommodation is needed.
Final Notes
➢ I have a Greek accent that may be hard to understand sometimes. Please do not hesitate to ask me to repeat something.
➢ If you need to record the class, you may do this with your phone if you do not disturb the class.
➢ Please respect your classmates. Put your phone on silent mode before the lecture starts.