

Info for educators – Cybersecurity Overview – Fall 2019

Module Description

This module covers the general area of cybersecurity – what is it? What are the issues? What are the careers and job opportunities. This is an overview intended for first year college students but may also be appropriate for high school.

Module contents

- 1) Recorded lecture (approx. 35 minutes)
- 2) Slide deck materials (pdf)
- 3) Discussion topics (below)
- 4) Suggested assignments and activities (below)

Student Learning Outcomes

- Develop student knowledge about the field of cybersecurity.
- Learn about some well-known cybersecurity events from the past decade.
- Understand the types of skills and education needed for a career in cybersecurity.
- Learn where to get more information about specific career requirements for jobs in cybersecurity.

Time/Effort

- Recorded lecture – approx. 25 minutes
- Activities – approx. 3 hours
- Discussion: 30 – 60 minutes

Suggested Discussion Topics

- 1) In what field do you want a career? Go back to that Verizon Data Breach Incident Report (slide 5) or do a little internet browsing to understand what kinds of threats your sector faces. Describe your field/sector, the cybersecurity threats they face.
- 2) After Stuxnet, people started becoming concerned about all kinds of different areas that rely on industrial control systems – the power grid, water supply, factories, etc. What would the effect be if malware caused outages, or other problems with US industrial operations? Consider that each industry relies on the “supply chain” for parts and materials. How safe do you think we are from cyber attack?
- 3) Have you or your family been affected by one of these breaches like what happened with Target? Don't give out sensitive info, but what happened? How were you affected? Does it worry you?

- 4) What do you think about the use of malware like Stuxnet to accomplish what might be seen as political purposes? Is it a good thing or a bad thing? Identify some arguments in favor of both sides.

Suggested Activities/Assignments

- 1) Spend 20 or 30 minutes researching types of jobs in cybersecurity. Using that information, create the position description for your dream job. Include the following:
 - Company name (can be imaginary company)
 - Title (i.e. CISO or Security Incident Responder)
 - Starting salary
 - Job duties
 - Required knowledge
 - Required education or certifications

Bonus points for creating or using a letterhead/company logo and making it look real.

- 2) Look for another famous cybersecurity incident (i.e. not one of the four in this lecture):
 - a) Brief "what happened" summary
 - b) Who was/were the victim(s)
 - c) If known, who were the attackers?
 - d) What motivated the attackers?
 - e) What was the impact of the attack?
- 3) Visit <https://cyberseek.org> and explore the cybersecurity career pathway. Look at the "Top Skills Requested" for the "Entry Level" jobs. What classes might prepare you for these jobs? Now switch to the "Interactive Map". In what areas of the country is there the most demand for cybersecurity professionals? As I write this, the supply/demand ration for cybersecurity workers is listed at "2.3" – in other words, there are 2.3 jobs for every cybersecurity worker. What does that mean to be looking for a job in these circumstances?

Suggested reading (or watching):

- Stuxnet – "[Stuxnet](#)" - 60 minutes (14min video)
- Stuxnet – "[Countdown to Zero Day](#)" - Wired
- Mirai – "[The Mirai bot net explained...](#)" - CSOnline
- 2016 Election – "[What we know about Russia's Election hacking](#)" - Politico
- Target – "[Email Attack on Vendor Set Up Breach at Target](#)" (somewhat technical – Krebs)