Cybersecurity Across the Curricula
Webcast Protocol

:: Mute your phone/mic when not talking
:: Questions during the webinar?
:: Technical problems
About the 2019 Webcast Series

:: Last Thrs. each month, 1 hour long, 2pm ET
:: Great topics
:: Recorder & archived on National CyberWatch YouTube channel
Cybersecurity Across the Curricula

:: Produced March 28, 2019

:: 2pm ET
Moderator

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Maui
Wednesday 11:00 AM
Partly Cloudy

75°F | 24°C

Precipitation: 4%
Humidity: 56%
Wind: 9 mph

More on weather.com
Agenda

:: Background
:: Cybersecurity Education – Across Disciplines
  Overall Approach
:: Case Studies
  o Accounting
  o Criminal Justice
  o Electronics
  o Healthcare
  o Hospitality
:: Challenges and Benefits
:: Discussion, Q&A
Background - UHMC

- University of Hawaii Maui College (UHMC)
  - Serves Maui County - islands of Maui, Molokai and Lanai
  - 160,000 or so resident population
  - 2 Million or so tourists per year!
  - ~2600 full-time commuter students
  - 20 or so Associate Degrees
  - 3 Baccalaureate Degrees
  - 66% or so women students
  - Median age of students ~25 years
  - Non-traditional students
  - Commuter island college
Background – BAS in ABIT

- Bachelor of Applied Science (BAS) Degree in Applied Business and Information Technology (ABIT)
  - Hybrid Degree in Business and Technology
  - CAE in CDE through 2024
  - Embedded Certificate in Cybersecurity
  - Security+
  - Network+
  - Ethical Hacking
  - Digital Forensics
  - Database Security
  - Information Technology Security
  - Systems Analysis and Design
  - Etc.
Cybersecurity Education – Across Disciplines/Segments

- Cybersecurity educations cuts across various segments
  - Program disciplines
  - Gender
  - Minorities
  - Backgrounds - high schools, professionals, returning veterans etc.
  - Various Industries
    - Accounting, Hospitality, Law Enforcement, Utility, Healthcare etc.
- One size education does not fit all types of students!
Cybersecurity Education – Across Student Population

- Focus on students from a variety of backgrounds
  - Women
  - Minorities
  - Veterans
  - Working Professionals
  - High School Students
  - Remote students who rely totally on distance education
  - Economically disadvantaged
  - Low math/science proficiency
  - Non-technical
  - Non-traditional
  - Not interested in Cybersecurity as a career!
Diverse Cybersecurity Education – Overall Approach

- Obtain administration and other institutional support
- Hold workshop with faculty from various disciplines
  - Stipend helps - $250 - $300, for a one day 8 hours workshop in May
- Identify key faculty leaders in key disciplines
- Engage faculty and students during the semester
  - Guest lectures in classes, Open House events, Career Fairs etc.
  - Highlight relevant industry examples that involves cybersecurity
- Identify one or two existing courses in each discipline
  - Explore topics where cybersecurity modules can be embedded
- Create custom cybersecurity modules and help faculty member teach it!
- Explore employers who will hire students with cyber skills
  - Hotels, banks, tourism, hospitals, law enforcement
5. Cyber Defense is a **Multidisciplinary Practice at the Institution**.

The institution must demonstrate that Cybersecurity is not treated as a separate discipline, but integrated into additional degree programs within the institution. Courses cannot be from the department mapped to the Knowledge Units.

**(Overall Point Value: 6 Minimum/10 Maximum)**

5. a. **Cyber Defense Concepts Taught in Other Fields of Study** Provide evidence that students in other departments are exposed to cyber concepts. For example: health practitioners learning about privacy and patient data protection; or accountants learning about data backup and protection. Provide **course name and syllabus** with cyber modules clearly highlighted. Cannot be courses in the department or curriculum path used to map to the Knowledge Units. Courses taught outside the CD program of study can be technical or **nontechnical**. (1 pt per course/3 pts mandatory/5 pts max)
5. b. Non-Cyber Defense Courses Encourage Papers, Projects or Test Questions in CD topics

- Provide evidence that courses taught outside the CD program path of study require CD topic papers/projects/posters/test questions/etc.
- For example: health care practitioners write a paper on the importance of safeguarding electronic patient health care records.
- Provide links to three to five best papers, presentations, projects or test questions with Cyber topics clearly highlighted within 3 years of application.
- Actual student work is required – not just the assignment required of students.
- Paper/projects/presentations/test questions must correspond to courses provided in 5a.

(1 pt each/3 pts mandatory/5 pts max)
Targeted Disciplines and Course Syllabi

- Details and Syllabi at maui.hawaii.edu/cybersecurity
- Accounting – ACC 124 – Principles of Accounting I
- Administration of Justice – AJ 221 – Criminal Law
- Electronics – ETRO 305 – Engineering Computing
- Hospitality and Tourism – HOST 100 – Career and Customer Service Skills
- Nursing – NURS 211 – Professionalism in Nursing I
C5 Cybersecurity Materials – Foundational Content

● Foundational content for cybersecurity can be found here
  o https://www.c5colleges.org/index.php/cs-course/module-downloads

● Cybersecurity Principles
  o https://www.c5colleges.org/index.php/cybersecurity-principles-module

● Cybersecurity and Society
  o https://www.c5colleges.org/index.php/cybersecurity-and-society-module

● Cyber Threats and Countermeasures

● The content is free and funded by NSF Grant #1548315
● Portions of the above content can be embedded as needed
Case Study: Accounting

- Details at maui.hawaii.edu/cybersecurity

- Accounting – ACC 124 – Principles of Accounting I
  - Targeted Topic - Internal Cost Controls
    - Embed new learning objective and content
    - Apply internal controls to cryptocurrency receipts
    - Currently, the IRS treats virtual currencies as “property”
  - Assignment: Case study on setting up effective cost controls to accept cryptocurrencies in a small business
Case Study: Administration of Justice or Criminal Justice

- Details at maui.hawaii.edu/cybersecurity
- Administration of Justice – AJ 221 – Criminal Law
- Targeted Topic – Loss Prevention or Theft
- Six Principles - Prevention, Awareness, Compliance, Detection, Investigation, Resolution
- Loss prevention for online assets such as IP, contracts, research documents, confidential emails, pictures and other digital assets
- **Assignment:** Case study on preventing spear phishing and social engineering that targets key decision makers
Case Study: Electronics

• Details at maui.hawaii.edu/cybersecurity

• **Electronics – ETRO 305** – Engineering Computing
  • Targeted Topic – IoT or Device Security
    • Security Features in Health Wearables
    • Do research on common and popular wearables
    • Identify reasons for popularity and usage patterns
    • Discover reasons why security is not a main issue to manufacturers
    • Identify issues of privacy, confidentiality and risks

• **Assignment:** Case study on how security vulnerabilities of wearables such as Fitbit
Case Study: Hospitality and Tourism

- Details at maui.hawaii.edu/cybersecurity
- HOST 100 – Career and Customer Service Skills
  - Targeted Topic – Front Desk Check in – Digital Keys
  - Digital Keys issued by Front Office Operations
    - Research the details of digital keys
    - Business benefits to hotel and customer
    - Security risks and pitfalls of digital keys
    - Future of digital keys and other technologies
- **Assignment:** Case study on how digital keys can be obtained by social engineering at the front desk
Case Study: Nursing

- Details at maui.hawaii.edu/cybersecurity

- Nursing – NURS 211 – Professionalism in Nursing I
  - Targeted Topic – Patient Privacy, Confidentiality of Health Records
  - Research malware and security hygiene in Small Medical Practices
  - Learn about rules and regulations regarding privacy of patient health records
  - Conduct research of security practices and policies in small medical offices, if any!

- **Assignment:** Case study on how small medical practices can incorporate security hygiene into daily operations?
Overall Challenges

- Faculty members need to be open and interested!
  - Cybersecurity does not appeal to all
- Faculty members need to see value
  - Inserting course modules within an existing syllabus and timeframe
- Students need need to see value!
  - See cybersecurity as a means to enhance job/career opportunities
- Embedding new courses and projects takes time and work
  - Faculty member needs time off existing work to create new modules
  - Faculty members may need to remove topics to insert CyberSec modules!
- Ongoing training to ensure new faculty can learn InfoSec
  - Making this sustainable requires one-two years of effort
- Administration needs to be behind all this effort!
Benefits!

- Hands-on projects engage diverse students with fun work!
- Cyber savvy workforce can come from various disciplines
- Increase interest in cybersecurity from a diverse group
- Grow the overall awareness of cybersecurity defense
- Enhance ability of non IT faculty to teach cyber topics
March 28, 2019

Q&A
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Supported by NSF ATE Award #s 1700562 and 1204904
and SFS Capacity Award # 1437514
Thanks!

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:: Past Webcasts on NCC website
:: National CyberWatch YouTube Channel