New Approaches to Cyber Security Education (NACE)

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AGENDA

● Background

● Cybersecurity Education - Traditional

● Cybersecurity Education - Across Disciplines

● Case Study
  ○ Faculty Workshop
  ○ NSA GenCyber, CyberPatriot
  ○ Student Research Projects

● Challenges/Benefits
Background - College

- University of Hawaii Maui College
  - Serves Maui County - islands of Maui, Molokai and Lanai
  - 150,000 or so resident population
  - 2 Million or so tourists per year!
  - 3000+ full-time commuter students
  - 20 or so Associate Degrees
  - 3 Baccalaureate Degrees
  - 66% or so women students
  - Average of students ~25 years
Cybersecurity Education - Traditional

- Certificates in Cybersecurity
  - Low Level - Intro, Network+, Security+
  - Higher Level - Ethical Hacking, Forensics
- Internships
  - Government, banks, utilities
- Baccalaureate Degree
  - Applied Business and Info Tech
- Cyber competitions and Workshops
  - NSA GenCyber, US AFA CyberPatriot
Cybersecurity Education - New Approaches

- Cybersecurity educations cuts across various segments
  - Community College program disciplines
  - Gender
  - Minorities
  - Background - high schools, professionals, returning veterans etc
  - Various Industries
    - Accounting, Hospitality, Law Enforcement, Utility, Tourism 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 and Minorities
  - Veterans and Working Professionals
  - High School Students
  - Remote students who rely totally on distance education
  - Economically disadvantaged
  - Low math/science proficiency
  - Non-technical and Non-traditional
  - Not interested in Cybersecurity as a career!
Cybersecurity Education - Across Disciplines

● Focus on 5 disciplines at Associate Degree level
  ○ Accounting
  ○ Criminal Justice
  ○ Electronics
  ○ Hospitality, Travel and Culinary
  ○ Business

● Supported by NSF
  ○ SFS Capacity Building Grant, Award# 1437514
  ○ ATE Grant, Award# 1700562
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. (7 pts mandatory/15 pts max)
Diverse Cybersecurity Education - Overall Approach

- Obtain administration and other institutional support
- Identify key faculty leaders in key disciplines
  - Engage faculty and students
- Engage employers who will hire students with cyber skills
  - Hotels, banks, tourism industry, law enforcement
- Identify one or two existing courses in each discipline
- Hold workshop with faculty from various disciplines
- Create modules and help faculty member teach it!
Case Study - Faculty Workshop

- Target Audience and Disciplines
  - Faculty from Accounting, Business, Electronics, Hospitality, Culinary

- Date - May 16, 2018
  - All Day Faculty Workshop (summer overload)
  - $350 stipend, supported by NSF SFS Award# 1437514
  - Finalize target courses for Fall 2018, discuss security modules/labs

- Topics
  - Ransomware, Bitcoins, Blockchains, Security Culture, Hacking Labs
Research Project - CyberSecurity in Health Care

- Student internship project - Spring 2018
  - Focus on small health care practitioners - doctors, dentists etc.
  - Conducted by undergraduate student - Cindy Osako
  - Survey to calibrate
    - cyber hygiene
    - Readiness for malware, phishing etc.
    - cybersec education
  - Deliverable - Infographic for office, coffee lounge etc.
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!

● Embedding new courses takes time and work

● Ongoing training to ensure new faculty can learn InfoSec

● Administration needs to be behind all this effort!
Benefits!

- 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