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

● Supported by NSF Grants
  ○ ATE Program Award# 1204904
  ○ SFS Program Award# 143751
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
CAE-CDE 2018 Criteria

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 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
Questions? Comments? Feedback?!

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