The Future of Cybersecurity Education:
University-Level Cybersecurity Education

Eman El-Sheikh, Ph.D.
University of West Florida
SAM’16
Outline

• Critical shortage: cybersecurity workforce development

• Innovative strategies
  – Develop cutting edge curricula
  – Build bridges
  – Provide flexible and accelerated options
  – Engage and prepare students

• The future of cybersecurity
Critical Need: Cybersecurity Talent

- Cybersecurity workforce demand is expected to rise to 6 million (globally) by 2019, with a projected shortfall of 1.5 million,” Michael Brown, CEO, Symantec

- 209,000 cybersecurity jobs unfilled in 2015 – Bureau of Labor Statistics

- Cybersecurity postings have grown 91% from 2010-2014 – Burning Glass Report
Develop Cutting Edge Curricula

- Curricula must be developed and continuously updated to stay ahead of attackers:
  - NSA-DHS National Center of Academic Excellence in Cyber Defense Education
    - 209 CAE-CDE institutions in the US
  - National Initiative for Cybersecurity Education (NICE)
  - Advisory boards
Develop Cutting Edge Curricula

• NICE Workforce Development Framework
  – 7 categories and 32 specialty areas
Build Bridges

• Foster partnerships among K12, higher education institutions, employers and government
  – Develop K12 bridge programs: summer camps, competitions, online training, dual enrollment, etc.
  – Multi-institution partnerships: 2 year – 4 year programs, articulation agreements, collaborative programs
  – Internships, coops, scholarships
    • Scholarships For Service Program
Provide Flexible & Accelerated Options

- Create flexible pathways
  - Condensed certificate programs that address needed skills
  - Training programs for military and veterans
  - Accelerated BS/MS programs
  - Online/distance programs and training
Engage and Prepare Students

• Prepare students to enter the workforce and become future cyber leaders
  – High Impact Practices (HIPs): capstone projects, research experiences, etc.
  – Build a community: student clubs, professional organizations, scholars program
  – Integrate important skills: communication, project management, team work
  – Include ethical hacking
  – Provide real-world experience:
    • internships, competitions, immersive lab environments
The Future of Cybersecurity

- Cybersecurity – an emerging discipline
  - Enhance multidisciplinary approach
  - Infuse research and real-world skills
  - Diversity is key for innovation
  - Develop [global] curricular standards
Resources

- National Initiative for Cybersecurity Careers and Studies: https://niccs.us-cert.gov
- National Centers of Academic Excellence: https://niccs.us-cert.gov/education/national-centers-academic-excellence-cae

E. El-Sheikh – SAM 2016
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Thank you
eelsheikh@uwf.edu
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