Overview

A coalition of Virginia universities, in partnership with the Virginia Department of Elections, launched the Virginia Cyber Navigator Internship Program (VA-CNIP) – an innovative educational program to train future cybersecurity professionals to protect election infrastructure.

The program includes a full semester gateway course covering sociotechnical election topics, a two-day kickoff bootcamp to prepare students for their internship, an internship with an election office, and a one-day debrief and assessment at the end of the internship.

The Need

- Secure elections are essential to democracy

- Election systems are critical infrastructure

- Decentralized

- Variability

VA-CNIP Funding

National Centers of Academic Excellence in Cybersecurity Education Innovation 2021

- NCAE-C-001-2021
- Critical Infrastructure Coalition
- $3 million
- Two-year grant with third year option

Virginia Department of Elections (ELECT)

Promote and support accurate, fair, open, and secure elections for the citizens of the Commonwealth

- Establishing cybersecurity needs of the local government election units.
- Facilitating the selection of the local government units.
- Ongoing coordination of communication between the local government units and the academic groups.
- Presenting to the interns about the governmental aspects of security with regard to the overall voting process.
- Being a resource for an assessment process with regard to the attained cybersecurity levels in the local government units.
- Being a resource for an assessment of the internship program.

Industry Partners

- Greater Washington Partnership
- Leidos
- Veracode
- Ernst & Young LLP
- Capital One
- Accenture Federal Services
- General Dynamics Information Technology (GDIT)
- Praxis Engineering
- Fortinet
- LMI
- Mitre

VA-CNIP Goals

1. Assess the security of Virginia's election system
2. Cybersecurity education opportunity focused on election systems
3. An experiential, service learning internship in election districts
4. Coalition collaboration
5. Future and sustainable collaboration

Gateway Course

The course will introduce students to the major sociotechnical aspects of election security and provide knowledge, skills, and abilities in areas that are essential to prepare the students for a productive internship with a local election office.

- Discusses the historical, cultural, and political significance of voting.
- Provides students with an understanding of the technical issues of securing election processes.
- Introduces students to careers in service for public good.

Gateway Course Learning Outcomes

- Understand election system and legislative history of voting in the U.S.
- Understand the cultural significance of voting in American democracy and the important role of trust.
- Identify threats, vulnerabilities, and attacks in election infrastructures.
- Understand election system security standards and regulations including the Virginia Department of Elections Voting Systems Security Policies, Standards, Guidelines, and Locality Election Security Standards (LESS).
- Assess security controls for voting systems, voter registration databases, and associated IT infrastructure and systems used to manage elections.
- Explore cybersecurity careers in the public sector.

Gateway Course Modules

Cybersecurity and Elections

- U.S. Election Systems History & Background
- Voting Systems Security Background & Standards
- Election Threats, Vulnerabilities & Attacks
- Election Architecture & Controls
- Locality Election Security Standards (LESS)
- Cybersecurity Careers in the Public Sector
- Design & Architecture of Voting Machines
- Misinformation and Social Engineering

Guest Speakers

- Chris Krebs – former Director of the Cybersecurity and Infrastructure Security Agency

- Michael Gilbert – Associate Dean of UVA School of Law

- Dreama Johnson, Dana Quist, Logan Reed – UVA Career Center

- Paul Sanders, Tom Dukes, Collins Huff, Tim Jarrett – UVA Alumni

Bootcamp

- Two-day kickoff bootcamp
- Attendees included interns, ELECT representatives, local registrars, faculty mentors, guest speakers
- Internship preparation
- Career development
- Team building
- Networking

Bootcamp Guest Speakers

- Jennifer West – UVA Dean of School of Engineering
- Johnathan Barbett – Director of Information Security, ELECT
- Karen Hoyt –Stewart – Locality Security Program Manager, ELECT
- Tim Wyatt – ValGIT
- Kim Wyman – Senior Election Security Advisor, CISA
- Julian Lapan – Director of UVA Center For Engineering Career Development
- Lynne Clark – Chief, Center for Cybersecurity Education, NSA
- Chris Krebs – Former Director of DHS Cybersecurity and Infrastructure Agency (CISA)
- Mariah Kenny, Crystal Ro, Jeff Gray – UVA Alumni Panel
- Linda Bixby – Director of Academic Programs, LMI
- Timothy Brooks – Program Manager, Leidos

Internship

- 10 weeks, 30 hrs/wk

- 17 Virginia localities

- 32 interns, teams of 2/3

- Faculty mentors

- Projects included: Incident response planning, tools assessment, policy review and development, vulnerability scanning, and more

Debrief

- One day meeting at end of internship

- Interns, mentors, and ELECT

- Interns share experiences

- Intern experience assessment

- Feedback for future programs

What's Next

- VA-CNIP as a a model for other universities and states

- Curriculum and materials shared on CLARK

- Ensuring program sustainability

- VA-CNIP as a model for other public interest cybersecurity programs

Thanks!

Do you have any questions?

Education

Experience

Public Service

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