Student Internships as a Staffing Strategy

2019 CoV Security Conference

April 11, 2019

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OLD DOMINION
UNIVERSITY

Old Dominion University

- A public doctoral research institution
  - ~24,000 student count
  - ~4,200 faculty and staff
  - Six colleges,
  - Graduate & Continuing Education Schools
  - Three remote locations
  - 100+ online programs
  - Over 150 active IT projects
  - Completed about 125 IT projects last year

Old Dominion University – InfoSec Program

- Program Areas:
  - Governance
  - Privacy
  - Awareness
  - Identity
  - Incident Management
  - Operational Security
  - Contingency Planning
  - Assessments and Reviews
  - Compliance
  - Enforcement

Old Dominion University – InfoSec Program

- Essential elements:
  - A Framework or guiding principles
  - Policies and Standards based on the Framework
  - A Program Document
  - Program Areas
  - A Program Review
  - A Program Champion

Old Dominion University – InfoSec Program

- Security Program Staff
  - CISO (.7 FTE)
  - Asst ISO SecOps
    - 3 Security Administrators
    - 2 student interns
  - Asst ISO for IAM & Banner (.3 FTE)
    - 1 Account Manager
    - 1 part time student
  - Asst ISO for Risk & Compliance
  - Asst ISO for Policy & Governance (.3 FTE)

Security Operations – Internship Program

- What we protect:
  - ~60 VM Servers in Production-PPRD
  - ~900 Virtual Servers
  - 110 Physical Servers
  - 700 VDI VM's
  - ~6,000 endpoints (Desktop and Laptops)
  - ~45,000 network ports
  - ~2,350 wireless access points
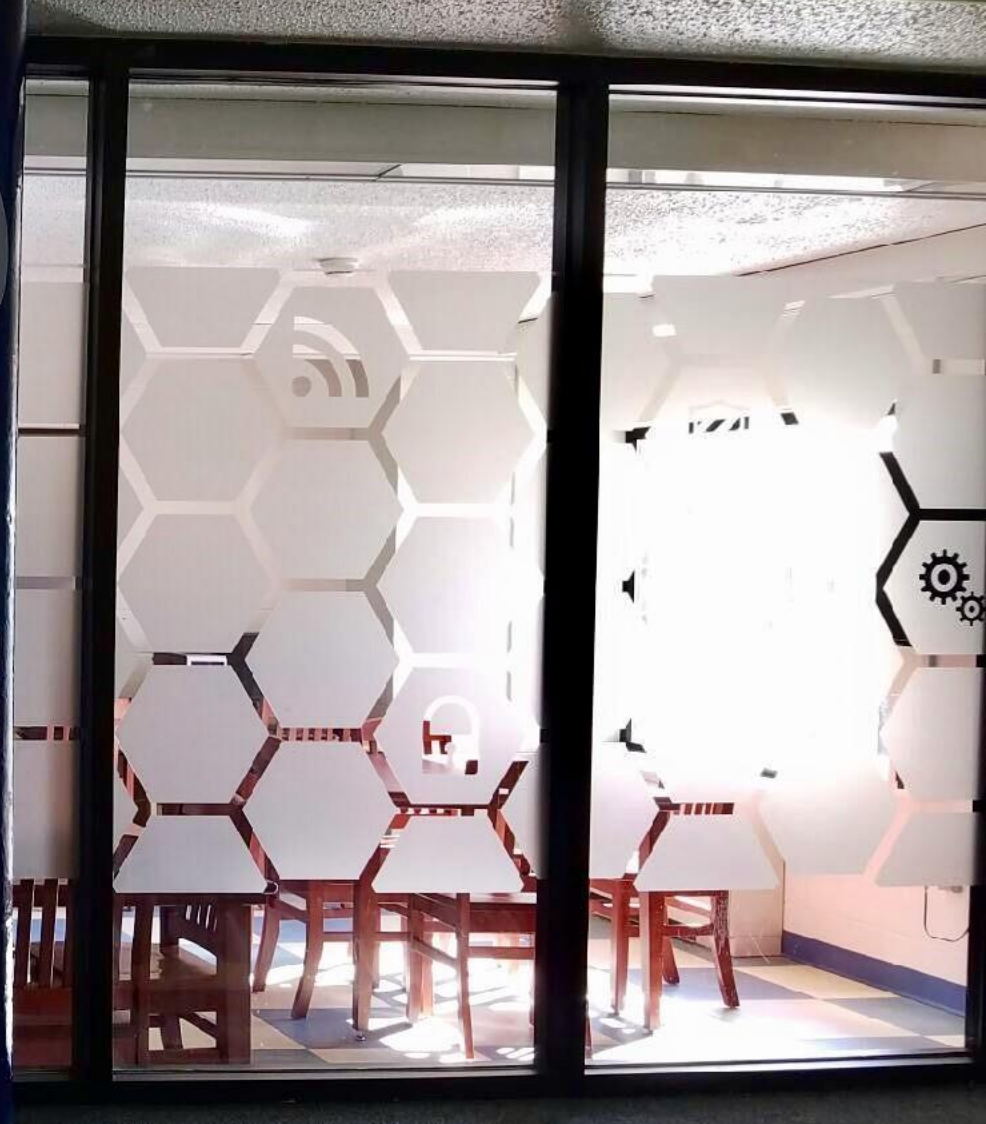 - ~13,000 concurrent wireless client connections

Security Operations – Internship Program

- Security\Compliance areas include:
  - Level II authority, including InfoSec Program
  - Records Management LVA regulation
  - DMCA Illegal Copyright program
  - PCI-DSS Program
  - FISMA, GLBA & FTC Safeguard
  - Federal reporting for PII
  - DFARS\CUI
  - Privacy (GDPR)
  - FERPA
  - HIPAA

Cybersecurity Lab

Old Dominion University – Academic Program

- ODU's Multi-faceted Approach:
  - An interdisciplinary approach
  - Reaching out to High Schools
  - Regional & Community College Partnerships
  - Fostering Student Engagement
  - Enhancing Hands-On Experience

Old Dominion University – Academic Program

- ## Interdisciplinary Academic Program
  - 35 Faculty
  - 4 Colleges
  - 8 Departments
  - NSA-Certified Core Curricula
  - 5 Specialized Majors/Emphasis
  - IDS Cybersecurity Minor
  - Online Graduate Certificates
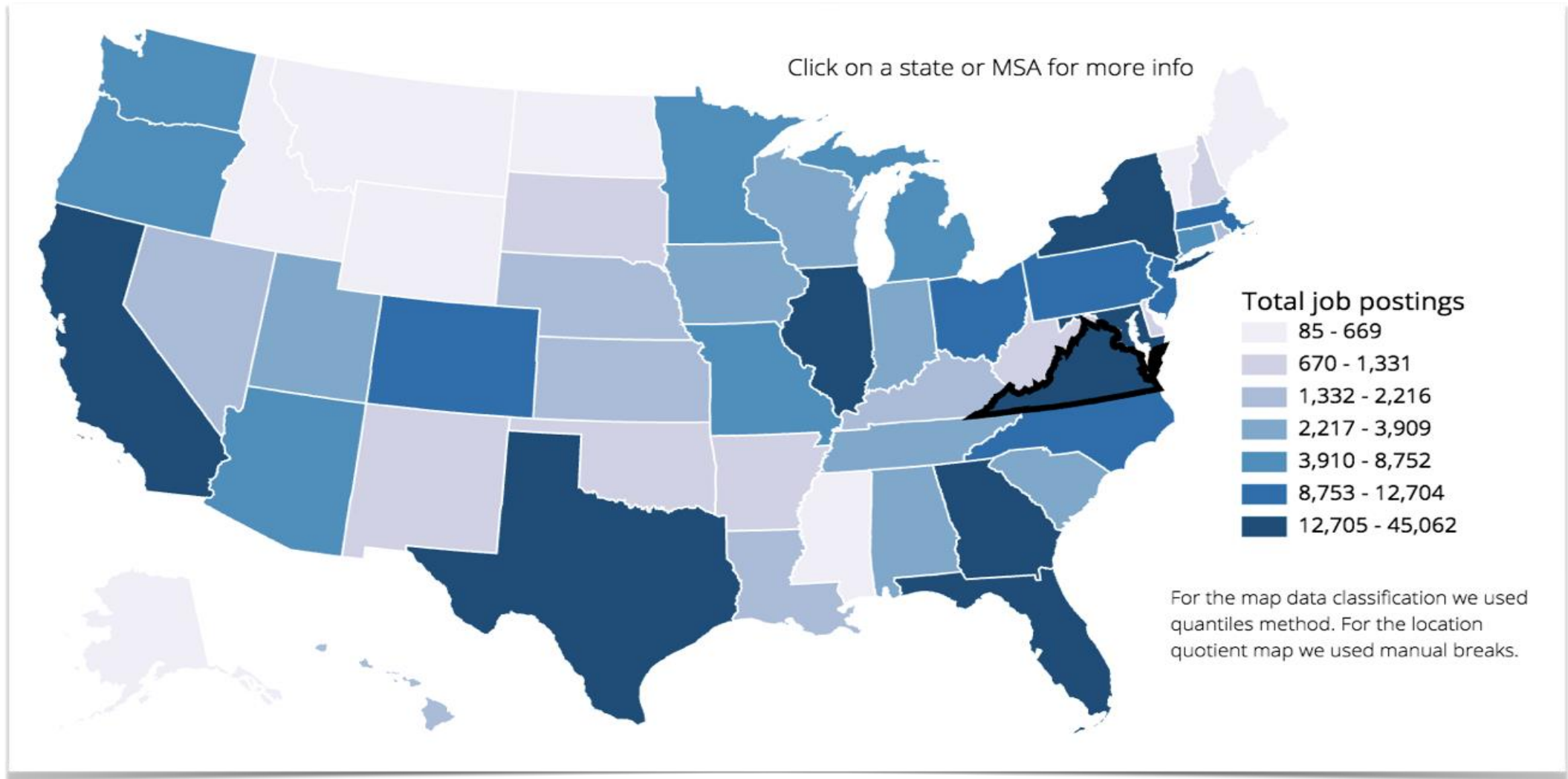 - MS in Cybersecurity

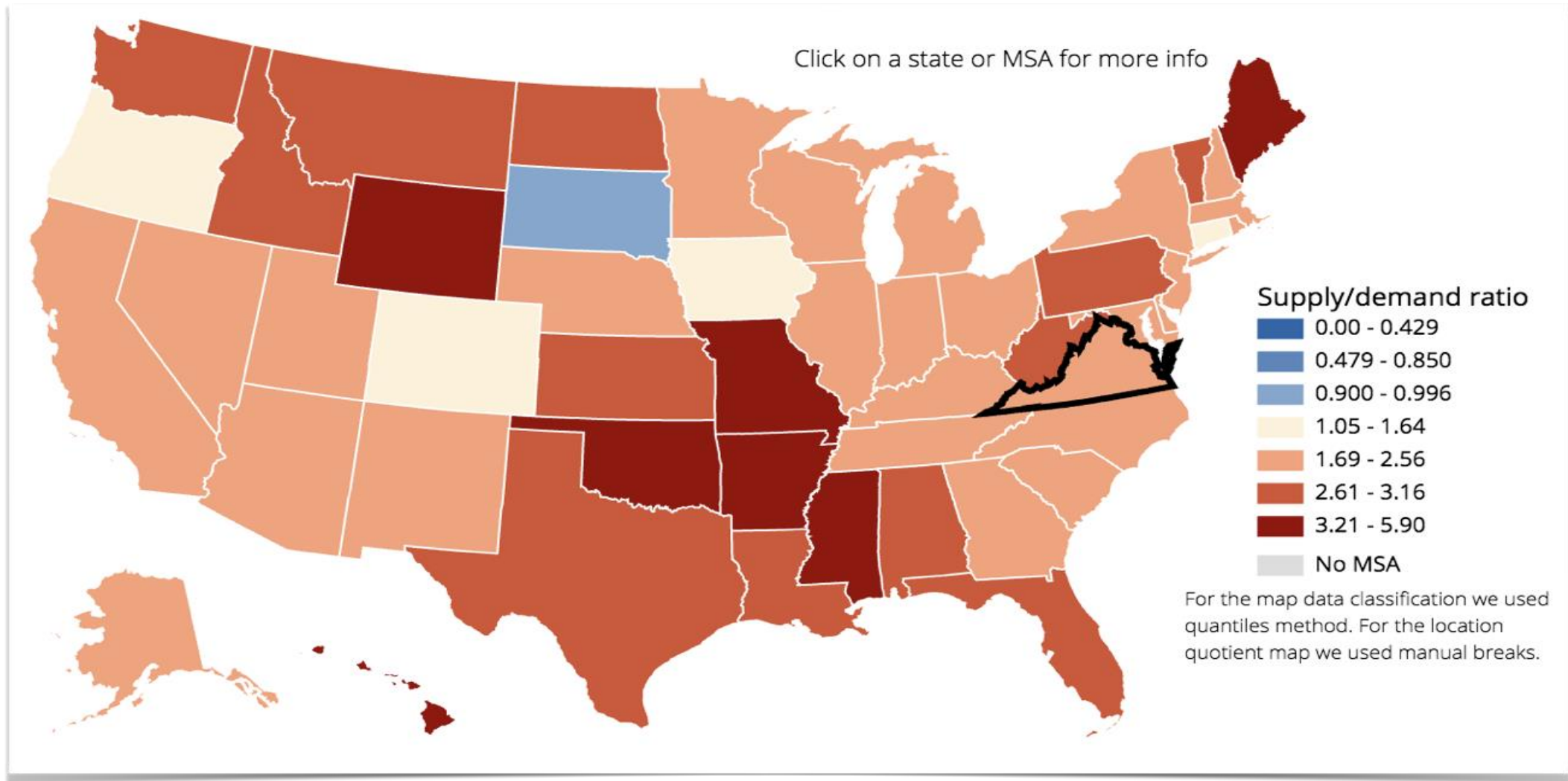# Old Dominion University – Academic Program

- Enhanced Hands-On Experience
  - Cybersecurity Research Environment
  - Cybersecurity Lab
  - Research Experience for Undergraduates
  - **Operational Cyber Internship**

Cybersecurity Demand Heat Map

Click on a state or MSA for more info

Total job postings

- 85 - 669
- 670 - 1,331
- 1,332 - 2,216
- 2,217 - 3,909
- 3,910 - 8,752
- 8,753 - 12,704
- 12,705 - 45,062

For the map data classification we used quantiles method. For the location quotient map we used manual breaks.

Cybersecurity Supply\Demand Ratio

Click on a state or MSA for more info

Supply/demand ratio
- 0.00 - 0.429
- 0.479 - 0.850
- 0.900 - 0.996
- 1.05 - 1.64
- 1.69 - 2.56
- 2.61 - 3.16
- 3.21 - 5.90
- No MSA

For the map data classification we used quantiles method. For the location quotient map we used manual breaks.

Cybersecurity Demand in Hampton Roads

Virginia Beach-Norfolk-Newport News, VA-NC

TOTAL CYBERSECURITY JOB OPENINGS ⓘ

3,329

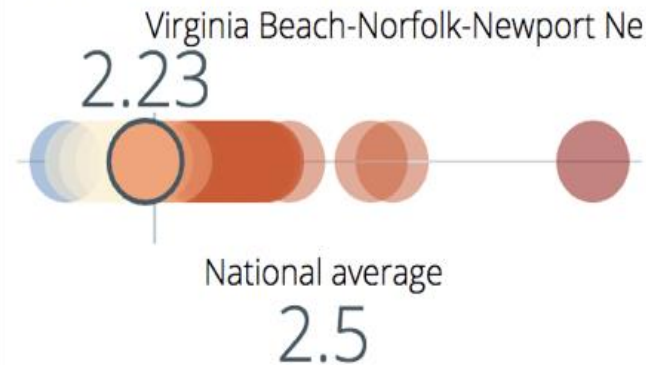**TOTAL EMPLOYED CYBERSECURITY WORKFORCE** ⓘ

7,430

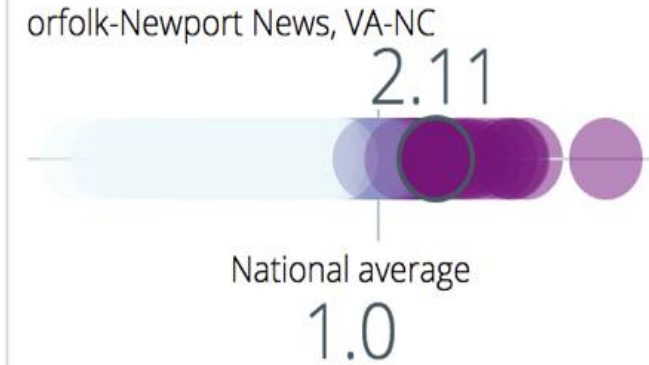**SUPPLY OF CYBERSECURITY WORKERS** ⓘ

Very Low

CYBERSECURITY WORKFORCE SUPPLY/DEMAND RATIO

Virginia Beach-Norfolk-Newport Ne

2.23

National average

2.5

GEOGRAPHIC CONCENTRATION ⓘ

Very High

LOCATION QUOTIENT

orfolk-Newport News, VA-NC

2.11

National average

1.0

Old Dominion University – Academic Program

- ## Enhanced Hands-On Experience
  - Cybersecurity Research Environment
  - Cybersecurity Lab
  - Research Experience for Undergraduates

  - ***Operational Cyber Internship***

STEP Program

> Information Technology Services > Project Showcase > STEP Program

Student Technology Employment

Old Dominion University's Student Technology Employment Program (STEP) provides students the opportunity to gain essential workplace experience during their enrollment. These positions within the Information Technology Services (ITS) department give students the credentials and practical knowledge they need to find success in the modern job market.

Program Goals

The STEP program's main focus is to prepare each student to be competitive, qualified and confident in their abilities when they graduate from ODU. Computer knowledge, experience

STEP Positions

To apply for a technology position in any of the following areas, send a resume and cover letter to its-step@odu.edu.

GET HELP

SOFTWARE & SERVICES

System Alerts

There are currently no system alerts.

Contact

Information Technology Services

4300 Engineering &

Information Security Internship Program

Cybersecurity Internship (Co-Op)

The Information Security Internship Program (a parnership between ODU's Center for Cyber Security Education and Research, Information Technology Services and Career Development Services) provides real-world information security experience to cybersecurity students. Rising sophomores who are enrolled in a cybersecurity undergraduate program at ODU can apply to work in ODU's information security program, gaining hands-on experience with state-of-the-art technologies. We also provide placement opportunities with external employers.

> This internship proved to be a critical step for me after graduating from ODU. It provided me with the tools and experience to secure an entry level position at IBM.
>
> **JALEEL JOHNSON**
> Information Security Intern, 2018

GET HELP

SOFTWARE & SERVICES

System Alerts

There are currently no system alerts.

Contact

Information Technology Services

4300 Engineering &

About The Internship

We are looking for students who are willing to commit to a three-year internship. Students who are

Security Operations – Internship Program

- Cybersecurity Internship (Co-Op)
  - The Information Security Internship Program (*a parnership between ODU's Center for Cyber Security Education and Research, Information Technology Services and Career Development Services*) provides real-world information security experience to cybersecurity students. Rising sophomores who are enrolled in a cybersecurity undergraduate program at ODU can apply to work in ODU's information security program, gaining hands-on experience with state-of-the-art technologies. We also provide placement opportunities with external employers.

Security Operations – Internship Program

- **About The Internship**
  - Students who are willing to commit to a three-year internship
    - Begin in the summer between the first and second year of coursework, and continue through graduation. (Rising sophomores, juniors and seniors will be considered.)
    - Work with the ITS Security Operations team 20 hours per week during summer, fall and spring semesters.
    - Learn about our information security program and gain operational experience during the first year.
    - Participate in vendor meetings, local security organization networking and other operational opportunities throughout the year.
    - Work on assignments and help to research emerging opportunities that will further develop the information security program.
    - Get paid for skills and knowledge while working a flexible schedule.
    - Earn credit after meeting department internship requirements.

Security Operations – Internship Program

- **Requirements**
  - We're looking for students who have the following skills:
    - The ability to work in a fast-paced environment
    - The ability to collaborate within a team environment
    - Excellent oral and written communication skills
    - Excellent data gathering, analytical and problem-solving skills
    - Excellent customer service or client management skills
    - Basic knowledge of cybersecurity principles, tools and devices
    - Experience working with one or more of the following: Java, Python, HTML, C, C#, C++, database design and development
    - Working knowledge of TCP/IP and network analysis

Security Operations – Internship Program

- **Who Can Apply?**
  - Undergraduates entering their second year:
    - Be currently enrolled in a four-year ODU cybersecurity academic program
    - Remain in good standing with your college
    - Maintain a minimum 3.0 GPA
    - Sign a non-disclosure agreement
    - Pass a background check
    - Commit to completing CYSE 300, Introduction to Cybersecurity (or equivalent coursework) by the end of the second school year, and CYSE 301 by the end of the third school year.
    - Participate in the evaluation process and give feedback on learning and program objectives

Security Operations – Internship Program

- **Security Operations/Incident Response**
  Security incident response
  Firewall and network security configuration
  Intrusion detection
  Log monitoring

- **Risk and Governance**
  Information security frameworks
  Security assessments
  Training and awareness programs
  Legal and compliance issues facing security professionals

- **Endpoint Security**
  Antivirus and systems protection
  Encryption management
  Vulnerability management processes

- **Identity and Access Management**
  Identity, roles and access provisioning
  Business analysis and systems design
  Authentication systems management
  Multi-factor authentication engineering

Security Operations – Internship Program

- What value have interns added to our security operations effort?
    - Provide extra "cycles" for rapid response
    - Junior SOC analysts, monitoring, alerts
    - 1st line responders
    - Triage and investigate
    - Opportunity to develop code – automation, extending functionality
    - Special projects as needed (itemized devices on network, assist engineers on their projects)

Security Operations – Internship Program

- What value do we envision over the next few years?
  - Advancing the capability in current role
  - Expand tasking to vulnerability scan remediation
  - Advanced special projects, PoC, new tools
  - Expanding research support for new attack vectors, threat hunting
  - Pen testing or evaluation of existing controls
  - Training leadership witin program for more self management

Security Operations – Internship Program

- What challenges did the program present in starting the program, and in ongoing administration?
  - Compartmentalizing processes to enable handing off portions to students
  - Documenting processes
  - Carve out access to tools for scoped capability
  - Identifying the right students and interview process – aptitude and enthusiasm (take-home challenge – set up a VM and virtual lab with BRO and do some tasks)
  - Expanded staff management overhead
  - Training the students to do tasks and to escalate

Security Operations – Internship Program

- Training Methodology
  - We do it while they watch
  - We do it with their assistance
  - They do it with our assistance
  - They do it while we watch
  - They do it independently

Security Operations – Internship Program

- What other insights may be helpful for agencies who partner with local higher education to initiate an internship program?
  - Meet with Career Services at a local school
  - Develop your position as a pipeline for cyber security students to get hands-on experience
  - Make it a win-win for the student and your organization
  - Have a defined list of objectives
  - Leverage their skills and interests
  - Encourage self-study for an entry level certification

Security Operations – Internship Program

- Results:
  - 2 positions funded, with agreement to expand to 4
  - 2 have gone through program
    - One hired by IBM due to internship experience
    - One hired by our SecOps team
  - 2 new interns
    - One has created several scripts to extend the functionality of our vulnerability scanner

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