Networks are the backbone of information technology operations within an enterprise and are responsible for a significant portion of an organization's security posture. Cybersecurity professionals are often tasked with securing network operations and responding to network threats which demonstrates the importance to networking knowledge in the cybersecurity industry. As a cybersecurity practitioner, it is imperative that there is an understanding of network operations, protocols, and administration practices. This course focuses on developing skills and taking a deep dive into networking protocols including TCP, UDP, ICMP, and IP, network design and architecture, network administration automation, network analysis, and network protocol and design impacts on security and defense measures.

B. Course Effective Dates: 12/15/2017 - Present

C. Outline of Major Content Areas:

See Course Description for major content areas.

D. Learning Outcomes (General)

1. Interpret and analyze packet captures, and perform network trending and baselining
2. Implement network protocol and device hardening practices
3. Dissect and analyze TCP, UDP, ICMP, IP and other networking protocols based on RFC's and real-world applicability
4. Design network architecture and design and impacts on network security and performance
5. Distinguish between the various types of networking hardware and the roles they serve in network performance and defense
6. Design network administration automation and scripting
7. Validate network device management practices: command line interfaces and graphical user interface administration techniques
8. Create and validate signatures for IDS and IPS systems
9. Plan and execute network administration and troubleshooting practices using syslog and SNMP
10. Hunt and identify network threats based on protocols, network devices, and network design

E. Learning Outcomes (MN Transfer Curriculum)

This contains no goal areas.

G. Special Information

Note: Students are responsible to both be aware of and abide by prerequisites for ICS courses for which they enroll, and will be administratively dropped from a course if they have not met prerequisites.