**ILLINOIS TECH** | College of Computing

**Department of Information Technology and Management** *Departmental Syllabus*

# ITMS 448 SYLLABUS

**ITMS 448 Cyber Security Technologies**

**Hours:** 3 credit hours / 45 contact hours

**Instructor:** Maurice Dawson

**Textbook, title, author, and year:** *Official (ISC) 2 Guide to the CISSP CBK.* CRC Press. Gordon, A. (Ed.). 2015

Specific course information

a. **Catalog description:** Prepares students for a role as a network security analyst and administrator. Topics include viruses, worms, and other attack mechanisms, vulnerabilities, and countermeasures; network security protocols, encryption, identity and authentication, scanning, firewalls, security tools, and organizations addressing security. A component of this course is a self-contained team project that, if the student wishes, can be extended into a fully operational security system in a subsequent course.

b. **Prerequisites:** ITMO 440

c. **Required.**

Specific goals for the course

a. Program Educational Objective
2. Perform requirements analysis, design and administration of computer and network-based systems conforming to policy and best practices, and monitor and support continuing development of relevant policy and best practices as appropriate.

b. Course Outcomes:
Each successful student will gain an in-depth understanding of various important network and computer security concepts and practices. Students, through their course exams, labs, and homework will demonstrate the ability to apply information assurance and security concepts, specifically on the topics of malware analysis, attack vectors, mitigation/deterrents, cryptography, steganography, computer forensics, firewalls, IDS/IPS, internet security protocols, authentication, and wireless network security.

c. Course student outcomes:
- Recall and describe various careers in cybersecurity
- Describe Access Control and Bash Scripting
- Describe use of the NIST SP 800 Series Publications
- Describe Security Architecture and Design, DIACAP IA Controls, Virtualization
- Recall and describe key concepts of Physical and Environmental Security
- Recall and describe key concepts of Telecommunications and Network Security
- Recall and describe key concepts of Cryptography and Cryptographic Applications
- Describe the need for and function of Business Continuity and Disaster Recovery
- Recall applicable Laws, Regulations, Compliance, and Investigations and describe their application
- Demonstrate knowledge of Application Security
- Demonstrate knowledge of Operations Security
- Recall and describe special topics in cybersecurity
- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions **(ABET Computing Criterion 3.1)**
- Communicate effectively in a variety of professional contexts
**(ABET Computing Criterion 3.3)**
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline
**(ABET Computing Criterion 3.5)**
- Assist in the creation of an effective project plan

Topics to be covered

a. Careers in Cyber Security, Security Trends, Information Security and Risk Management, Introduction to Linux
b. Access Control, Bash Scripting, Introduction to NIST SP 800 Series
c. Security Architecture and Design, DIACAP IA Controls, Virtualization
d. Physical and Environmental Security
e. Telecommunications and Network Security
f. Cryptography and Cryptographic Applications
g. Business Continuity and Disaster Recovery
h. Legal, Regulations, Compliance, and Investigations
i. Application Security
j. Operations Security
k. Special Topics: Cyber Terrorism, Destructive Coding Practices, Human Intelligence (HUMINT), Signals Intelligence (SIGINT), Imagery Intelligence (IMINT), Measurement and Signatures Intelligence (MASINT), Open Source Intelligence (OSINT), Offensive Security, Defensive Security, Certification and Accreditation (DIACAP, NIST SP 800 Series, Common Criteria, NSA Rainbow Series, Directive of Central Intelligence Directives), Reverse Engineering

*Each* ITM Departmental Syllabus *represents a recent offering of the course. The instructor, textbook(s), course outcomes, and course student outcomes/learning objectives may vary in future semesters.*

June 27, 2020