

## ITMS 400 SYLLABUS

### ITMS 400 Technology Fundamentals for Cybersecurity

Hours: 3 credit hours / 45 contact hours

Instructor: TBD

#### Textbook, title, author, and year:

*Information Technology: An Introduction for Today's Digital World*, Richard Fox 2021

*A Byte of Python*, C.H. Swaroop,, N.D.

*Database Design – 2nd Edition*, Adrienne Watt 2018

Additional online resources

#### Specific course information

- a. **Catalog description:** Hardware and operating system fundamentals; programming basics in Python; introduction to databases, data management, and SQL; networking and data communications fundamentals. Basic cybersecurity concepts are introduced as each technology area is addressed. This course is not available to undergraduates in the Department of Information Technology and Management.
- b. **Prerequisites:** None
- c. **Optional.**

#### Specific goals for the course

- a. **Program Educational Objectives**
  2. Perform requirements analysis, design, and administration of secure 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:**  
This course is a complete examination of fundamental technologies required to construct and operate information systems to facilitate the operation of a modern business enterprise, with an introduction to basic cybersecurity concepts used in each area. The course design will allow students an opportunity to use each of the technologies in hands-on exercises. This course will impart the necessary foundational knowledge for later courses in cybersecurity.
- c. **Course student outcomes:**  
Upon completion of this course the student should be able to do the following
  - Recall and describe the components of a computer
    - Explain the functioning of processors
    - Describe the purpose and operation of motherboards, buses, architecture, and memory

- Describe the purpose and basic functions of an operating system
  - Explain operating system virtualization
  - Install and configure a contemporary operating system in a virtual machine
- Explain fundamental concepts of programming
  - Describe object orientation and explain the value and uses of object orientation
  - Create and run programs in an object-oriented programming language
- Describe fundamental concepts of networking and data communications including physical media, devices, protocols, and standards
  - Configure a computing device to connect to a network
- Describe basic functionality of the World Wide Web
- Describe cloud computing concepts
- Recall and describe fundamental concepts of relational database systems, including data modeling, the entity relationship data model, normalization, and query languages
  - Create and manipulate a relational database in MySQL

1. Topics to be covered
  - a. Introduction to Data, Computer, and Network Technologies
  - b. CPU and Memory
  - c. Operating systems
  - d. OS Installation and configuration
  - e. Software
  - f. Programming basics
  - g. Operators, expressions, functions
  - h. Data structures and I/O
  - i. Object orientation
  - j. Network Infrastructure Concepts
  - k. The Internet and internetworking
  - l. Network configuration
  - m. The Web and the Cloud
  - n. Introduction to Databases, data modeling and the relational database model
  - o. Entity relationship models and normalization
  - p. Structured Query Language and using MySQL