1. *Course number and name*: CSCI 5431 Computer Security

2. *Credits and contact hours*: 3 credit, 3 contact

3. *Instructor's or course coordinator's name*: James Harris , PhD

4. *Text book, title, author and year*: None
   a. *Other supplemental materials:* None

5. *Specific course information*
   a. *Brief description of the content of the course (Catalog Description)*
      Computer security theory and practice fundamentals including methods of attack, defending against attacks, privacy vs. security, methods of encryption, authentication, writing secure code, web security, and network security.
   b. *Prerequisites*: A minimum grade of "C" in CSCI 2120
      *Corequisite:* CSCI 5332
   c. *Indicate whether a required, elective, or selected elective course in the program*
      Required course for BS-CS since 2013-2014 catalog.

6. *Specific goals for the course*
   a. *Specific outcomes of instruction, ex. The student will be able to explain the significance of current research about a particular topic.*

| Course Learning Outcomes | Student Outcomes |
|---|---|
| Analyze and determine the relative risks involved in securing a system | 1a,1b,1e |
| Analyze computer network traffic to determine threats | 1a, 1b, 1e |
| Implement procedures to secure computer networks | 1a, 1b, 1e, 1i, 2b |
| Demonstrate the ability to apply knowledge of operating systems to secure those systems | 1a, 1b, 1c, 1e, 1i, 2b |
| Demonstrate the ability to apply methods of encryption, authentication, and integrity to secure data | 1a,1b,1e |
| Demonstrate the ability to recognize and repair insecure design and code | 1a, 1b, 1c, 1e, 1i, 2a, 2b |

*b.* Student Outcomes

- 1a: An ability to apply knowledge of computing and mathematics appropriate to the discipline;
- 1b: An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution;
- 1c: An ability to design, implement and evaluate a computer-based system, process, component, or program to meet desired needs;
- 1e: An understanding of professional, ethical, legal, security, and social issues and responsibilities;
- 1i: An ability to use current techniques, skills, and tools necessary for computing practice.
- 2a: An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices;
- 2b: An ability to apply design and development principles in the construction of software systems of varying complexity.

7. *Brief list of topics to be covered*

- OSI Model
- TCI/IP Protocol Suite
- Wireless Network Fundamentals
- Securing Each OSI layer
- Encryption
- Operating System Security