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.**

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