Course Overview
A treatment of security issues related to computers and computer networking. This course is designed for advanced users, system administrators and network administrators. The course covers TCP/IP security issues, security policies, packet filtering, Internet firewall architecture and theory, detecting and monitoring unauthorized activity, password authentication, intrusion detection and prevention and other security issues involving Linux, UNIX and Microsoft Windows operating systems. A team project is included. Prerequisite: MATH 1040 or MATH 1220 or MATH 3410, ENGL 3100 or NTM 3250, CS 3100 and CS 3705.

Class Structure
Class will consist of lectures, discussions, lab exercises, presentations, quizzes and exams. Questions, comments and thought provoking inquiries are strongly encouraged. There is a lot of reading and lab work for this class and students are expected to read the related course material prior to that week's lectures and discussions. Lectures will generally be on Tuesdays followed by a lab exercise on Thursday each week.

Lab Exercises (Assignments)
Lab exercises are worth a significant portion of a student's grade. These labs are designed to reinforce the principles of secure computing by giving students hands-on experience into how computer security works. Lab exercises are performed in a protected virtual environment and most require a written report to be submitted. Details of the report format are provided in the lab exercise instructions. I will allow up to two late assignments for half credit.

Presentations
Students are required to complete a presentation. The presentation should be well planned and students should be prepared to speak authoritatively on the subject. Each presentation should be about 20 to 30 minutes on a subject approved by the instructor.

Discussions, Quizzes and Exams
Students are required to participate in weekly discussions of current events and to submit a critique covering security topics in the news. Weekly quizzes will cover lectures, readings and lab exercises. Students are strongly encouraged to complete the weekly assignments to prepare for the quizzes. Quizzes will generally be given on Tuesdays at the first of class. There will be two comprehensive exams for this
class. One midterm and one final. Quizzes and exams can only be taken on the days given unless arrangements are made prior to the date given.

**Ethical Conduct**

Students are expected to maintain academic ethics and integrity in regards to performing their own work. Any form of academic dishonesty (cheating, plagiarism, etc.) will not be tolerated. Academic dishonesty is prohibited as detailed in the WSU University Catalog and Student Handbook. Proof of academic dishonesty will result in a failing grade for the assignment and/or for the course and may result in notification of University Authorities.

The WSU Student Code explains:

a. Cheating, which includes but is not limited to:
   i) Copying from another student's test;
   ii) Using materials during a test not authorized by the person giving the test;
   iii) Collaborating with any other person during a test without authorization;
   iv) Knowingly obtaining, using, buying, selling, transporting, or soliciting in whole or in part the contents of any test without authorization of the appropriate University official;
   v) Bribing any other person to obtain any test;
   vi) Soliciting or receiving unauthorized information about any test;
   vii) Substituting for another student or permitting any other person to substitute for oneself to take a test.

b. Plagiarism, which is the unacknowledged (uncited) use of any other person's or group's ideas or work. This includes purchased or borrowed papers;

c. Collusion, which is the unauthorized collaboration with another person in preparing work offered for credit;

d. Falsification, which is the intentional and unauthorized altering or inventing of any information or citation in an academic exercise, activity, or record-keeping process;

e. Giving, selling, or receiving unauthorized course or test information;

f. Using any unauthorized resource or aid in the preparation or completion of any course work, exercise, or activity;

g. Infringing on the copyright law of the United States, which prohibits the making of reproductions of copyrighted material except under certain specified conditions.

**Schedule**

This is the tentative schedule complete with topic covered and required reading. This schedule is subject to change and any changes will be promptly notified.

<table>
<thead>
<tr>
<th>Week of</th>
<th>Topic</th>
<th>Chap Reading</th>
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<tbody>
<tr>
<td>Aug. 26</td>
<td>Ethics, Hacking and the Legal System</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td>Sep. 2</td>
<td>Penetration Testing Basics (No Class 9/3)</td>
<td>4, 5, 9</td>
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<tr>
<td>Sep. 9</td>
<td>Authentication Techniques</td>
<td>6</td>
</tr>
<tr>
<td>Sep. 16</td>
<td>Wireless Security</td>
<td>Handout</td>
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<tr>
<td>Sep. 23</td>
<td>Using Kali Linux for Penetration Testing</td>
<td>7, 8</td>
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<tr>
<td>Sep. 30</td>
<td>Further Exploits with Kali Linux</td>
<td>7, 8</td>
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<tr>
<td>Oct. 7</td>
<td>Open Lab Week</td>
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<tr>
<td>Oct. 14</td>
<td>Review and Midterm Exam</td>
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<tr>
<td>Oct. 21</td>
<td>Firewall Theory and Practice</td>
<td>Handout</td>
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<tr>
<td>Oct. 28</td>
<td>Intrusion Detection and Log Analysis</td>
<td>Handout</td>
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<tr>
<td>Nov. 4</td>
<td>Malware Analysis</td>
<td>28, 29</td>
</tr>
<tr>
<td>Nov. 11</td>
<td>Mitigation Techniques</td>
<td>26, 27</td>
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<td>Nov. 18</td>
<td>Presentations</td>
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<tr>
<td>Nov. 25</td>
<td>Open Lab Week (No Class 11/28)</td>
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<tr>
<td>Dec. 2</td>
<td>Review and Final Exam</td>
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**Assignment Due Dates:**

- Assignment 1: September 5
- Assignment 2: September 12
- Assignment 3: September 19
- Assignment 4: September 26
- Assignment 5: October 3
- Assignment 6: October 10
- Assignment 7: November 1
- Assignment 8: November 7
- Assignment 9: November 14
- Assignment 10: November 21

These dates are subject to change and any changes will be promptly notified. Canvas will have a more complete list.

**Academic Dishonesty**

CS Department policy dictates that any verifiable evidence of student academic cheating, as defined and determined by the instructor, will result in: 1) an automatic failing grade for the class and 2) a report to the Dean of Students that will include the student's name and a description of the student's dishonest conduct.

**Example Presentation Choices**

- DNS Pharming Attack
- Packet Snifing and Spoofing
- Cross-Site Scripting Attack
- Chroot Sandbox Vulnerability
- Virtual Private Networking
- SYN Cookies
- Wireless Security
- Password Cracking
- Firewalls
- Buffer Overflows
- Rootkits, Malware, Spyware