NET 4740	Security Vulnerabilities and Intrusion Mitigation Spring Semester 2017

Instructor	Kyle Feuz Office: TE 111C Phone: 801-626-7864 E-mail: kylefeuz@weber.edu Office Hours: M 1:30-2:30 pm; T,TH 11:30-1:30 pm
Classroom	TE 109F
Days	MW
Time	11:30-1:20
Texts	Selected Readings
Description	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.
Objective	• Define security in terms of risk assessments and threat models. • Contribute meaningful discussion of ethical issues involving cybersecurity • Conduct a limited penetration test staying within the allowed bounds • Secure a system under different threat models
Class	Class will consist of lectures, discussions, assignments, quizzes and exams. Questions and comments are encouraged. It is expected that students will read the material related to each week's coursework. Attendance and participation will account for 10% of your grade and will be based upon the completion of in-class activities.
Labs and Assignments	There will be five projects for the class based on the reading and lecture topics. The specifics of each assignment project will be posted on Monday in the Coursework folder and the assignment will be due two weeks later on Monday at 11:59 pm. At least one of the projects will be team-based. The assignments will account for 40% of your final grade.
Readings	You will be expected to read and critique 4 current research articles related to the current class topic. For each reading critique a set of articles will be provided from which you may select one article of interest. The critique should consist of a 1-2 paragraph summary of the article followed by a paragraph discussing the strengths of the article and another paragraph discussing the weaknesses or shortcomings of the article. A final paragraph should include a discussion on how the article could be extended in the future. The reading critiques will account for 10% of your final grade.
Projects	There will be an individual final project which will account for 15% of your final grade
Late Policy	Late work will be accepted with a 20% penalty per day for up to three days to provide for unforeseen circumstances.

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<tr><td>Exams</td><td>There will be two exams for the class. Exams count for 30% of the final grade.</td></tr>
<tr><td>Accommodations for disabilities</td><td>Any student requiring accommodations or services due to a disability must contact Services for Students with Disabilities (SSD) in room 221 of the Student Services Center here at the Davis Campus. SSD can also arrange to provide course materials (including this syllabus) in alternative formats if necessary. You can also call 801-395-3524 or visit http://www.weber.edu/ssd for more details.</td></tr>
<tr><td>Grading</td><td>
<table>
<tr><td>Reading Critiques</td><td>10%</td></tr>
<tr><td>Assignments</td><td>40%</td></tr>
<tr><td>In-Class</td><td>10%</td></tr>
<tr><td>Final Project</td><td>15%</td></tr>
<tr><td>Exams</td><td>25%</td></tr>
</table>

The final grade will be given based on points accumulated through quizzes, assignments and exams. Standard grading will apply:

<table>
<tr><td>94 – 100</td><td>A</td><td></td><td>74 – 76</td><td>C</td></tr>
<tr><td>90 – 93</td><td>A-</td><td></td><td>70 – 73</td><td>C-</td></tr>
<tr><td>87 – 89</td><td>B+</td><td></td><td>67 – 69</td><td>D+</td></tr>
<tr><td>84 – 87</td><td>B</td><td></td><td>64 – 67</td><td>D</td></tr>
<tr><td>80 – 83</td><td>B-</td><td></td><td>60 – 63</td><td>D-</td></tr>
<tr><td>77 – 79</td><td>C+</td><td></td><td>0 – 59</td><td>E</td></tr>
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</td></tr>
<tr><td>Allocated Time</td><td>You should anticipate spending two to three hours of study per week for each credit hour of a university course. Computer and programming classes typically require time in the upper range.</td></tr>
<tr><td>Canvas</td><td>This course will have a strong online component via the Canvas course management system. To log on to the course, go to http://canvas.weber.edu, and follow the login instructions. You will need your WSU wildcat name and password to log in. You should have already received this information from the admissions department. If you still have problems getting into the course, please email me and I will see if I can resolve the issue.

If you are unfamiliar with Canvas, go to https://learn-wsu.uen.org/courses/8878 for a student orientation. Click on the links on the left side of the page. PDF help documents are available at http://departments.weber.edu/ce/distancelearning/CanvasFAQ.aspx</td></tr>
<tr><td>Policies</td><td>Exams can only be taken on the days given unless arrangements are made to take them ahead of time.</td></tr>
<tr><td>Cheating</td><td>Students are expected to maintain academic ethics and integrity in regards to performing their own work. The WSU Student Code states clarifies cheating.
1. Cheating, which includes but is not limited to:
a. Copying from another student's test paper;
b. Using materials during a test not authorized by the person</td></tr>
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	giving the test; c. Collaborating with any other person during a test without authority; d. Knowingly obtaining, using, buying, selling, transporting, or soliciting in whole or in part the contents of any test, without authorization of the appropriate official; e. Bribing any other person to obtain any test; f. Soliciting or receiving unauthorized information about any test; g. Substituting for another student or permitting any other person to substitute for oneself to take a test. 2. Plagiarism, which is the unacknowledged (uncited) use of any other person or group's ideas or work. This includes purchased or borrowed papers; 3. Collusion, which is the unauthorized collaboration with another person in preparing work offered for credit; 4. Falsification, which is the intentional and unauthorized altering or inventing of any information or citation in an academic exercise, activity, or record-keeping process; 5. Giving, selling or receiving unauthorized course or test information; 6. Using any unauthorized resource or aid in the preparation or completion of any course work, exercise or activity; 7. Infringing on the copyright law of the United States which prohibits the making of reproductions of copyrighted material except under certain specified conditions; 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.

Class Schedule and Course Outline

Week of	Topic	Coursework
Jan 9 Week 1	Introduction to Security Threat models	
Jan 16 Week 2	Introduction to common tools Kali Linux, Metasploitable, Metasploit, VMware	
Jan 23 Week 3	Risk assessment Security Economics	Project #1
Jan 30 Week 4	Social Engineering Information Reconnaissance	Reading Critique #1
Feb 6 Week 5	**No Class** Authentication Buffer Overflows and Countermeasures	Project #2
Feb 13 Week 6	Privilege Separation Privilege Escalation	Reading Critique #2
Feb 20 Week 7	Virus Scanning, signatures, heuristics, etc. rootkits	Project #3
Feb 27 Week 8	Sandboxing	**Midterm Exam 1**
March 6 Week 9	Firewalls, IDS, IPS	
March 13 Week 10	Web Security	Project #4
March 20 Week 11	SQL Injection	Reading Critique #3
March 27 Week 12	Mobile device security	
April 3 Week 13	Privacy and Anonymization Side-Channel Attacks	Project #5
April 10 Week 14	Medical Software Internet of Things	Reading Critique #4
April 17 Week 15	Project Presentations	**Final Project**
April 24 Week 16	Review Final Exam	Final Exam