CS 576 Computer Security, Spring 2018

Instructors: Dr. Charles V. Wright   Dr. Wu-chang Feng
Office: FAB 120-25   FAB 120-14
Phone: 503.725.4252   503.725.2409
Email: cvwright@cs.pdx.edu   wuchang@cs.pdx.edu
Slack: @cvwright   @wuchang
Office Hours: Tues 2:30–4:30 Fri 8:30–10:30
Course homepage: http://www.cs.pdx.edu/~cvwright/courses/gradsec/

Course Description
Introduction to the principles of computer security. Development of the notion of security through formal models and the examination of existing secure systems. Systems intended for the protection of classified information as well as commercial systems will be examined.

Prerequisites CS 333/533 Operating Systems

Course Outline
The course will cover current “hot” research topics in computer security. Likely topics include:

- Electronic Cash and Crypto Currencies
- Blockchain and Distributed Ledgers
- Searching and Computing on Encrypted Data
- Fuzzing and Symbolic Execution
- Web Security and Privacy
- Hardware Attacks (Rowhammer, Spectre/Meltdown)
- Domain Fronting and DNS Black Ops
- Canary Tokens and Honeytoken Systems
- Multi-factor Authentication
- UEFI and Trusted Boot
- Control-flow Guard and Bypass Attacks

Grading
The format of the course will be primarily discussion-based. Students will be responsible for reading recent research papers each week, and will submit written summaries (“reviews”) of the papers through an online discussion system. Reviews are due at 6am the morning before class. Each student will be responsible for presenting at least two papers in class. At the end of the term, each student will submit an in-depth “deep dive” screencast presentation on a selected topic. Final grades will be determined according to the following formula:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Participation</td>
<td>10%</td>
</tr>
<tr>
<td>Written Reviews</td>
<td>30%</td>
</tr>
<tr>
<td>Class Presentations</td>
<td>40%</td>
</tr>
<tr>
<td>Final Screencast Deep-Dive</td>
<td>20%</td>
</tr>
</tbody>
</table>
Letter grades will be calculated according to the standard US system on a roughly 10-point scale.

**Electronic Discussions**

Online spaces for electronic discussions and for reviews of papers and presentations will be provided as part of this course. Details will be provided in class. All students should sign up for the discussion channels in order to sign up for presentations and to submit their written reviews.

*Please note:* Respectful communication is required on all electronic discussion resources. Please be courteous and professional. Use of electronic resources is subject to Portland State’s student code of conduct, and discrimination or harassment of any kind will not be tolerated.

**Academic Honesty**

All submissions must represent the work of the submitting team or individual. It is permissible to discuss the assignment with other students, but **you must develop each solution yourselves**. Do not, under any circumstances, copy another person’s program and submit it as your own. Writing any material (whether it be code, English text, or other) for use by another or using another’s work as your own, in any form (even with their permission), will be considered cheating. Cheating on an assignment or exam will result in an **automatic zero grade** for that piece of work, and the initiation of disciplinary action at the University level.

**Ethics**

Some of the technical material studied in this course might be useful for doing things that violate university regulations, laws, or common standards of ethical behavior. Any such behavior that comes to the instructors’ attention will be reported to appropriate authorities. In particular, note that use of university computing resources is governed by the Office of Information Technology’s Acceptable Use Policy, which may be found at http://oit.pdx.edu/aup/.

**Accessibility**

If you are a student with a disability in need of academic accommodations, you should register with Disability Services for Students and notify the instructors immediately to arrange for support services.