PURDUE UNIVERSITY

CS 50011: Introduction to Systems II

Summer 2017

Class:
MTWTh 11:00 AM, Room LWSN B134

Lab:
TTh 1:00 PM, Room HAAS 257

Course Web Page:
http://courses.cs.purdue.edu/cs50011:summer17:start

Course Newsgroup:
https://piazza.com/purdue/summer2017/cs50011

Instructor:
Prof. Jeff Turkstra, jeff@purdue.edu, HAAS 128, 49-63088.

Office Hours:
MW 1:30pm-3:00pm
F 9:30am-11:00am

Text:
Optional
Operating Systems: Three Easy Pieces; Arpaci-Dusseau; Online, 2015
http://pages.cs.wisc.edu/~remzi/OSTEP/

Book Online: Introduction to Systems Programming; Rodriguez-Rivera and Ennen; 2014
https://www.cs.purdue.edu/homes/grr/SystemsProgrammingBook/

Prerequisites:
Experience commensurate with a minor in Computer Science
Programming proficiency is *absolutely* required

Course Outcomes:
A student who successfully fulfills the course requirements will:

1. have foundational knowledge for understanding software vulnerabilities in C/C++
2. understand how C/C++ programs are compiled into assembly, how the call stack works in function calls, and stack-based buffer overflows
3. understand basic concepts in computer architecture including instruction sets, assembly code, CPU modes, registers, MMUs, and paging
4. understand basic OS concepts including processes, system calls, virtual memory, and file system structures
5. understand basic concepts in networking, databases, and web applications

Class Attendance
You are expected to attend all classes. If you choose to attend class, please arrive in the classroom on time. You are expected to be quiet in class. If you must miss a class, you are responsible for procuring any material, information, handouts, announcements, etc., that you missed.

Preparation for Lectures
You are expected to check your email and the course website regularly. Here is the *tentative* lecture schedule:

Wk	Lec	Subject
5	1	File Systems and Access Control
	2	More *NIX Utilities
	3	Computer Architecture
	4	Introduction to x86_64 Assembly
6	5	The Stack
	6	More Assembly: Security-relevant Features
	7	Virtual Memory, Data Execution Prevention (DEP)
	8	Programs, Compilers, and Processes
7	9	Networking Overview
	10	The Socket Abstraction
	11	Databases
	12	Web Applications
8	13	TBD
	14	Review

Labs
There will be four “labs” during the course of the semester. The lab exercises are designed to further acquaint one with the material covered during lecture – particularly in a practical manner.

Examination
The exam will be closed book and closed notes. You must solve the exam problems yourself, without any help (knowing or unknowing) from any other student. You must not seek any knowledge in advance of the test questions (beyond that given in class) and must report any advance knowledge of the test questions by any student that you are aware of. You must not allow any other student access to your solutions during the exam.

Final Exam: Wednesday, August 2 1:00pm LWSN B134

Regrades
Problems regarding grading of lab exercises and the exam must be resolved within **two days** after the graded work has been returned to you. It is your responsibility to pick up the graded work on time. Grades will not be modified after the two day period.

Make-up Examination Policy
Make-up exams will be given only in the **most extreme** circumstances and require certification for such circumstances. Eg, a medical doctor's statement certifying that the student is **unable** to attend the scheduled exam. Any travel (including interview trips), load from work or from other classes, failed alarm clocks, or simply not being able to make it to the exam will **not** be grounds for a make-up. If you have any recurring medical problems that may unexpectedly prevent you from making it to class or exams, please obtain a doctor's statement certifying your circumstance.

Academic Integrity
As a student at Purdue you are subject to the *Purdue University Student Code of Conduct*, which enjoins you to respect the highest standards of honesty and integrity. All work that you submit in this course must be your own; unauthorized group efforts are considered academic dishonesty. See the online brochure *Academic Integrity: A Guide for Students* for definitions and sanctions. Academic dishonesty is a serious offense which may result in suspension or expulsion from the University. In addition to any other action taken, such as suspension or expulsion, a **grade of F** will normally be recorded on the transcripts of students found responsible for acts of academic dishonesty. Students are encouraged to report academic dishonesty to the instructor directly, or to the Office of the Dean of Students.

You may discuss assignments in a general way with other students, but you may not consult anyone else's written work. Among other ways to get an F, you are guilty of academic dishonesty if:

- You examine another student's solution to a written assignment
- You allow another student to examine your solution to a written assignment
- You fail to take reasonable care to prevent another student from examining your solution to a written assignment and that student does examine your solution. For example, if you allow another student to check his/her email from your terminal while you step out of the room, you have failed to take reasonable care to prevent him/her from accessing your files.

Do not con yourself into thinking that you can hide any collaboration. The risk of getting caught is too high, and the standard penalty is way too high.

If we find reason to believe that a student has cheated on any assignment, we may inform the student promptly, or we may decide to silently accumulate evidence against the student on later assignments.

Grading
Final grades will be assigned according to the following weighting:
Module I Exam – 25%
Module I Labs – 25%
Module II Exam – 25%
Module II Labs – 25%

Questions and Answers
Questions of general interest should be posted on the course piazza site. Answers will be posted as soon as possible. Project questions should be directed to the appropriate project coordinator via email. Answers will be sent to you directly. If you need to contact a specific TA or instructor, send email to that individual or go see him/her during office hours.

Modifications
This syllabus may be modified at any time with notification.

**** As an interesting side note, a significant portion of this syllabus is copied from Dr. Dunsmore, Dr. Hosking's, Dr. Brylow's, and Dr. Hu's policy pages from previous semesters. One of the major differences between plagiarism and proper reuse is giving credit where credit is due. ****