

From Hackers to CEOs: An Introduction to Information Security

ITP 125 (2 Units)

Fall



Objective

Upon completing this course, students will:

- Understand the fundamentals of information security
- Learn the basics of securing a workstation
- Understand basic networking and security technologies
- Understand the relationship between security and management
- Have a motivation to learn and improve their awareness and understanding of computers and security

Concepts

- This course is designed to be an introductory course in information and computer security. This course starts with an analysis of threats to information integrity. Students will then get an introduction to security mechanisms and policies. Students will learn how security infrastructure will integrate with the rest of the business and IT infrastructure, through the use of hands-on projects.
- This is the gateway course for the Digital Forensics and Cyber Security Minors and Specializations at USC. As a result this is a survey course where we will touch briefly on many different topics in the information security realm.

Prerequisites

None

Instructor

Joseph Greenfield

Contacting the Instructor

Joseph.greenfield@usc.edu

Office Hours

See itp.usc.edu for office hours

Lab Assistants

TBA

Lecture/Lab

Wednesdays 9:30AM-12:30PM in OHE 406

IT Help

Hours of Service: 8AM-9PM; Phone: 213-740-0517; Email: engrhelp@usc.edu

Required Textbooks

None. Required readings will be posted on Blackboard.

Website

All course materials will be posted on Blackboard. (<http://blackboard.usc.edu>)

Code Academy – Python - <http://www.codecademy.com/tracks/python>

Piazza – <http://piazza.com/usc/fall2015/itp125/home>

Grading

Grading will be based on percentages earned in assignments. Students will have structured labs throughout the semester, to be conducted during the scheduled lab time. In addition, students will have a midterm and final exam as well as a final project. Additionally, there will be 21 short programming assignments in python. These will be extra credit, worth up to one point each.

The following percentage breakdown will be used in determining the grade for the course.

Lab Assignments/News	45%
Class Participation/Attendance	5%
Midterm Exam	15%
Final Exam	20%
Final Project	15%
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Total	100%

Grading Scale

The following shows the grading scale to be used to determine the letter grade.

93% and above	A
90% - 92%	A-
87% - 89%	B+
83% - 86%	B
80% - 82%	B-
77% - 79%	C+
73% - 76%	C
70% - 72%	C-
67% - 69%	D+
64% - 66%	D
63% and below	F

Policies

- No make-up exams will be offered nor will there be any changes made to the Final Exam schedule or assignment due dates (except for documented medical or family emergencies).
- It is your responsibility to submit your assignments on or before the due date. **It is not the responsibility of the lab assistant or the instructor.** Do **not** turn in anything to your lab assistant!
- Assignments are due on the date listed in the syllabus at the beginning of class unless otherwise changed by announcement in class or via e-mail. Any assignment turned in late will incur a 25% penalty for the first 24-hour period that it is late, an additional 50% off for the second 24-hour period that it is late, and will not be accepted after 48-hours. All assignments must be turned in either in person to the instructor or via Blackboard. Do not e-mail assignments.
- Grades will be posted on Blackboard and it is your responsibility to ensure that the grades online are accurate and to follow your progress in the class.

- You are expected to be in class, on time, and distraction free. As this class meets once a week and as it is lecture and lab any student who misses more than two classes is in danger of failing the course. Please see me immediately if you have missed that number of class meetings.

News Assignment

To promote class discussion, each student will be required to submit an article for class discussion starting February 3rd. Articles shall be posted with a hyperlink to the article and a one-paragraph summary to the class blog at <http://uscinfosecintro.blogspot.com>. If you have not used this blog before, please submit your Google user name (which is not your USC e-mail address) to the TA. Please take care not to duplicate stories that have been submitted that week.

News stories should directly pertain to topics covered in this class.

- Post a link on the blog by 6PM before class.
- Please submit a story that is no more than one week old.
- If the story is behind a pay-wall or subscription-wall or requires a login, please submit a PDF copy along with the link.
- Be prepared to give a short three-minute summary of the article and any surrounding background details to start the discussion.
- Press releases including anything from prweb.com are not valid news content
- Group 1: Last Names A-L
- Group 2: Last Names M-Z
- Each proper posting is worth 2 points which is 10 points of your lab assignments grade

Incomplete and Missing Grades

Excerpts for this section have been taken from the University Grading Handbook, located at <http://www.usc.edu/dept/ARR/grades/gradinghandbook/index.html>. Please see the link for more details on this and any other grading concerns.

A grade of Missing Grade (MG) “should only be assigned in unique or unusual situations... for those cases in which a student does not complete work for the course before the semester ends. All missing grades must be resolved by the instructor through the Correction of Grade Process. One calendar year is allowed to resolve a MG. If an MG is not resolved [within] one year the grade is changed to [Unofficial Withdrawal] UW and will be calculated into the grade point average a zero grade points.

A grade of Incomplete (IN) “is assigned when work is no completed because of documented illness or other ‘emergency’ **occurring after the twelfth week** of the semester (or 12th week equivalency for any course scheduled for less than 15 weeks).”

Statement on Academic Conduct and Support Systems

Academic Conduct

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Section 11, *Behavior Violating University Standards* <https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions/>. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct/>.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the *Office of Equity and Diversity* <http://equity.usc.edu/> or to the *Department of Public Safety* <http://capsnet.usc.edu/department/department-public-safety/online-forms/contact-us>. This is important for the safety whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. *The Center for Women and Men* <http://www.usc.edu/student-affairs/cwm/> provides 24/7 confidential support, and the sexual assault resource center webpage sarc@usc.edu describes reporting options and other resources.

Support Systems

A number of USC's schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute* <http://dornsife.usc.edu/ali>, which sponsors courses and workshops specifically for international graduate students. *The Office of Disability Services and Programs* http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information* <http://emergency.usc.edu/> will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.

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Course Outline

Subject to Change Throughout the Semester

*** = Attendance Mandatory*

Week 1 – August 24-28 – Introduction, Basics of Security, Ethics

- History of Info Sec
- Types of Security
- Goals of Security
- Laws & Ethics

News Group

None

Lab/Homework

Register for Piazza

At Home Questionnaire

Week 2 – August 31-September 4 – Operating Systems

- History of Operating Systems
- Physical Pieces of a Computer
- POST, BIOS, EFI
- OS Components

News Group

Group 1

Lab/Homework

Command Line Lab

Week 3 – September 7-11 – Security Tactics & Encryption

- Security Tactics & Mechanisms
- Encryption Algorithms
- Digital Signatures
- Hashing
- Passwords

News Group

Group 2

Lab/Homework

Password Cracking Lab

Week 4 – September 14-18 – Networking Basics

- Topologies
- OSI Model
- IP & MAC Addresses
- NAT/DNS/Gateways

News Group

Group 1

Lab/Homework

Windows & Linux Networking Lab

Week 5 – September 21-25 – Networking II

- TCP/IP
- Three Way Handshake
- PAR/Sliding Window
- Ports
- UDP
- ICMP

News Group

Group 2

Lab/Homework

Port Scanning Lab

Week 6 – September 28-October 2 – Advanced Networking Topics & Guest Lecture

- Wireless Networking
- IPv4 v IPv6
- Network Devices
- Secure Network Topology
- VoIP & FTP

News Group

Group 1

Lab/Homework

Metasploit Lab

Week 7 – October 5-9 – **Virtualization Guest Lecture**

Week 8 – October 12-16 – Threats & Attacks

- Malware
- E-mail Threats
- Web Threats
- Protecting Yourself

News Group

Group 1

Lab/Homework

Exam Review

Sending Anonymous E-mail Lab

Week 9 – October 19-23 – Midterm Exam

Week 10 – October 26-30 – Social Engineering

- What is it?
- Principles of Social Influence
- Tactics & Manipulation
- Popular Schemes

News Group

Group 2

Lab/Homework

Backstopping & Basic SE Lab

Week 11 – November 2-6 – Lockdown & Enterprise

- Building Secure Networks
- Data Loss Prevention
- Rings of Trust
- Additional Layers of Security
- BYOD/Mobile Device Management

News Group

Group 1

Lab/Homework

Secure Network Architecture Lab

Week 12 – November 9-13 – Information Security Management

- What is it?
- Attack Continuum: Before, During, After
- Termination Issues
- Policies

News Group

Group 2

Lab/Homework

Final Project Assigned

Policy Analysis & Creation Lab

Week 13 – November 16-20 – Digital Forensics

- What is it?
- Types of Investigations
- Imaging & Software
- Court Admissibility
- Case Studies

News Group

Group 1

Lab/Homework

File Recovery Lab

Week 14 – November 23-27 – Thanksgiving Break

Week 15 – November 30-December 4 – Course Conclusion

- Careers in Info Sec
- Certifications
- Conferences

News Group

Group 2

Lab/Homework

Exam Review

Special Lab Day

Final Exam – December 9-16 According to Final Exam Schedule