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INF529 Security and Privacy for Informatics
Units: 4
Friday's 12:00 – 3:20PM

Location: T.B.A (class website http://ccss.usc.edu/529)

Instructor: Clifford Neuman
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Office: T.B.A.
Office Hours: T.B.A.
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IT Help: T.B.A.
Hours of Service:
Contact Info: T.B.A.

Catalogue Description:

INF 529 Security and Privacy in Informatics   Covers societal implications of information privacy and how to design systems to best preserve privacy. Provides a brief overview of security philosophy and technologies for students not specializing in information security. Covers implications of security technologies in law, public policy, and ethics. Discusses theoretical measures for privacy. Covers the technologies that invade privacy, and technical countermeasures.

Course Description
Much of the information managed in computer systems is sensitive and private The ability of an organization to meaningfully collect, store, and use information requires confidence on the part of all organizational stakeholders that the information will be secure: accessible when needed and safe from tampering and compromise. Thus, the security and privacy of information – its confidentiality, integrity, and availability – must be a major consideration in the application of informatics to human communication.

The laws, rules, and expectations of the societies in which an organization operates, and the goals and practices of the organization itself, determine how the organization will manage, protect, and distribute information. They provide the basis for the organization's security and privacy policy. The policy identifies what information is to be protected, why it must be protected, and who (and under what circumstances) may have access to that information. Security and privacy policies, and threats to the enforcement of those policies, ultimately determine the specific measures implemented to protect the information. Those measures must protect not just the information, but also the system components used to store, process, and transmit the information.

This course covers fundamental problems and principles in the security and privacy information in an interconnected world. Because information processing systems today are overwhelmingly digital, this course places special emphasis on security and privacy in digital systems. The course touches on legal and ethical aspects of security and privacy, security and privacy policies and models, threats to security and privacy, and technical mechanisms for security and privacy enforcement in digital systems. Case studies based on recent events will be used as much as possible to illuminate the real-world impact of each of the topics covered by the course.

This class is lecture based augmented by weekly assigned readings, several homework assignments, short in-class quizzes, a project, a midterm and a final.

Learning Objectives
. Students will develop the following abilities:

- To *recognize* types of information that have value and that must be protected
- To *describe* current cultural, legal, and ethical concerns about security and privacy in different parts of the world
- To *evaluate* security and privacy needs across organizations and to *synthesize* a security and privacy policy

- To *identify* security and privacy threats to the organization's policy
- To *apply* basic security and privacy controls to enforce the organization's policy

Prerequisite(s): none
Co-Requisite (s): none
Concurrent Enrollment: none
Recommended Preparation: General familiarity with the use of common internet and mobile applications.

Required Readings and Supplementary Materials

Selections from Matt Bishop, "Introduction to Computer Security"

Additional References

[KERN] If youre not paranoid your crazy, Walter Kern, The Atlantic, November 2015.

[PII] Guide to Protecting the Confidentiality of Personally Identifiable Information, National Institute of Standards and Technology, NIST Publication 800-122, April 2010.

[Levemore] Saul Levemore, "The Offensive Internet: Speech, Privacy, and Reputation"

[Nissenbaum] Helen Nissenbaum, "Privacy in Context: Technology, Policy, and the Integrity of Social Life"

[Craig] Terence Craig, "Privacy and Big Data"

[Lane] Julia Lane, "Privacy, Big Data, and the Public Good: Frameworks for Engagement"

[IoTAT] Internet of Things security is hilariously broken and getting worse, Ars Technia, January 23 2016

[Sch15] Schneier, Bruce. "What's Wrong With Electronic Voting Machines?". Schneier on Security. Retrieved 3 December 2015.

[TOR] Goldschlag D., Reed M., Syverson P. (1999.) Onion Routing for Anonymous and Private Internet Connections, Onion Router.

[CAS] Cloak and Swagger: Understanding Data Sensitivity Through the Lens of User Anonymity.
S. Peddinti, A. Korolova, E. Bursztein, G. Sampemane.

[Kor] Privacy Violations Using Microtargeted Ads: A Case Study.
A. Korolova

Description and Assessment of Assignments

Students will be required to complete ten homework assignments, which may take 4-6 hours to complete. All homework assignments are to be submitted individually; however students may work in groups to complete the tasks. There is one midterm test and a final exam which date will be determined by the Schedule of Classes. There will be 11 short in-class quizzes. There will be one semester project.

Guidelines and additional information will be developed which will provide a common vernacular for the assignments. It is crucial that students turn in whatever they have on the due date. NO assignment will be accepted late. An incompletes grade will be granted only under the conditions called out in the student handbook, *SCAMPUS*, which is available online, http://scampus.usc.edu.

Semester Project:

The semester project gives each student the opportunity to use and illustrate the concepts from the course in an applied manner in not less than 7 nor more than 15 pages, and will be assigned after the applicable foundational concepts have been covered in class. That assignment will include preparation guidelines and due date.

The project will be for each student to create a privacy and security plan for sensitive information acquired and managed by a large organization. Students will be required to write a plan that satisfies the following requirements:
1. Identify sensitive information acquired and managed by the organization and the legal, regulatory, and social requirements and restrictions on the security and privacy of that data;
2. Write a privacy and security policy for the organization that can be traced to the requirements;
3. Identify threats to that policy; and
4. Describe security controls that could be used to mitigate the threats.

Grading Breakdown

Assignment	Points	% of Grade
Final Exam		25
Mid Term Exam		25
Quizzes		15
Homework		20
Class Participation		15
TOTAL	0	100

Assignment Submission Policy

All homework assignments are to be submitted individually; however students may work in groups to complete the tasks. There is one midterm test and a final exam which date will be determined by the College. There will be four quizzes. There will be eight homework assignments and one semester project.

Students are required to collect articles in current professional and trade journals that are relevant to topics in systems analysis and design. The process is particularly important in keeping current with technology and new methodologies. Each class period, students must submit a paper copy of the articles to the instructor at the beginning of class.

Guidelines and additional information will be developed, which will provide a common vernacular for the assignments. It is crucial that students turn in whatever they have on the due date. NO assignment will be accepted late. An incompletes grade will be granted only under the conditions called out in the student handbook, *SCAMPUS*, which is available online, http://scampus.usc.edu.

Additional Policies

Return of Course Assignments
Returned paperwork, unclaimed by a student, will be discarded after a year and hence, will not be available should a grade appeal be pursued following receipt of his/her grade.

Emergency Preparedness/Course Continuity in a Crisis
In case of a declared emergency if travel to campus is not feasible, USC executive leadership will announce an electronic way for instructors to teach students in their residence halls or homes using a combination of Blackboard, teleconferencing, and other technologies.

Students with Disabilities
Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me as early in the semester as possible. Your letter must be specific as to the nature of any accommodations granted. DSP is located in STU 301 and is open 8:30 am to 5:30 pm, Monday through Friday. The telephone number for DSP is (213) 740-0776.

Course Schedule: A Weekly Breakdown

	Topics/Daily Activities	Readings and Homework	Deliverable/ Due Dates
Week 1 Dates	Overview and general landscape for privacy in information technology systems.	Kern	
Week 2 Dates	Personally Identifiable Information: Use and Misuse	PII	HW#1 Due, Quiz1
Week 3 Dates	Overview of computer security, Technical means of protection.	Bishop CH1, CH23, CH24	HW#2 Due, Quiz 2
Week 4 Dates	Identification, Authentication, and Audit	Bishop CH11,13,21	HW#3 Due, Quiz 3
Week 5 Dates	Social Media, Social Networks, and Privacy	*Nissenbaum, Levermore, KOR*	HW#4 Due, Quiz 4
Week 6 Dates	Measuring Privacy, Technical Approaches to Preserve Privacy	TOR	
Week 7 Dates	Review for mid-term, Mid-Term Exam	Review of all readings to date	**Mid-term exam**
Week 8 Dates	Aggregation, Anonymization, Correlation, and Data Mining	CAS	HW#5 Due, Quiz 5
Week 9 Dates	Privacy Considerations in Big Data	Craig, Lane	HW#6 Due, Quiz 6
Week 10 Dates	Privacy and Criminal Procedure, Legal Treatment of Private Data (includes a guest lecture)	Readings to be Assigned in consultation with guest lecturer	
Week 11 Dates	Civil Law and Privacy, Privacy Statements and Abuse, Discovery (includes a guest lecture)	Readings to be Assigned in consultation with guest lecturer	HW#7 Due, Quiz 7
Week 12 Dates	The international Face of Privacy, Conflicts in International Law (includes a guest lecture)	Readings to be Assigned in consultation with guest lecturer	HW#8 Due, Quiz 8
Week 13 Dates	Privacy and the Internet of Things	IoTAT	HW#9 Due, Quiz 9
Week 14 Dates	Privacy in application areas: Payment, Voting, Communication	Sch15	HW#10 Due, Quiz 10
Week 15 Dates	Review for Final Exam	Review Readings from entire semester	

FINAL			Date: For the date and time of the
Date			final for this class, consult the USC *Schedule of Classes* at www.usc.edu/soc.

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://adminopsnet.usc.edu/department/department-public-safety. This is important for the safety of the 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 http://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.