

Spring 2015 Syllabus
UIC CS 477,
Public Policy, Legal, & Ethical Issues in Computing, Privacy, and Security;
Chicago-Kent Special Topics, Computer and Network Privacy and Security

Tuesdays and Thursdays, 2:00–3:15

Team taught:

Prof. Robert Sloan, UIC Computer Science Department, sloan@uic.edu

Office hours: Tuesdays 10-11, 1112 SEO (or drop by—I'm in a lot)

Prof. Richard Warner, Chicago-Kent/IIT School of Law.

This unusual course will meet with a mixed class of UIC students from computer science, communications, and other disciplines concerned with privacy and security in the modern era, and Kent Law school students.

Tuesdays: IIT Chicago-Kent, 565 West Adams,

Thursdays: UIC, 238 Science & Engineering South (Dark red brick building on south side of Taylor St. roughly midway between Halsted and Morgan)

Course Description, Goals, and Objectives

In this course you will learn what is "inside the box" of modern electronic security and privacy. We will do our best to make the course self contained, so law students will learn about how tracking cookies, cryptography, and malware work, and computer science students will learn how to read appellate court decisions, and everybody will learn a bit of economics.

Required book:

Sloan and Warner, *Unauthorized Access: The Crisis in Online Privacy and Security*, available in the CK and UIC bookstores and on Amazon,

<http://www.amazon.com/Unauthorized-Access-Crisis-Privacy-Security/dp/1439830134>.

Recommended book:

James Rule, *Privacy in Peril*, <http://www.amazon.com/Privacy-Peril-Sacrificing-Fundamental-Convenience/dp/0195394364>

Numerous other provided readings.

Course requirements, evaluation, and grading

The heavy majority of the course grade will be based on an original term paper on a policy topic of the student's choice.

Other small factors will include:

- Occasional short written or technological assignments, graded on a completed/not completed basis
- Participation in in-class discussion

Course Topics

Subject to change! *Who knows what interesting things corporate executives or President Obama may have decided to do as a response to the North Korean (or so says the FBI) cyber-attack on Sony between the time we are writing this syllabus and the third week of classes that we might need to talk about?*

Privacy

1. Thoughts about Privacy from the late 1800s to roughly 1984

Read before class on Tuesday January 20:

S. D. Warren & L. D. Brandeis, *The right to privacy*, 4 HARVARD LAW REVIEW 193–220 (1890). (Very possibly the most cited law journal article of all time). Available from <http://www.jstor.org/stable/1321160> and many other places.

J. J. Thomson, *The right to privacy*, PHILOSOPHY & PUBLIC AFFAIRS 295–314 (1975), available from JSTOR.

Isaac Asimov, "The Dead Past," probably available online at <http://www.redlibrary.net/ScienceFiction/Asimov41/27323.html>

"Computers may soon know you better than your spouse," news item from Jan. 12, 2015, <http://www.computerworld.com/article/2868013/computers-may-soon-know-you-better-than-your-spouse.html>

2. Private sector privacy in the era of the web

Read before class on Thursday January 22: Sloan/Warner, Chapters 3–5

- a. An look at the early modern era

Dwyer v. American Express

Humphrey Taylor, "Most People Are 'Privacy Pragmatists' Who, While Concerned About Privacy, Will Sometimes Trade It Off for Other Benefit," *The Harris Poll* 17 (2003), <http://www.harrisinteractive.com/vault/Harris-Interactive-Poll-Research-Most-People-Are-Privacy-Pragmatists-Who-While-Conc-2003-03.pdf>.

Recommended reading

James Rule, PRIVACY IN PERIL

Daniel Solove, A Brief History of Information Privacy Law, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=914271

- b. How the internet, the web, and web tracking work

Sloan/Warner, Chapter 2 (skipping Primer on computers for now)

- c. Policy and economics

Pedro G. Leon et al., *Why Johnny Can't Opt Out: A Usability Evaluation of Tools to Limit Online Behavioral Advertising* (2011) (revised 2012), http://www.cylab.cmu.edu/files/pdfs/tech_reports/CMUCyLab11017.pdf

Sloan/Warner, Behavioral Advertising: From One-Sided Chicken to Informational Norms, 15 Vanderbilt Entertainment and Technology Law Journal, (2012). Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2034424

Recommended reading

Joseph Turow Et Al., *Americans Reject Tailored Advertising And Three Activities That Enable It* (2009), <http://ssrn.com/abstract=1478214>.

3. "Big Data" and predictive analytics

Omer Ten and Jules Polonetsky, *Privacy In The Age Of Big Data: A Time For Big Decisions*, 64 Stanford Law Review 63 (2012)
<http://www.stanfordlawreview.org/online/privacy-paradox/big-data>

Recommended Reading

Foster Provost, Tom Fawcett, *Data Science For Business: What You Need To Know About Data-Mining And Data Analytic Thinking*

Nate Silver, *The Signal And The Noise: Why So Many Predictions Fail — But Some Don't*

4. The dominant regulatory response: Notice and Choice

Solon Barocas and Helen Nissenbaum, *On Notice: The Trouble with Notice and Consent*, http://www.nyu.edu/projects/nissenbaum/papers/ED_SII_On_Notice.pdf

Beyond Notice and Choice: Privacy, Norms, and Consent, Robert Sloan and Richard Warner , 14 SUFFOLK UNIVERSITY JOURNAL OF HIGH TECHNOLOGY LAW 370 (2014), available from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2239099.

Sloan/Warner, Chapter 11

Recommended reading

Solon Barocas and Helen Nissenbaum, Big Data's End Run Around Procedural Privacy Protections, November 2014 Communications of the ACM.

J. H. Beales III & T. J. Muris, *Choice or Consequences: Protecting Privacy in Commercial Information*, U. CHI. L. REV. 109–135 (2008)

5. Governmental Surveillance: Fourth Amendment

Katz v. United States

Wiretaps, pen registers, trap and trace devices: telephone surveillance c. 1970 - 2013, and related rules on email metadata surveillance from ECPA.

Read § 2703 of the Stored Communications Act

Jones v. United States

Riley v. California

6. Governmental Surveillance: A First look at Terrorism and Intelligence

- a. *Why should we care: Privacy (from the government) and the self*
- b. *An initial look at the NSA's authority*

Reading:

Brennan Center for Justice, *Are They Allowed To Do That?*,
<http://www.brennancenter.org/sites/default/files/analysis/Government%20Surveillance%20Factsheet.pdf>

Patriot Act, Section 215 (50 U. S. Code § 1861)
<http://www.law.cornell.edu/uscode/text/50/1861>

Skim Foreign Intelligence Surveillance Act, Section 702 (50 U. S. Code § 1881a)
<http://www.law.cornell.edu/uscode/text/50/1881a>

Skim Executive Order 12333
<http://www.archives.gov/federal-register/codification/executive-order/12333.html>

7. Technology Time: Cryptography and Authentication

- a. *Background and history to the early 1970s*
- b. *Modern Crypto: Diffie-Hellman to AES*
- c. *Uses of cryptography: Secrecy, authentication, digital signatures*
- d. *What precisely is encrypted, or TLS vs. PGP*
- e. *Usability, or why we don't encrypt our email*
- f. *Alleged NSA attempts to weaken crypto standards*

Reading: Ross Anderson, *Security Engineering*, 2nd e., 2008, Read Chapter 5 through 5.2, and skim 5.3. Available free online at
<http://www.cl.cam.ac.uk/~rja14/book.html>

8. *Compelled assistance from providers in decryption, and E. Snowden's Email Provider*

US v Lavabit

9. *Governmental Surveillance: Terrorism and Intelligence: Snowden revelations and responses*

The 11 slides on PRISM leaked by Snowden to *The Guardian*. Available from <http://www.theguardian.com/world/interactive/2013/nov/01/prism-slides-nsa-document> and posted as a PDF under Resources on the course Piazza page.

"INCENSER, or how NSA and GCHQ are tapping internet cables," <http://electrospace.blogspot.com/2014/11/incenser-or-how-nsa-and-gchq-are.html>

Clapper v. Amnesty International (optional to read; presented in class)

Klayman v. Obama (optional to read; presented in class)

Recommended Reading

James Ball. "NSA Collects Millions of Text Messages Daily in 'Untargeted' Global Sweep." *The Guardian*, January 16, 2014. <http://www.theguardian.com/world/2014/jan/16/nsa-collects-millions-text-messages-daily-untargeted-global-sweep>.

"Document Trove Exposes Surveillance Methods," *WSJ*, <http://www.wsj.com/articles/SB10001424052970203611404577044192607407780>

Stephen Smith, *Gagged, Sealed & Delivered: Reforming ECPA's Secret Docket*, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2071399

GLENN GREENWALD, NO PLACE TO HIDE: EDWARD SNOWDEN, THE NSA, AND THE U.S. SURVEILLANCE STATE

JULIA ANGIN, DRAGNET NATION: A QUEST FOR PRIVACY, SECURITY, AND FREEDOM IN A WORLD OF RELENTLESS SURVEILLANCE

Privacy Oversight Board Report on Patriot Act Section 215 http://www.pclob.gov/Library/215-Report_on_the_Telephone_Records_Program-2.pdf

Privacy Oversight Board Report on Patriot Act Section 702 <http://www.pclob.gov/Library/702-Report-2.pdf>

10. *The Fifth Amendment and Compelled Decryption of One's Own Device*

Recommended reading:

In re GRAND JURY SUBPOENA DUCES TECUM US v. John Doe, 670 F.3d 1335 (2012)

11. *Reprise: A synthesis and analysis of all the surveillance statutes*

US v. Warshak 631 F.3d 266 (6th Cir. 2010)

Security

12. *Insecure Software*

Sloan/Warner, Chapters 6–7.

Spafford, Eugene H. "Remembrances of Things Pest" *Communications of the ACM* 53, no. 8 (2010): 35–37.

Ross Anderson & Tyler Moore, *Information security: where computer science, economics and psychology meet*, 367 PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY A: MATHEMATICAL, PHYSICAL AND ENGINEERING SCIENCES 2717–2727 (2009).

CWE/SANS TOP 25 Most Dangerous Software Errors, <http://cwe.mitre.org/top25/>

13. *Lemons Market Issues*

George Akerlof, *The Market for "Lemons": Quality Uncertainty and the Market Mechanism*, 84 QUARTERLY JOURNAL OF ECONOMICS 353 (1970)

Bruce Schneier, "How Security Companies Sucker Us With Lemons," *Wired*, 2007, http://archive.wired.com/politics/security/commentary/securitymatters/2007/04/securitymatters_0419

Recommended reading

John R. Michener, Steven D. Mohan, James B. Astrachan and David R. Hale, "Snake-Oil Security Claims" *The Systematic Misrepresentation of Product Security in the E-Commerce Arena*, 9 MICH. TELECOMM. TECH. L. REV. 211 (2003)

14. *Network Attacks*

Sloan/Warner, Chapters 8

15. Malware

Sloan/Warner, Chapter 9.

Recommended reading

Paul Schmehl, *Past its Prime: Is Anti-Virus Scanning Obsolete?*,
<http://www.symantec.com/connect/articles/past-its-prime-anti-virus-scanning-obsolete>

Jeffrey Hunker, *CREeping FAILURE: HOW WE BROKE THE INTERNET AND WHAT WE CAN DO TO FIX IT* (McClelland & Stewart, 2010)

16. The wave of massive data breaches

Krebs, Target Hackers Broke in Via HVAC Company,
<http://krebsonsecurity.com/2014/02/target-hackers-broke-in-via-hvac-company>

Committee On Commerce, Science, And Transportation, A "Kill Chain" Analysis of the 2013 Target Data Breach,
http://www.commerce.senate.gov/public/?a=Files.Serve&File_id=24d3c229-4f2f-405d-b8db-a3a67f183883

Recommended reading

Kim Zetter, *Countdown to Zero Day: Stuxnet and the Launch of the World's First Digital Weapon*

Brian Krebs, *Spam Nation: The Inside Story of Organized Cybercrime-from Global Epidemic to Your Front Door*

17. Espionage, Sabotage, and Cyberwar

Crowdstrike Intelligence Report, Putter Panda,
<http://cdn0.vox-cdn.com/assets/4589853/crowdstrike-intelligence-report-putter-panda.original.pdf>

Recommended reading

DANA PRIEST AND WILLIAM M. ARKIN, *TOP SECRET AMERICA: THE RISE OF THE NEW AMERICAN SECURITY STATE*

JAMES BAMFORD, *THE SHADOW FACTORY: THE NSA FROM 9/11 TO THE EAVESDROPPING ON AMERICA*

Ronald J. Deibert, *Black Code: Surveillance, Privacy, and the Dark Side of the Internet*

Thomas Rid, *Cyberwar Will Not Take Place*

Richard A. Clarke and Robert K. Knake, *Cyber War: The Next Threat to National Security and What to Do About It*

18. Legal conceptions of unauthorized access

Reilly v. Ceridian Corp.

United States v. Morris (evasion of technical defenses)

Int'l Airport Ctrs. LLC v. Citrin (breach of a duty of loyalty, 1st, 5th, 7th, and 11th circuits)

United States v. Nosal (breach of a duty of loyalty: 4th and 9th circuits)

Recommended reading

Orin Kerr, *Cybercrime's Scope: Interpreting 'Access' and 'Authorization' in Computer Misuse Statutes*, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=399740

19. Liability Proposals

Bruce Schneier, *Liability changes everything*, November 2003, <http://www.schneier.com/essay-025.html>

Michael D. Scott, *Tort Liability for Vendors of Insecure Software: Has the Time Finally Come?* 62 Maryland Law Review 425 (2008), <http://digitalcommons.law.umaryland.edu/cgi/viewcontent.cgi?article=3320&context=mlr>

Recommended reading

Jennifer A. Chandler, *Improving Software Security: A Discussion of Liability for Unreasonably Insecure Software*, in ANAPUM CHANDER, LAUREN GELMAN, AND MARGARET JANE RADIN (EDS.), *SECURING PRIVACY IN THE INTERNET AGE* 155 (2006); available from SSRN.

Shuba Gosh and Vikram Mangalmurti, *Curing Cybersecurity Breaches Through Strict Products Liability*, in *SECURING PRIVACY IN THE INTERNET AGE* 187

Kevin Kalinich, *Network Security and Privacy: Risk Management and Insurance to address Legal Exposures and Financial Statement Protection, 2013*, <http://www.aon.com/attachments/risk-services/cyber/Privacy-Update-Cyber-White-Paper-2013.pdf>

20. Liability for network attacks

Kline v. 1500 Massachusetts Ave. Apartment Corporation

Patco v. United People's Bank

FTC v. Wyndham

Recommended reading

David Thaw, *The Efficacy of Cybersecurity Regulation* (October 4, 2013).
Georgia State University Law Review, Vol. 30, 2014. Available at SSRN:

<http://ssrn.com/abstract=2241838> or
<http://dx.doi.org/10.2139/ssrn.2241838>

Bryne v. Avery

21. Proposed Solutions

Dallas Wood and Brent Rowe, *Assessing Home Internet Users' Demand for Security: Will They Pay ISPs?*,

<http://weis2011.econinfosec.org//papers/Assessing%20Home%20Internet%20Users%20Demand%20for%20Security%20-%20Will%20T.pdf>.

Sloan/Warner Chapter 10

Recommended reading

Brent Rowe, *The Role of Internet Service Providers in Cyber Security*,
https://www.ihssnc.org/portals/0/PubDocuments/ISP-Provided_Security_Rowe.pdf, 2010

Brent Rowe, Doug Reeves, Dallas Wood, Mike Gallaher, *ISP-based cyber security: Can government provide the right incentive?*,
https://www.ihssnc.org/Portals/0/Agenda_Docs/Rowe.pdf, 2009.

The Communications Security, Reliability and Interoperability Council, Final Report: Internet Service Provider (ISP) Network Protection Practices Working Group 8,
http://www.fcc.gov/pshs/docs/csric/CSRIC_WG8_FINAL_REPORT_ISP_NETWORK_PROTECTION_20101213.pdf 2010

Topics we wish we would have time for relating to government surveillance and privacy but almost certainly won't

Effectiveness

Bruce Schneier, *We're Giving Up Privacy and Getting Little in Return*,
https://www.schneier.com/essays/archives/2006/05/were_giving_up_privacy.html

Privacy Oversight Board Report on Patriot Act Section 215
Privacy Oversight Board Report on Patriot Act Section 702

Proposed solutions

a. Legislation

Abril and Lipton, The Right To Be Forgotten: Who Decides What The World Forgets?, Section III.

b. "Context"

FTC, Protecting Consumer Privacy in an Era of Rapid of Change, March 2012,
<http://www.ftc.gov/sites/default/files/documents/reports/federal-trade-commission-report-protecting-consumer-privacy-era-rapid-change-recommendations/120326privacyreport.pdf>

Nissenbaum, A Contextual Approach to Privacy Online,
http://www.amacad.org/publications/daedalus/11_fall_nissenbaum.pdf.

c. Coordination norms

Sloan/Warner, Chapter 12