

Spring 2017 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: 10–11 am Tuesdays, 1112 SEO (or drop by—I'm in a lot)

Prof. Richard Warner, Chicago-Kent/IIT School of Law, rwarn@kentlaw.iit.edu

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. Meeting times:

Tuesdays: IIT Chicago-Kent, 565 West Adams, room 520.

Thursdays: UIC, 317 Burnham Hall. (A little southwest of the central quad in the big block bounded by Harrison, Taylor St., Halsted, and Taylor. Campus map available at <https://psch.uic.edu/docs/default-source/default-document-library/map---east-campus.pdf?sfvrsn=2>.)

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

Security

1. *The data breaches and voting machines: Week of January 17*

Sloan/Warner, Chapter 1, Chapter 8, pp. 181–187 only.

Bruce Schneier, *The Security Mindset*, March 2008,
https://www.schneier.com/blog/archives/2008/03/the_security_mi_1.html

Ron Rivest and Philip Stark, *Still time for an election audit: Column*, USA TODAY, Nov. 18, 2016, <http://www.usatoday.com/story/opinion/2016/11/18/election-audit-paper-machines-column/93803752/>

Andy Greenberg, *Hacked or Not, Audit This Election (And All Future Ones)*, WIRED, 11.23.16, <https://www.wired.com/2016/11/hacked-not-audit-election-rest/>

The Geneva Association ('International Association for the Study of Insurance Economics'), *Ten Key Questions on Cyber Risk and Cyber Risk Insurance—Report Summary*, 2016, https://www.genevaassociation.org/media/955487/cyber-risk-10-key-questions_summary.pdf. (Full report available at: <https://www.genevaassociation.org/media/954708/cyber-risk-10-key-questions.pdf>)

Recommended reading

Handing over the Keys to the Castle,
<http://icitech.org/wp-content/uploads/2015/07/ICIT-Brief-OPM-Breach2.pdf>

Jones and Simons, *BROKEN BALLOTS: WILL YOUR VOTE COUNT?*, 2012,
https://www.amazon.com/Broken-Ballots-Count-CSLI-Lecture-Notes-ebook/dp/B00KYL0MRG/ref=asap_bc?ie=UTF8

2. *Why Not Just Negligence Liability?* For Tuesday, January 24

Kline v. 1500 Massachusetts Ave. Apartment Corporation

Bruce Schneier, *Liability changes everything*, November 2003,
https://www.schneier.com/essays/archives/2003/11/liability_changes_ev.html

Warner and Sloan, *Defending Our Data: The Need for Information We Do Not Have*,
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2816010

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

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>

3. *Software Failures and More on Vulnerabilities* For Thursday, January 26

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).

The Top Five Cyber Security Vulnerabilities,
<http://resources.infosecinstitute.com/the-top-five-cyber-security-vulnerabilities-in-terms-of-potential-for-catastrophic-damage/#gref>

4. *Human Vulnerabilities*

Ross Anderson, *Security Engineering*, Chapter 2, 17 – 22, 40 – 52,

Recommended reading

Brian Krebs, SPAM NATION: THE INSIDE STORY OF ORGANIZED CYBERCRIME-FROM GLOBAL EPIDEMIC TO YOUR FRONT DOOR

5. *Network Vulnerabilities*

Sloan/Warner, Chapters 8

Krebs, Target Hackers Broke in Via HVAC Company,
<https://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

Douglas W. Hubbard and Richard Seiersen, HOW TO MEASURE ANYTHING IN CYBERSECURITY RISK,

https://www.amazon.com/dp/B01J4XYM16/ref=pe_385040_118058080_TE_M1DP

David Thaw, *The Efficacy of Cybersecurity Regulation*, 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>

6. Malware

Sloan/Warner, Chapter 9.

Recommended reading

Paul Schmehl, *Past its Prime: Is Anti-Virus Scanning Obsolete?*,

<https://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)

Kim Zetter, COUNTDOWN TO ZERO DAY: STUXNET AND THE LAUNCH OF THE WORLD'S FIRST DIGITAL WEAPON

7. 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://www.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)

8. The FTC and the FCC

FTC v. Wyndham, available on Piazza

FTC v. LabMD, available on Piazza

Recommended reading

Chris Hoofnagle, FEDERAL TRADE COMMISSION PRIVACY LAW AND POLICY

9. *Outsourcing Solutions*

Bruce Schneier, *The Case for Outsourcing Security*,
https://www.schneier.com/essays/archives/2002/01/the_case_for_outsour.html

Why (and when) outsourcing security makes sense,
<http://www.cio.com/article/3120650/security/why-and-when-outsourcing-security-makes-sense.html>

Can't Touch This--New Encryption Scheme Targets Transaction Tampering: An Estonia-based cybersecurity firm adopts a "blockchain" public ledger system to verify online transfers of sensitive information,
<https://www.scientificamerican.com/article/can-t-touch-this-new-encryption-scheme-targets-transaction-tampering/#>

Recommended reading

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

10. *The Computer Fraud and Abuse Act*

United States v. Morris

Facebook v. Power Ventures

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

Nick Akerman, *THE COMPUTER FRAUD AND ABUSE ACT—A GUIDE FOR GENERAL COUNSELS AND CIOS*, <https://www.amazon.com/Computer-Fraud-Abuse-General-Counsels-ebook/dp/B008ASO77G>

11. *Network Neutrality* [fits with the CFAA as another attempt to control access for business purposes]

G Sidak, *A Consumer-Welfare Approach to Network Neutrality Regulation of the Internet* (2006) 2(3) JOURNAL OF COMPETITION LAW AND ECONOMICS 349

Recommended reading

Angela Daly, PRIVATE POWER, ONLINE INFORMATION FLOWS AND EU LAW: MIND THE GAP

12. *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

Privacy

13. *Privacy from the late 1800s to roughly 1984*

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.

Olmstead v. United States, 277 U. S. 438 (1928), (first few paragraphs for the facts and) Brandeis dissent.

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://readnovelonline.com/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>

Recommended reading

Vance Packard, THE NAKED SOCIETY

Alan Westin, PRIVACY AND FREEDOM

David Vincent, PRIVACY: A SHORT HISTORY, 2016

<HTTPS://WWW.AMAZON.COM/PRIVACY-SHORT-HISTORY-DAVID-VINCENT/DP/0745671136>

14. Private sector privacy in the era of the web

Sloan/Warner, Chapters 3–5

a. A look at the early modern era

Dwyer v. American Express, 273 Ill. App. 3d 742

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), Chapter 10

c. Private Sector Privacy Tradeoffs: The Dominance of the Online Contract

Sloan/Warner, Chapter 11

d. 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

Kenneth Bamberger and Deirdre Mulligan, PRIVACY ON THE GROUND DRIVING CORPORATE BEHAVIOR IN THE UNITED STATES AND EUROPE (*strongly recommended*), https://www.amazon.com/Privacy-Ground-Corporate-Behavior-Information/dp/0262029987/ref=asap_bc?ie=UTF8

Joseph Turow et al., *Americans Reject Tailored Advertising and Three Activities that Enable It* (2009), <http://ssrn.com/abstract=1478214>.

15. "Big Data": predictive analytics, network analysis

Omer Tene 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

Steven Finlay, PREDICTIVE ANALYTICS, DATA MINING AND BIG DATA: MYTHS, MISCONCEPTIONS AND METHODS, 2014 (strongly recommended)

Nate Silver, THE SIGNAL AND THE NOISE: WHY SO MANY PREDICTIONS FAIL — BUT SOME DON'T

Foster Provost, Tom Fawcett, DATA SCIENCE FOR BUSINESS: WHAT YOU NEED TO KNOW ABOUT DATA-MINING AND DATA ANALYTIC THINKING

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

16. 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.

Recommended reading

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

17. Governmental Surveillance: Fourth Amendment

Katz v. United States, 389 US 347 (1967)

Smith v. Maryland, 442 US 735 (1979)

§ 2703 of the Stored Communications Act
(Wiretaps, pen registers, trap and trace devices: telephone surveillance c. 1970 - 2013, and related rules on email metadata surveillance from ECPA)

Riley v. California, 134 S. Ct. 2473 (2014)

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

a. Why should we care: Privacy (from the government) and the self

Sloan/Warner, *The Self, the Stasi, and the NSA*, 17 Minn. J. L. Sci. & Tech. 347 (2016), available at <https://ssrn.com/abstract=2577308>

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>

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>
(skim)

c. A synthesis and analysis of all the surveillance statutes

19. *Compelled decryption, the Fifth Amendment, and Snowden's Email Provider*

US v Lavabit, 749 F.3d 276 (4th Cir. 2014)

Kim Zetter, "Encrypted Email Service Once Used by Edward Snowden Relaunches." *The Intercept*, Jan. 2017, <https://theintercept.com/2017/01/20/encrypted-email-service-once-used-by-edward-snowden-to-relaunch/>

Recommended reading:

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

20. *Technology Time: Cryptography Revisited, especially in email context*

- a. What precisely is encrypted, or TLS vs. PGP
- b. Usability, or why we don't encrypt our email
- c. Alleged NSA attempts to weaken crypto standards

Ross Anderson, SECURITY ENGINEERING, 2nd e., 2008, Skim Chapter 21.4.5, skipping SSH and HomePlug completely. Available free at <http://www.cl.cam.ac.uk/~rja14/book.html>

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

"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, 133 S. Ct. 1138 (2013)

Klayman v. Obama, 957 F. Supp. 2d 1 (D.C. 2013)

Recommended Reading

"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](http://www.pclob.gov/Library/215-Report%20on%20the%20Telephone%20Records%20Program-2.pdf)

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

22. *Governmental Surveillance: 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 (selections)

Privacy Oversight Board Report on Patriot Act Section 702 (selections)

23. *Proposed solutions*

a. *Legislation*

Abril and Lipton, *The Right To Be Forgotten: Who Decides What The World Forgets?*, 103 Ky. L.J. 363 (2014-2015), Section III.

b. *"Context"*

FTC, *Protecting Consumer Privacy in an Era of Rapid 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

Warner/Sloan, *Relational Privacy*