

The background features a stylized globe with a network overlay of nodes and lines, and a large key silhouette. The globe is rendered in shades of blue and green, with a network of white and blue lines connecting various points. A large, semi-transparent key silhouette is positioned on the right side of the globe. The overall aesthetic is futuristic and technological.

CS 419 Computer Security

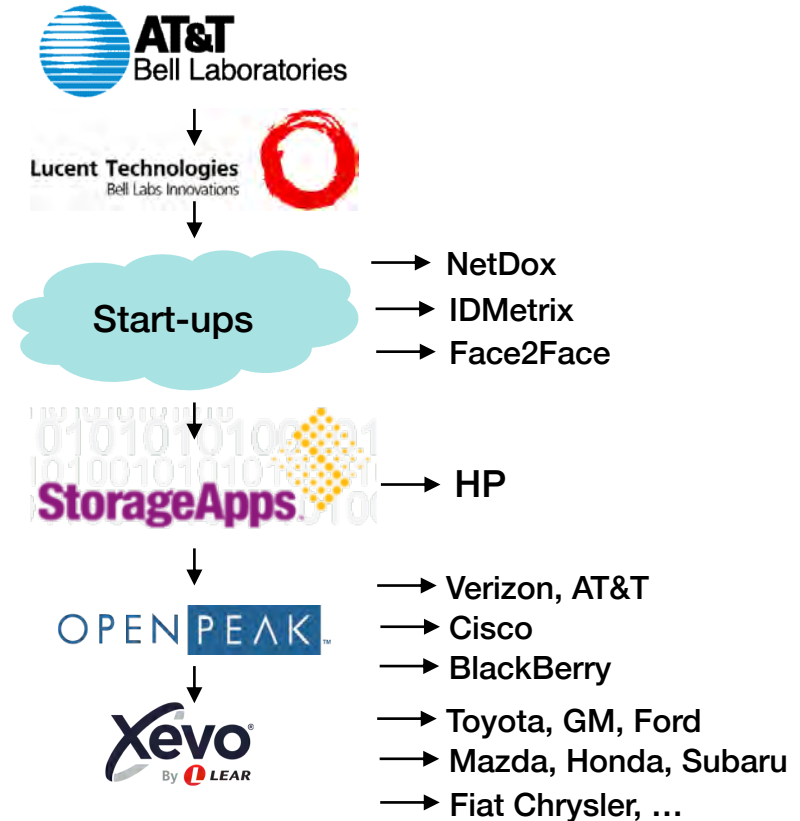
Week 0: About the Class

Paul Krzyzanowski

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Welcome to computer security

About Me



Web site and contact

web: www.cs.rutgers.edu/~pxk/419

mirror: www.pk.org/419

email: pxk@cs.rutgers.edu

phone: +142.59.79.35.02

zoom: <https://rutgers.zoom.us/my/pxk.rutgers>

Canvas: <https://rutgers.instructure.com/courses/66088>

Class info

- Contact info
- TA info
- Syllabus
- Lecture notes
- Class news
- Homework

The screenshot shows a web browser displaying the course page for CS 419: Computer Security. The page has a light green sidebar on the left with a 'Menu' section containing links to Homepage, Main Course Page, Syllabus, Announcements, Homework, Documents, Exam info, Grading Info, Canvas, and Course Info. Below the menu is a 'Get in touch' section with contact information for Paul Krzyzanowski, including an email address (webinfo@pk.org) and a note to contact him for questions. The main content area on the right features the course title 'CS 419: Computer Security' and the semester 'Fall 2020'. A welcome message follows, stating that the page will be updated regularly. Below this is a 'Class Times' section with a table listing activities, their frequencies, and schedules. The 'Contact Information' section provides details for Paul Krzyzanowski, including his name, address (Department of Computer Science, Hill Center, Busch Campus, Rutgers University, 110 Frelinghuysen Road, Piscataway, NJ 08854-8019), email (pk@cs.rutgers.edu), website (http://www.cs.rutgers.edu/~pk/rutgers), mirror (http://pk.org/rutgers), voice (+142.59.79.35.02), office (403 Hill), my hours (Monday, 5:30-6:30), and TA info (TBD). At the bottom, there is a 'Course News' section with the last update date (September 1, 2020) and a link to check news and notices related to the course.

Menu

- Homepage
- Main Course Page
- Syllabus
- Announcements
- Homework
- Documents
- Exam info
- Grading Info
- Canvas
- Course Info

Get in touch

For questions or comments about this site, contact Paul Krzyzanowski:

✉ webinfo@pk.org

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Computer Security: Paul Krzyzanowski

CS 419: Computer Security

Fall 2020

Welcome to CS 419 – Computer Security. This page contains information for this course. I'll be updating it and other pages under it regularly as the semester goes by.

Class Times

activity	sec	period	time	place
lecture	1,2	6-7	M 5:00 - 8:00 pm	Online
recitation	1	5*	W 5:15 - 6:10 pm	online
recitation	2	7*	W 6:55 - 7:50 pm	online

Contact Information

name Paul Krzyzanowski

address Department of Computer Science
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mirror <http://pk.org/rutgers>

voice +142.59.79.35.02

office 403 Hill

my hours Monday, 5:30-6:30 (only by appointment; send email)

TA info TBD

Course News: last update: September 1, 2020

⇒ Check news and notices related to the course.

Class meetings

- **Classes will be held via Zoom**
- **Lecture recordings will be made available**
 - YouTube? Canvas?
 - Web site
- **You can take classes asynchronously**
 - I'll be around for questions
 - Send via zoom chat, email, etc.
 - I will post FAQs and corrections if needed

None required – but we will use several sources

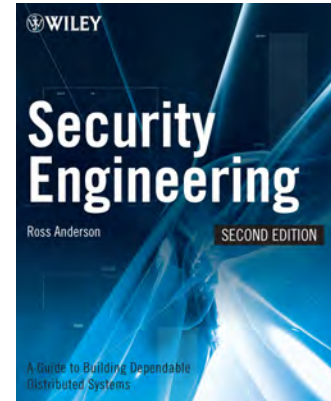
Security Engineering: A Guide to Building Dependable Distributed Systems

2nd Edition

by Ross J. Anderson

Free at

<https://www.cl.cam.ac.uk/~rja14/book.html>



But mostly...

- Other reading material on the web
- Lecture slides
- Lecture notes/summaries



- **Weekly quizzes: 5-6 questions; 15 minutes**
- **Short programming assignments (~5)**
 - Individual assignments
 - Due prior to the due date
- **Written assignments**
 - Due prior to the due date
 - No MS-Word, Pages, InDesign submissions!
 - PDF or text with line breaks only (HTML for in-line text on sakai)
- **Collaboration & academic integrity**
 - Individual assignments – no copying!

Grades

- **Quizzes** ~ 50%
- **4-5 written assignments** ~ 15%
- **~4-5 programming assignments** ~35%

What this course IS

- **Security engineering**
- **Understand why systems have weaknesses**
- **How do we deal with these weaknesses?**
 - People, devices, networks, operating systems, applications
 - Cryptographic algorithms
 - Authentication & key distribution protocols
 - Ensuring integrity & confidentiality

Things we'll cover

- **Intro: threats, risks, security needs**
- **Access control**
 - Core OS mechanisms for access control
 - Mandatory vs. discretionary access control
- **Code injection**
 - Buffer overflow, shell scripts, input validation
- **Client-side risks & protection**
 - Viruses, worms, trojans
 - Human factors
- **App confinement**
 - Jails, virtual machines, sandboxes
- **Cryptography**
 - Encryption
- **Integrity & key distribution**
 - Public keys, hashing, digital signatures
- **Authentication**
 - Passwords, tokens, biometrics, cards
- **Cryptocurrency**
 - Bitcoin, proof of work, proof of stake
- **Network security**
 - Switches, routers, services
- **Network protection**
 - Firewalls, VPNs
- **Web security**
- **Mobile security**
- **Anonymous communication**
 - Tor
- **Content protection**
 - Steganography, watermarking, DRM
- **IoT**
 - Security risks in embedded software
- **Forensics**

What this course is NOT

- **How to write viruses/trojans/malware**
- **How to break into systems**
- **How to be a hacker**
- **Rigorous mathematics on systems, security, or cryptography**

The End