

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 nodes and lines overlaid on it. 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

Canvas: <https://rutgers.instructure.com/courses/160949>

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

mirror: www.pk.org/419

email: pxk@cs.rutgers.edu

phone: +190.87.99.88.89

Class info

- Contact info
- TA info
- Syllabus
- Lecture notes
- Canvas links to:
 - 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 with a 'Menu' section containing links to 'Homepage', 'Main Course Page', 'Syllabus', 'Announcements', 'Homework', 'Documents', 'Grading Info', 'Canvas', and 'Course Info'. The main content area features a red header with the course title and semester, followed by a welcome message. Below this is a 'Class Times' table and a 'Contact Information' section with a list of details.

Computer Security: Paul Krzyzanowski

CS 419: Computer Security

Spring 2022

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	1,2,3	6 - 7	Mon 5:40 - 8:40 pm	TIL-254
recitation	1	6*	Thu 5:40 - 6:35 pm	BE-252
recitation	2	5*	Thu 3:50 - 4:45 pm	BE-253
recitation	3	4*	Thu 2:00 - 2:55 pm	BE-253

Contact Information

name	Paul Krzyzanowski
address	Department of Computer Science Hill Center, Busch Campus Rutgers University 110 Frelinghuysen Road Piscataway, NJ 08854-8019
email	pxk@cs.rutgers.edu
url	http://www.cs.rutgers.edu/~pxk/rutgers
mirror	http://pk.org/rutgers
voice	+190.87.99.88.89
office	403 Hill
my hours	Monday, 8:00-9:00 (only by appointment; please send email)
TA info	Daniel Bittner , Xiaoxiao He

Class meetings

- **Classes will be held via Zoom (initially)**
- **Lecture recordings will be made available**
 - Canvas
- **You can take classes asynchronously when they're remote**
 - I'll be around for questions
 - Send via zoom chat, email, etc.
 - I will post FAQs and corrections if needed

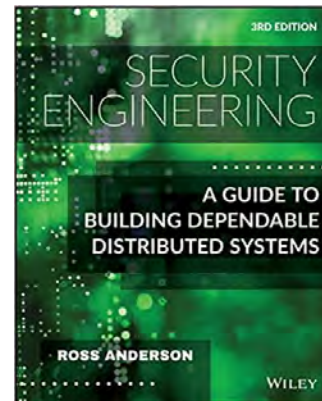
None required – but we will use several sources

Security Engineering: A Guide to Building Dependable Distributed Systems

3rd Edition

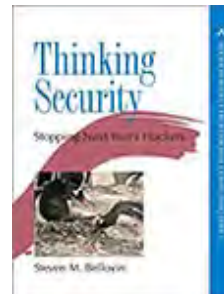
by Ross J. Anderson

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



But mostly...

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



- **If classes are remote:**
 - Weekly quizzes: 5-6 questions; 15 minutes

else

- 3-4 in-class quizzes, no final
- **Short programming assignments (~4)**
 - Individual assignments
 - Due prior to the due date
- **Written assignments**
 - Due prior to the due date
- **Collaboration & academic integrity**
 - Individual assignments – no copying!

Grades

- Quizzes ~ 40%
- 6-10 written assignments ~ 25%
- ~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
- **Cryptocurrency**
 - Bitcoin, proof of work, proof of stake
- **Network security**
 - Switches, routers, services
- **Network protection**
 - Firewalls, VPNs, Zero Trust
- **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