CS4235/6035

Spring 2019

Introduction to Information Security

- Me

Georgia Institute of Technology

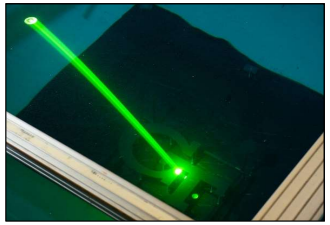
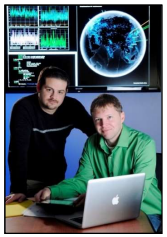
Georgia Tech Academics

- Education
- Basic & Applied Research
- Open Environment
  - Unclassified
  - International
- Entrepreneurship & Start-ups

Georgia Tech Research Institute

- Applied Research & Development
- Technology & Systems Prototyping
- Restricted Environment
  - Unclassified and Classified
  - U.S. Citizens Only
- Technology Transfer

Georgia Tech Research Institute (GTRI)

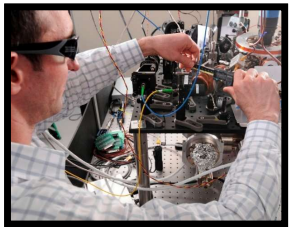









FY16 Profile	
• Contract Awards: $500 M	• Research space: > 1 million ft^2
• Number of Employees: 2046	• Field sites: 20

GTRI Laboratories



Advanced Concepts Lab

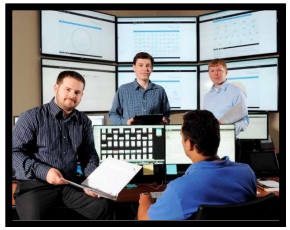
- Tactical Systems & Signatures
- RF Sensor Technology
- Quantum computing

Applied Systems Lab

- Air & Missile Defense
- C2 & Decision Support

Aerospace, Transportation & Advanced Systems Lab

- Threat Systems
- Autonomous Systems & Robotics
- Agriculture & Food Processing

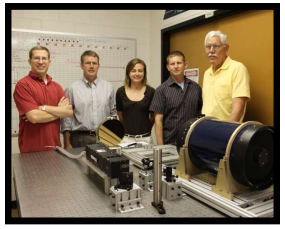


Cybersecurity, Information Protection, and Hardware Evaluation Research Lab

- Cyber security
- Threat systems

Electronic Systems Lab

- Electronic Warfare
- Avionics & Open Systems
- Human Systems



Electro-Optical Systems Lab

- Electro-Optical Systems
- Modeling & Simulation
- Materials & Devices

Information & Communications Lab

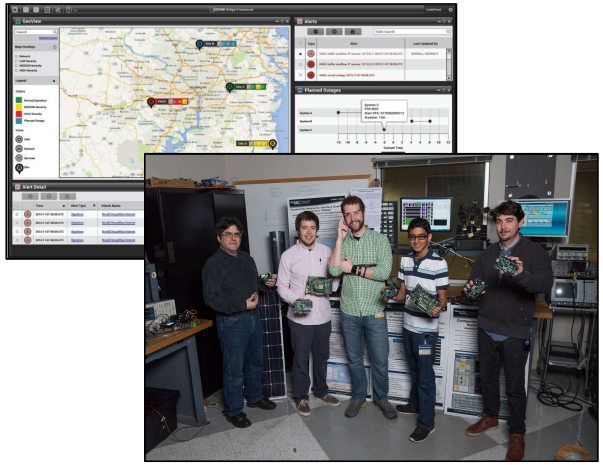
- C2 & Decision Support
- Communications Systems
- Information & Data Analytics

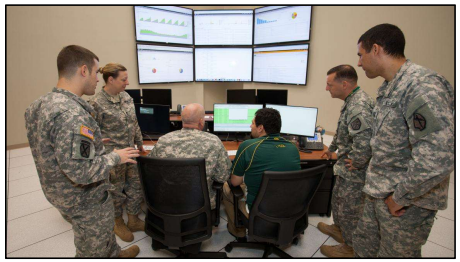
Sensors & Electromagnetic Applications Lab

- RF Sensors
- Air & Missile Defense
- Electronic Warfare

CIPHER Lab

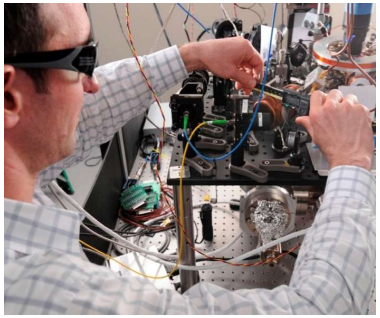
- **Staff: 225 full-time research faculty members and 46 student employees**
- **Funding: >$100M for FY17**
- **Sponsors: Include all 4 branches of the U.S. military; DARPA and IARPA; CDC; DOE; and several Fortune 500 companies**
- **Collaborations: Close collaborations with GT faculty, students, and outside partners in industry, government, and academia**
- **Influence: Researchers serve on government advisory boards, academic panels, and industry working groups in several areas of cyber security**
- **Education: Researchers teach short courses to train government and industry professionals on relevant applied problems**



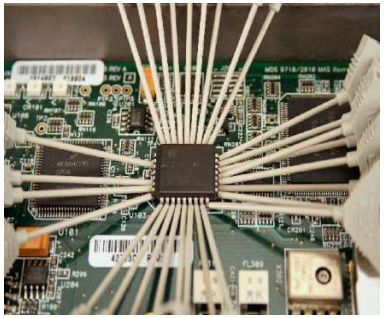


Range of Expertise in Cyber Security

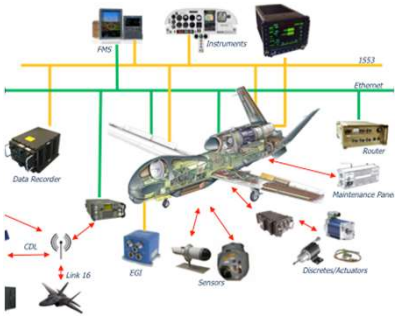
BASIC RESEARCH → APPLIED RESEARCH



Quantum Computing & Sensing



Vulnerability Identification in Embedded Systems



Resiliency of Cyber-Physical Systems

Mission-Assured Command & Control

Analytics for Threat Intelligence, & Attribution

Multi-level Secure Software Systems

Advanced Cyberspace Operations

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CS4235/6035

1. Syllabus
2. Timeline

CS4235/6035: Introduction to Information Security

Instructor
Dr. Jim Cannady
Wells Fargo Building (Atlantic Station) 920
cannady@gatech.edu
Office hours: By appointment

Head TA

Riya Shah
riya@gatech.edu

TA	Email	Office Hours
Bhavani Jaladanki	bhavani@jaladanki.com	Monday: 11:30am to 2.30pm Klaus 3rd floor outside break room
Xu Meng	meng.xu@gatech.edu	Tuesday: 3pm to 6pm Klaus 3108
Jubin James	jubin.james@gatech.edu	Wednesday: 11:00am-2:00pm Common area outside Klaus 3319
Riya Shah	riya@gatech.edu	Thursday: 1:30pm to 4:30pm Common area outside Klaus 3201
Steven Cho	scho302@gatech.edu	Friday: 1:00-4:00pm Klaus 2100

Overview

This is an introductory course in information security. It teaches the basic concepts, principles, and fundamental approaches to secure computers and networks. Its main topics include: security basics, security management and risk assessment, software security, operating systems security, database security, cryptography algorithms and protocols, network authentication and secure network applications, malware, network threats and defenses, web security, mobile security, legal and ethical issues, and privacy.

Prerequisites

Familiarity with operating systems and networks and prior programming is recommended.

Textbook

Computer Security: Principle and Practice, 4/E, by William Stallings and Lawrie Brown.

Grading

Grading will be based on:

- 20% Quizzes:
  - There will be 10 quizzes throughout the semester. Each quiz is worth 2% of your final grade.
- 40% Projects:
  - There will be 4 projects to be completed during the semester. Each project is worth 10% of your final grade.
- 40% Exams: 20% for the first exam and 20% for the second exam (both exams are T/F and multiple-choice). All exams are closed-everything and will last for 60 minutes.
- 5% Pop Quizzes: There will be 5 pop quizzes provided during the semester. This will be provided in the classroom only. Each pop quiz will be worth an additional 1% (i.e., extra credit) toward the student's final grade.

Late Submissions

No late submissions (project, quizzes, exams, etc.) are allowed unless special circumstances subject to Georgia Tech rules (e.g., medical/family emergencies, and instructor approvals) **and** the request is made prior to the original due date. **There are no exceptions to this rule**. Even if your submission is only 1 minute late, we will not accept it. If you would like to request a deadline extension (projects, quizzes, exams, etc.) because of a Georgia Tech approved reason (e.g., medical emergency), please email the Head TA, copy the Instructor, and attach appropriate documentation (e.g., a doctor's note for a medical emergency) to your email.

Piazza

Piazza will be used as the main communications medium for this class. You are encouraged to post discussions on issues you're having with projects or otherwise. **Do not post solutions to Piazza**. If you do, we will revoke your access to our Piazza page, and you may be referred to the Dean of Students for disciplinary action. Please do not post new messages addressing us individually (e.g., Jim Cannady). If the TA cannot resolve the issue he will contact the Instructor and the Instructor will have the final say on the situation.

CS 4235/6035 (Spring 2019) Course Schedule

Date	Topics	Text Reading	Quizzes	Projects
01/08/19	Course Introductions			
01/10/19	Security Mindset	Chapter 1		Project 1 01/13-02/09
01/15/19	Software Security	Chapter 10 and 11		
01/17/19	Operating System Security	Chapter 12	Quiz 1 01/18-01/24	
01/22/19	Authentication	Chapter 3		
01/24/19	Access Control	Chapter 4	Quiz 2 01/25-01/31	
01/29/19	No Class			
01/31/19	Mandatory Access Control		Quiz 3 02/01-02/07	
02/05/19	Database Security	Chapter 5		
02/07/19	Malicious Code	Chapter 6	Quiz 4 02/08-02/14	
02/12/19	Modern Malware			Project 2 02/10-03/02
02/14/19	Firewalls	Chapter 9	Quiz 5 02/15-02/21	
02/19/19	First-Half course review			
02/21/19	No Class			
2/26/19	In-class, One-Hour Close-Everything First-Half Exam			
02/28/19	Intrusion Detection	Chapter 8		
03/05/19	Introduction to Cryptography	Chapter 2		Project 3 03/03-03/30
03/07/19	Symmetric Encryption	Chapter 20	Quiz 6 03/08-03/14	
03/12/19	Public-Key Cryptography	Chapter 21		
03/14/19	Hashes		Quiz 7 03/15-03/21	
03/18-22/19	Spring Break			
03/26/19	Security Protocols	Chapter 23		
03/28/19	IPSec	Chapter 22	Quiz 8 03/29-04/04	
04/02/19	Wireless and Mobile Security	Chapter 24		Project 4 03/31-04/27
04/04/19	Web Security		Quiz 9 04/05-04/11	
04/09/19	Security Management and Cyber Risk Assessment	Chapters 14 and 15		
04/11/19	Law, Ethics, and Privacy	Chapter 19	Quiz 10 04/12-04/18	
04/16/19	Second-Half Course Review			
04/18/19	In-Class, One-Hour Close-Everything Second-Half Exam			
04/23/19	Course Wrap-up			

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- Canvas/Piazza

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- Canvas/Piazza
- Issues

Issues

1. **Introduction** to Information Security

2. The projects take more time and effort than you may think

3. The projects are the realm of the TAs

4. If you have any GT-approved special circumstances I need to know early

5. You can retake quizzes as long as they are open, but the last grade is the one recorded

6. Please don't request any special arrangements without prior approval.

7. Don't assume that degree candidacy guarantees passing the course

Introduction to Information Security

- Me
- CS4235/6035
- Canvas/Piazza
- Issues
- Suggestions for success

Suggestions for success

1. Get the text and review the relevant chapters
2. Attend lectures
3. Put the dates for quizzes, projects, and exams in your calendar **now**
4. Ask questions, especially about the projects

Introduction to Information Security

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- T-Square/Piazza
- Issues
- Suggestions for success
- Questions/Concerns