

# Principles of Information Security

## CS 5323 Lecture One

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## Course Introduction

- See syllabus:
  - <http://www.cs.utsa.edu/~winsboro/teaching/CS5323F2008/Syllabus.htm>
- Attendance is mandatory
- Textbook
  - *Introduction to Computer Security*, Matt Bishop. Addison Wesley, 2005.
- Read the text book
  - I will assign readings and assignments in lecture
- If you cannot make my office hours, please set up an appointment
  - Email, call, drop by
- Please speak up!

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## Business

- Read chapters 1 and 2 by Tuesday
- Lectures next week will be covered by Murillo Pontual
  - I'm giving a talk at a security workshop in Zurich ☺

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## Course Activities

- Assignments
  - Due at start of class in which the paper in question is first discussed
- Participation in class
  - Attendance is required
- Tentatively planning to have 3 exams

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## Security Objectives

- Major security objectives and services
  - Confidentiality and privacy
  - Integrity and authenticity
  - Availability

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## Security policy

- Statement of what is and is not allowed
  - Divides the system states (or behaviors) into two groups
- Example: Chinese Wall Policy
  - Consultants are prohibited from working for two companies in the same market

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## Security mechanism

- Method, tool, or procedure for enforcing a security policy
  - Ensures that unallowed states are not entered (or unallowed behaviors to not occur)
- Some common security mechanisms:
  - Authentication
  - Access Control
    - E.g., Chinese Wall: keep track of which company's data each consultant has accessed in the past
  - Encryption

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## Threats

- A threat is a potential violation of security
  - Disclosure
    - Eg, snooping
  - Deception
    - Eg, alteration of data, masquerading or spoofing, repudiation, denial of receipt
  - Disruption
    - Eg, denial of service
  - Usurpation
    - Eg, unauthorized access , masquerading or spoofing

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## Trust and Assurance

- A subsystem is *trusted* if the security of the entire system depends on the correct behavior of the subsystem
- A subsystem is *trustworthy* if it behaves appropriately
- *Assurance* is the degree of trustworthiness that can be guaranteed by security systems

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## Security Life Cycle

- Threats
- Policy
- Specification
- Design
- Implementation
- Operation and Maintenance

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