

# IS 2150 / TEL 2810

## Introduction to Security



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Access Control Model  
Foundational Results



# Objective

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- Understand the basic results of the HRU model
  - Safety issue
  - Turing machine
  - Undecidability



# Safety Problem: *formally*

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- Given
  - Initial state  $X_0 = (S_0, O_0, A_0)$
  - Set of primitive commands  $c$
  - $r$  is not in  $A_0[s, o]$
- Can we reach a state  $X_n$  where
  - $\exists s, o$  such that  $A_n[s, o]$  includes a right  $r$  not in  $A_0[s, o]$ ?
    - If so, the system is not safe
    - But is "safe" secure?