Final Exam

- **Closed Book, Closed Notes, In-Class (~30 minutes)**
  - Vocabulary
  - Concepts
  - Definitions
  - Transient balance equations
  - Forms of basic transfer functions
  - Standard block diagram

- **Open Book, Closed Notes, In-Class (~2 ½ hrs)**
  - Story problems
  - Material and/or energy balance(s)
  - Linearization and deviation variables
  - Laplace form
  - Block diagram algebra
  - Transfer functions
  - Stability analysis
  - Performance when a setpoint or disturbance changes
  - Initial and final values from transfer functions
  - Write input function in Laplace coordinates from graph in time coordinates
  - Obtain process response constants (τ_p, K_p, θ_p, and ζ_p) from graphical data
  - Stability analysis (Routh, Direct Substitution)
  - Get transfer function for each piece of equipment
  - Valve equations