ME 280 Graduate Program Comprehensive Exam Guidelines

1. **Time, Date, and Place:**
   Posted on the ME Department website.

2. **General Rules:**
   - This is a closed-book examination.
   - Some related formulas and equations would be provided.
   - Students are allowed to bring a calculator without any wireless and connectivity.

3. **Format of the Exam:**
   Includes,
   
   (a) (allow 15-20 minutes): Short questions, True and False questions, or multiple-choice questions,
   
   (b) (allow 40 minutes): A choice from a set of two problems

4. **Exam Duration:** One hour.

5. **Topics to be considered:**
   (Questions would come from ME 280 textbook by K. Ogata)
   - Classical controls and definitions
   - Block diagram representation and formulation
   - Stability analysis
   - Transient response determination and interpretation
   - Steady-state response determination and interpretation
   - Frequency response determination
   - Bode plot and Nichols chart representation
   - Controller design in Laplace domain
   - Controller design in frequency domain
   - State variable representation
   - Controllability and observability
   - Controller design in state space
   - Design of state observers
   - Optimal control systems
   - Nonlinear control systems

6. **Passing Grade:** 65% minimum

7. **Course Coordinator:** Dr. Fred Barez

October 6, 2015