Controls and Encoders Learning Outcomes

ME 492

Students will:

- be able to define feedback control, explain the difference between open and closed-loop controls, and understand the risk associated with closed-loop control
- know how to interpret block diagrams
- understand the connection between a block diagram of a feedback control system and the associated pseudo-code
  - be able to write the pseudo-code associated with a block diagram
  - be able to draw a block diagram that represents a chuck of pseudo-code
- know how to interpret quadrature encoder signals
- know what the letters PID stand for and what each term in a PID controller does
- recognize how changes in damping coefficient ζ and natural frequency ω_n affect the step response of a control system
- be able to define various measures for control system performance and calculate them from a graph of a step response:
  - period, natural frequency, overshoot, steady-state error, settling time