Kuwait UniversityCollege of Engineering and Petroleum





ME417 CONTROL OF MECHANICAL SYSTEMS

PART I: INTRODUCTION TO FEEDBACK CONTROL

LECTURE 11: UNITY FEEDBACK CONTROLLER DESIGN

Summer 2020

Ali AlSaibie

Lecture Plan

- Objectives:
 - Algebraically design a Unity Feedback Controller for a Second-Order System given Performance Specifications.

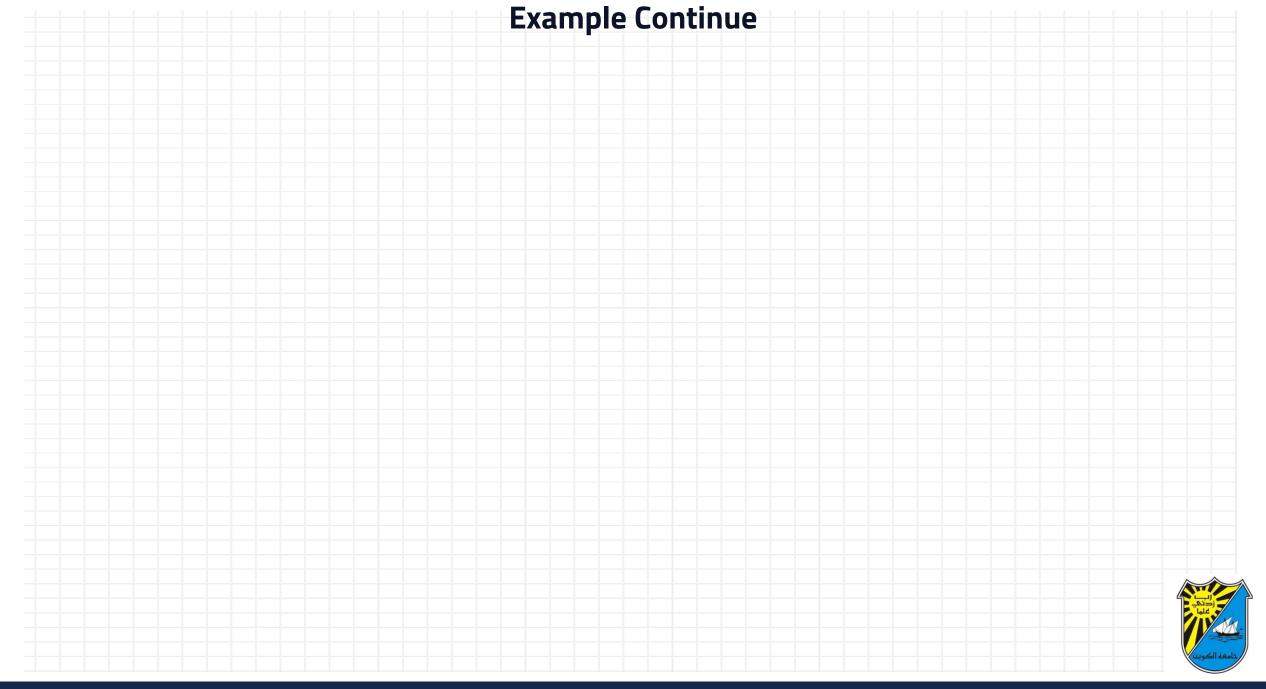


Is the closed-loop system with your designed controller: over/under/un or critically damped?

Does the closed-loop system behave like an ideal second order system?

$$G_p(s) = \frac{20(s+5)}{s(s+1)}$$





Design a PD controller for the following system such that it achieves a settling time $T_s = 0.5s$ and a damped frequency $\omega_d = 2rad/s$

Does the closed-loop system behave like a general second order system?

$$G_p(s) = \frac{5}{s^2 + 2s + 2}$$



