Division of Engineering
Colorado School of Mines

EGGN498 – Control Systems Applications

Instructor: Dr. Sanaa Azim
E-mail: sazim@mines.edu
Semester offered: TBA

This course has been designed to develop a working knowledge of engineering practice in the area of automation and control systems design and implementation. The course objective is to bridge the gap between control systems theory and control systems practice. The importance of automation, control and instrumentation to the industrial processes is universal; this course will introduce the student to the three operations of control: measurement, manipulation, and control. The focus of the course will be Process Control, Analysis and Design. Extensive use of MATLAB computer programs is an essential part of this course. Students enrolled in this course must have completed EGGN407 Feedback Control or its equivalent.

Outline

1. **Types of Control**
2. **System Components**
3. **Laplace Transforms and Transfer Functions**
4. **Measuring instruments characteristics**
5. **Signal conditioning**
6. **Manipulation: Switches, Actuators, Valves, and Heaters**
7. **Control of Continuous processes**
8. **Analysis Techniques**
9. **Controller Design**

Text: Bateson, R.N., **Introduction to Control System Technology**, 5th ed., Prentice Hall
Reference: Considine and Considine, **The Control Systems Handbook**, ,McGraw Hill, 3rd ed**.**

Prerequisites: EGGN407 or Consent of Instructor.

Grading:

Weighting of course efforts will be given as follows:

Assignments: 40%
Final Project: 40%
Seminar 20 %

Final grades will be based on a linear scale: (90+=A, 80-89=B, 70-79=C).

Assignment

Assignments may have several forms: it can be a formal homework, a problem to be worked or finished at home, a design exercise using MATLAB. Those several homework formats are intended to be an interactive learning tool.

Final Project

A final project (Team work) involves a practical case study with detailed analysis and design of a control system to meet performance requirements. A proposal for your final project will be due by the middle of semester. The project must be supported with a comprehensive technical report.

Seminar:

At the end of the course students (Teams) will be required to present a seminar on their final project.