

University of Arkansas - Fort Smith
5210 Grand Avenue
P. O. Box 3649
Fort Smith, AR 72913-3649
479-788-7000

General Syllabus

ELEC 3523 HMI Programming

Credit Hours: 3

Lecture Hours: 2

Laboratory Hours: 2

Prerequisite: ELEC 2513 PLC Applications or consent of department head.

Prerequisite or corequisite: ELEC 3513 Advanced PLC Control Systems or consent of department head.

Effective Catalog: 2018-2019

I. Course Information

A. Catalog Description

Covers Allen Bradley HMI (Human Machine Interface) Factory Talk design, selection, wiring, programming and troubleshooting, using the Panel View Plus touchscreen. Emphasizes user-friendly design of HMI systems for use in industry.

B. Additional Information

This course is an upper division, technical elective for students, who have the required prerequisites, pursuing Bachelor's degrees in Applied Science or Electrical Engineering Technology or the AAS degree in Electronics Technology. It may also be taken by working engineers/technicians to upgrade their Human Machine Interface programming skills, if they meet the required prerequisites.

II. Student Learning Outcomes

A. Subject Matter

Upon successful completion of this course, the student will be able to:

1. Program recipe selection or multi-mode control.
2. Program HMI to display numeric data for a PLC.
3. Design HMI program to graphically relate system status in automated filler operation.
4. Design interface screens for data acquisition components for a PLC system.

5. Configure and tune closed-loop, proportional, analog PID using faceplate to interface with a Control Logix PLC.
6. Take programs designed in the Advanced PLC class and replace physical IO with virtual IO.

B. University Learning Outcomes

This course enhances student abilities in the following areas:

Analytical Skills

Critical Thinking - Students will program the most logical course of action to achieve the functional specification of a specific industrial control interface.

Quantitative Reasoning –Students will use mathematics to analyze screen development with the goal of making operator interfaces easy to use.

III. Major Course Topics

- A. Display of data files, words and bit arrays in Control Logix PLC's
- B. Commissioning of a factory talk view system
- C. Faceplates for PowerFlex drives
- D. Use of parameters to save time when programing.
- E. User display and input with PID Control Block applications
- F. Ethernet IP messaging using HMI input