

**University of Arkansas - Fort Smith
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General Syllabus

ELEC 3443 Robot Studio Programming

Credit Hours: 3 Lecture Hours: 2 Laboratory Hours: 4

Prerequisite: ELEC 2413 Robot Operations and Maintenance and ELEC 2423 Robot Programming II

Effective Catalog: 2021-2022

I. Course Information

A. Catalog Description

Use of off-line programming software for simulating robot layout and reach capabilities and robot program simulation. Students will use ABB Robot Studio for use with IRC5 Controllers.

II. Student Learning Outcomes

A. Subject Matter

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

1. Start and utilize the off-line programming software.
2. Create a simulation station.
3. Create and attach tooling to the robot simulator.
4. Create robot motion.
5. Create robot programs.
6. Create basic geometry modeling.
7. Import external graphic files.
8. Use the I/O simulator.
9. Create work objects.
10. Simulate conveyor tracking.
11. Create simulations with part motions.
12. Create and orally present a final programming project using Robot Studio Software

B. University Learning Outcomes (ULO)

This course enhances student abilities in the following areas:

Analytical Skills

Critical Thinking - Students will analyze and troubleshoot failures in robot systems using the resources of the robotics lab. Students will apply the proper analytical troubleshooting techniques to determine failures in robot hardware and software.

Communication Skills (written and oral)

Students will communicate proficiently. The student will compose coherent documents appropriate to the intended audience and effectively communicate orally in a public setting.

III. Major Course Topics

- A. Create and simulate basic robot programs using the graphical programming tools of RobotStudio.
 - a. RobotStudio Overview
 - b. Use Unpack & Work to open an existing station
 - c. Import external graphic files
 - d. Programming the basic station
 - e. Graphical Programming
 - f. Programming and Simulating I/O's
 - g. Create work objects
 - h. Create robot programs containing routines
 - i. Define robot configurations.
 - j. Create simulations using I/O and the I/O simulator
 - k. Use Auto Path Feature
 - l. Create simulation of a real robot.
- B. Execute programs created in the graphical environment of RobotStudio on a real robot.