



OTC DAIHEN INC.
ADVANCED WELDING & ROBOTIC SYSTEMS
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Advance Features and Functions Course Syllabus

- A.
 - 1. Course Title: Advanced Features and Functions
 - 2. Course Number: OTC
 - 3. Class hours: Monday 10:00 AM to 12:00 PM, 1:00 PM to 4:30 PM
Tuesday - Thursday 9:00 AM to 12:00 PM, 1:00 PM to 4:30 PM
- B.
 - 1. FD Robotic Training and Operation
- C.
 - 1. Course description: The **Advanced Features and Functions Course** takes programming to the next level, building upon the fundamentals of safe and efficient robot operation. This course teaches students how to fully utilize the robot controller and teach pendant while introducing advanced techniques for optimizing performance and flexibility. Participants will learn program conversion between different robots, cycle time reduction methods, program organization strategies, and the effective use of shifting tools. This course is designed for personnel responsible for advanced set-up, programming, editing, and optimization of **DAIHEN FD series robots**, with a focus on improving productivity and maintaining consistent operation across multiple robot systems.
- D.
 - 1. Textbooks (1): Instruction manual for Robot Programming and Operation
- E.
 - 1. Other required materials: none
- F.
 - 1. Course objectives
 - The student shall be able to perform the following after completion of the course:
 - a. Safely power up the robot and controller from a fully shutdown position
 - b. Understand general robotic safety within working envelopes
 - c. Know the purpose and operation of the robot controller
 - d. Know the purpose and operation of the teach pendant
 - e. Know the purpose and operation of the start box
 - f. Move the manipulator and positioner using different coordinate systems
 - g. Create and test a simulated welding program
 - h. Create and use arc/ weaving commands
 - i. Perform program conversion between robots
 - j. Learn shifting functions including but not limited to XYZ, mirror, and 3D Shift

- k. Learn shifting functions related to an external axis
- l. Look at program structure for optimizing programs
- m. Verify and improve robotic cycle time

G. Grading: A grade of 72% or greater is required to successfully complete the course

H. Course outline

- 1. Monday: Introduction, general robot overview, robot safety, and review from Programming and operation
- 2. Tuesday: Robot programming and classroom discussion
- 3. Wednesday: Robot programming and classroom discussion
- 4. Robot programming, final exam, course critique, closing comments

I. Other requirements and notes

- 1. Smoking is not permitted in the building. A designated outdoor smoking area is available at the back of the building.
- 2. Class participation and completion of all exercises is recommended
- 3. All safety rules must be followed at all times
 - a. Eye protection must be worn at all times in the lab area
 - b. Leather closed-tip shoes are to be worn at all times
- 4. Lunch break will be 1 hour each day. Normal lunch hours will be from 12:00 PM – 1:00 PM. Students are responsible for lunch.
- 5. A student who misses more than $\frac{1}{2}$ day of instruction may be removed from the class at the discretion of Daihen, Inc. management and asked to return to their normal workplace.
- 6. Please arrive no earlier than 15 minutes before class
- 7. Proper attire is required at all times. Please do not wear clothing bearing slogans or sayings that could be offensive to others.