



OTC DAIHEN INC.
ADVANCED WELDING & ROBOTIC SYSTEMS
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Advanced Robotic Programming Course Syllabus

- A. 1. Course Title: Advanced Robotic Programming
2. Course Number: Advanced P.
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. Prerequisites: Basic Programming
- C. 1. Course description: The Robotics Programming Course is an advanced programming class that teaches students the advanced fundamentals of robot control, programming and manipulation. This course is designed for personnel that are well versed in basic programming fundamentals and application specific details.
- D. 1. Textbooks (1): Advanced Programming Manual, Handouts.
- 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 teach pendant.
 - d. Basic programming overview, refresher.
 - e. Definition and theory of harmonious programming.
 - f. Input and Output signal assignment.
 - g. System Mastering (robot and external axis.)
 - h. Advanced logic commands and program structure.
 - i. Total system recovery/tool shift for program correction.
 - j. Advanced Input/Output programming for system allocation.
 - k. Teach pendant layout and customization.
 - l. System back-up and program data.
 - m. How to set-up and use user coordinate systems.
 - n. How to set-up and use home position fields.
 - o. How to create and use function grouping.
 - p. Use and manipulate program conversion functions.
- 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 basic programming review
2. Tuesday: review, advanced logic commands and program structure, definition and theory of harmonious programming, total system recovery and the use of tool shift, system backup and restore
3. Wednesday: review, input/output signal assignment, advanced I/O programming for system allocation.
4. Thursday: review, system mastering, teach pendant customization, home position definition, function grouping, program conversion menu, weekly review and final exam.

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 ½ 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.