# ITEC 279: INDUSTRIAL ROBOTS

**Proposer:**

| Name: | Email: |
|---|---|
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**Effective Term:**
Fall 2024

**Credit Status:**
Credit - Degree Applicable

**Subject:**
ITEC - Industry and Technology

**Course Number:**
279

**Discipline:**

| And/Or | ( | Discipline | ) |
|---|---|---|---|
| | | Industrial Technology | |

**Catalog Title**
Industrial Robots

**Catalog Description**
Operation and programming of industrial robots used in manufacturing processes. Study of automated robot work cells, servo motors, servo drives, closed-loop control, PLC control of servo systems, and safety devices.

**Prerequisites**
ITEC 174, ITEC 182, ITEC 283, and ITEC 184

**Corequisites**
ITEC 176, ITEC 285, and ITEC 287

## Validation

**Validation Type**
Sequential - Same Discipline

**Course**
ITEC 174

**Validation Type**
Sequential - Same Discipline

**Course**
ITEC 283

**Validation Type**
Sequential - Same Discipline

**Course**
ITEC 176

**Validation Type**
Sequential - Same Discipline

**Course**
ITEC 285

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**Validation Type**
Sequential - Same Discipline

**Course**
ITEC 287

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**Validation Type**
Sequential - Same Discipline

**Course**
ITEC 182

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**Validation Type**
Sequential - Same Discipline

**Course**
ITEC 184

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Complete the Prerequisite/Corequisite Objectives and provide sound quantitative research to document the need for the requisite.

**Method of Instruction:**
Laboratory
Lecture and/or Discussion

## Course Units/Hours:

**Course Units Minimum:**
4

**Lecture Hours Minimum (week)**
3

**Lab Hours Minimum (week)**
3

**Total Contact Hours Minimum (semester)**
105

**Total Outside Hours Minimum (semester)**
105

**Total Student Learning Minimum Hours (semester)**
210

**Repeatability:**
No

**Open Entry/Exit:**
No

**Field Trips:**
Not Required

**Grade Mode:**
Standard Letter

**TOP Code:**
094500 - * Industrial Systems Technology and Maintenance

**SAM Code:**
C - Clearly Occupational

## Course Content

**Methods of Assessment:**
Mulitple choice tests
Problem solving assignments or activities
Problem solving quizzes or exams
Project
Skill demonstrations

**Course Topics:**

| | Course Topics |
|---|---|
| 1 | Applications of robots and servo systems in manufacturing. |
| 2 | Operation of an industrial robot using a teach pendant. Manually jogging the robot, fault diagnosis and recovery, robot safety devices, and file manipulation. |
| 3 | Programming an industrial robot to perform a repeatable motion task. |
| 4 | PLC control of servo systems. Electrical wiring, programming, fault diagnosis and recovery, safety relays, and applications of these systems in industry. |

**Course Objectives:**

| | Course Objectives |
|---|---|
| 1 | Identify and explain the system components that make up a robot work cell. |
| 2 | Identify and explain the system components that make up a PLC-controlled servo system. |
| 3 | Learn how to operate and program an industrial robot, and how to diagnose and recover from system faults. |
| 4 | Learn how to program and troubleshoot a servo system controlled by a PLC. |
| 5 | Identify and analyze the safety devices and related electrical circuits used in robotics and servo applications in manufacturing. |

**Course Outcomes:**

| | Course Outcomes |
|---|---|
| 1 | Demonstrate the operation and programming of an industrial robot using a teach pendant. |
| 2 | Demonstrate how to diagnose and recover from system faults in a robot work cell, and in a servo system controlled by a PLC. |
| 3 | Demonstrate ability to identify and explain safety devices and safety considerations in robot and servo systems. |

**Assignments:**

| Assignment Type: | Details |
|---|---|
| Reading | Students will be assigned reading from manuals and documentation for robot and servo systems. |
| Homework | Students will be assigned topics related to industrial robots and servo systems to research and write a summary of their findings. |
| Lab | Students will complete lab assignments in which they will learn and demonstrate how to operate, program, and troubleshoot an industrial robot work cell and a servo system. |

| | |
|---|---|
| Writing | Students will be assigned reading and research topics, and will answer questions about the assigned materials. |

**Textbooks or other support materials**

| Resource Type: | Details |
|---|---|
| Manuals | FANUC HandlingTool Operations and Programming |

**Equity Review:**

No

**Other Degree Attributes**

Degree Applicable
Not Transferable
Not a Basic Skills Course

**Additional Attachment**

Meeting Agenda 01_19_2022.docx
Advisory Meeting Minutes 01_19_2022.docx

**Banner Title:**

Industrial Robots

**Course Control Number:**

CCC000634809