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| **ATR-211\_1997SU** | **Robot Programming** | **ATR-211** |

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| CIS Course ID | S20705 |
| Effective Term | Summer 1997 |
| End Term | Summer 1999 |

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| Class | 2 | Lab | 3 | Clinical | 0 | Work | 0 | Credit | 3 |

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| This course provides the operational characteristics of industrial robots and programming in their respective languages. Topics include robot programming utilizing teach pendants, PLCs, and personal computers; and the interaction of external sensors, machine vision, network systems, and other related devices. Upon completion, students should be able to program and demonstrate the operation of various robots. |

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| State Prerequisites | Take One: CIS-110 or CIS-111 |

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| State Corequisites | None |

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| **ELC-112\_2013FA** | **DC/AC Electricity** | **ELC-112** |

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| CIS Course ID | S23481 |
| Effective Term | Fall 2013 |
| End Term |  |

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| Class | 3 | Lab | 6 | Clinical | 0 | Work | 0 | Credit | 5 |

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| This course introduces the fundamental concepts of and computations related to DC/AC electricity. Emphasis is placed on DC/AC circuits, components, operation of test equipment; and other related topics. Upon completion, students should be able to construct, verify, and analyze simple DC/AC circuits. |

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| Competencies |
| ·Student Learning Outcomes 1. Demonstrate safe practices and procedures with tools, materials, and industry accepted test equipment covered in the course. 2. Demonstrate appropriate use of test equipment, evaluate circuit performance and apply appropriate troubleshooting techniques to electrical circuits. 3. Construct and analyze series, parallel and combinations circuits using appropriate components. 4. Use appropriate laws and formulas to perform circuit calculations. 5. Interpret electrical schematics. 6. Describe the characteristics of various power sources. |

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| State Prerequisites | None |

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| State Corequisites | None |

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| **ELC-128\_2013FA** | **Intro to PLC** | **ELC-128** |

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| CIS Course ID | S23522 |
| Effective Term | Fall 2013 |
| End Term |  |

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| Class | 2 | Lab | 3 | Clinical | 0 | Work | 0 | Credit | 3 |

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| This course introduces the programmable logic controller (PLC) and its associated applications. Topics include ladder logic diagrams, input/output modules, power supplies, surge protection, selection/installation of controllers, and interfacing of controllers with equipment. Upon completion, students should be able to understand basic PLC systems and create simple programs. |

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| Competencies |
| Student Learning Outcomes 1. Identify and demonstrate safe practices and procedures with tools, materials and industry accepted test equipment covered in the course. 2. List and describe the hardware components used in PLC systems. 3. Utilize numbering systems as applied to PLCs. 4. Demonstrate and describe the use of various PLC instruction sets. 5. Create various simple PLC programs using the appropriate instruction set. 6. Apply appropriate troubleshooting methods to PLCs. |

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| State Prerequisites | None |

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| State Corequisites | None |

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| **ELC-228\_2007FA** | **PLC Applications** | **ELC-228** |

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| CIS Course ID | S21601 |
| Effective Term | Fall 2007 |
| End Term |  |

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| Class | 2 | Lab | 6 | Clinical | 0 | Work | 0 | Credit | 4 |

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| This course covers programming and applications of programmable logic controllers. Emphasis is placed on programming techniques, networking, specialty I/O modules, and system troubleshooting. Upon completion, students should be able to specify, implement, and maintain complex PLC controlled systems. |

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| State Prerequisites | None |

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| State Corequisites | None |