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| **AHR-110\_2013FA** | **Intro to Refrigeration** | **AHR-110** |

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| CIS Course ID | S23419 |
| Effective Term | Fall 2013 |
| End Term |  |

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| Class | 2 | Lab | 6 | Clinical | 0 | Work | 0 | Credit | 5 |

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| This course introduces the basic refrigeration process used in mechanical refrigeration and air conditioning systems. Topics include terminology, safety, and identification and function of components; refrigeration cycle; and tools and instrumentation used in mechanical refrigeration systems. Upon completion, students should be able to identify refrigeration systems and components, explain the refrigeration process, and use the tools and instrumentation of the trade. |

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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. Identify and explain the theory, operating principle, and components of the refrigeration cycle. 3. Identify tools, materials, and equipment used in the refrigeration industry. 4. Evacuate, charge, recover, and safely operate a basic refrigeration /cooling system in accordance with EPA regulations. 5. Demonstrate refrigeration piping and soldering techniques. |

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| State Prerequisites | None |

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| State Corequisites | None |

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| **AHR-111\_2013FA** | **HVACR Electricity** | **AHR-111** |

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| CIS Course ID | S23420 |
| Effective Term | Fall 2013 |
| End Term |  |

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

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| This course introduces electricity as it applies to HVACR equipment. Emphasis is placed on power sources, interaction of electrical components, wiring of simple circuits, and the use of electrical test equipment. Upon completion, students should be able to demonstrate good wiring practices and the ability to read simple wiring diagrams. |

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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. Be able to use electrical test instruments. 3. Demonstrate knowledge of electricity as applied to heating, ventilation, air conditioning and refrigeration machines. 4. Identify the various electrical components used in HVAC equipment and explain their operation. 5. Use Ohm's Law to calculate the current, voltage, and resistance in a circuit. 6. Draw and interpret wiring schematics for installation and troubleshooting. 7. Follow systematic troubleshooting procedure to diagnose electrical problems and control circuit problems. |

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| State Prerequisites | None |

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| State Corequisites | None |

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| **AHR-112\_2013FA** | **Heating Technology** | **AHR-112** |

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| CIS Course ID | S23421 |
| Effective Term | Fall 2013 |
| End Term |  |

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

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| This course covers the fundamentals of heating including oil, gas, and electric heating systems. Topics include safety, tools and instrumentation, system operating characteristics, installation techniques, efficiency testing, electrical power, and control systems. Upon completion, students should be able to explain the basic oil, gas, and electrical heating systems and describe the major components of a heating system. |

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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. Use industry terminology to describe principles for oil, gas, and electric warm air heating systems. 3. Identify the major components of oil, gas, and electric heating systems. 4. Install and start-up warm air heating systems. 5. Identify various types of energy sources used in heating and describe the individual characteristics of each. 6. Describe service procedures for heating systems. 7. Use tools and instruments necessary to troubleshoot and test system efficiency. |

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| State Prerequisites | None |

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| State Corequisites | None |

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| **AHR-160\_1997SU** | **Refrigerant Certification** | **AHR-160** |

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| CIS Course ID | S12778 |
| Effective Term | Summer 1997 |
| End Term |  |

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| Class | 1 | Lab | 0 | Clinical | 0 | Work | 0 | Credit | 1 |

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| This course covers the requirements for the EPA certification examinations. Topics include small appliances, high pressure systems, and low pressure systems. Upon completion, students should be able to demonstrate knowledge of refrigerants and be prepared for the EPA certification examinations. |

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| State Prerequisites | None |

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| State Corequisites | None |

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| **ELC-111\_1997SU** | **Intro to Electricity** | **ELC-111** |

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| CIS Course ID | S11841 |
| Effective Term | Summer 1997 |
| End Term |  |

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

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| This course introduces the fundamental concepts of electricity and test equipment to non-electrical/electronics majors. Topics include basic DC and AC principles (voltage, resistance, current, impedance); components (resistors, inductors, and capacitors); power; and operation of test equipment. Upon completion, students should be able to construct and analyze simple DC and AC circuits using electrical test equipment. |

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| State Prerequisites | None |

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| State Corequisites | None |