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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-113\_1997SU** | **Comfort Cooling** | **AHR-113** |

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| CIS Course ID | S14131 |
| Effective Term | Summer 1997 |
| End Term | Summer 2014 |

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

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| This course covers the installation procedures, system operations, and maintenance of residential and light commercial comfort cooling systems. Topics include terminology, component operation, and testing and repair of equipment used to control and produce assured comfort levels. Upon completion, students should be able to use psychrometrics, manufacturer specifications, and test instruments to determine proper system operation. |

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| State Prerequisites | None |

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| State Corequisites | None |

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| **AHR-114\_2013FA** | **Heat Pump Technology** | **AHR-114** |

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| CIS Course ID | S23423 |
| 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 principles of air source and water source heat pumps. Emphasis is placed on safety, modes of operation, defrost systems, refrigerant charging, and system performance. Upon completion, students should be able to understand and analyze system performance and perform routine service procedures. |

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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. Diagram refrigerant flow through a heat pump in both the heating and cooling mode identifying refrigerant conditions and pressures. 3. Explain the defrost cycle for air-to-air heat pumps. 4. Identify and troubleshoot electrical control system components for heat pumps. 5. Identify and troubleshoot refrigeration system components for heat pumps. 6. Identify and describe the different types of heat pumps in relation to their source of heat. |

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| State Prerequisites | Take One: AHR-110 or AHR-113 |

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| State Corequisites | None |

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| **AHR-130\_2013FA** | **HVAC Controls** | **AHR-130** |

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| CIS Course ID | S23273 |
| 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 covers the types of controls found in residential and commercial comfort systems. Topics include electrical and electronic controls, control schematics and diagrams, test instruments, and analysis and troubleshooting of electrical systems. Upon completion, students should be able to diagnose and repair common residential and commercial comfort system controls. |

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| State Prerequisites | Take One: AHR-111, ELC-111, or ELC-112 |

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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 |