

**Course Objectives/Course Outline**  
**Spokane Community College**

---

---

**Course Title: HVAC/R Electrical Applications**

**Prefix and Course Number: AIRC 107**

---

Students further explore the theory of electricity to include applications and troubleshooting in the HVAC/R field. Topics include: motors, basic control components and circuits, schematic development and reading, meter usage, and troubleshooting electrical components. Emphasis will be placed on developing the skills to interpret a schematic and perform basic troubleshooting on electric and gas furnaces.

**Course Learning Outcomes:**

**By the end of this course, a student should be able to:**

- Demonstrate safety procedures
- Describe the operation of an AC induction motor
- Identify types of AC induction motors
- Interpret basic electrical diagrams
- Troubleshoot a basic electrical heating circuit
- Troubleshoot a basic gas furnace
- Identify types of basic electrical controls
- Test basic electrical components
- Demonstrate testing procedures using a digital multimeter

**Outline:**

- I. Motors
  - a. AC induction motor theory
  - b. Types of AC induction motors
  - c. Applications of AC induction motors
  - d. Troubleshooting AC induction motors
- II. Electric furnace operation
  - a. Control circuits
  - b. Schematic and wiring diagrams
  - c. Sequence of operation
  - d. Basic troubleshooting
- III. Gas furnace operation
  - a. Control circuits
  - b. Schematic and wiring diagrams
  - c. Sequence of operation
  - d. Basic troubleshooting