

**Heating, Ventilation, Air Conditioning 3 & 4**  
**Scope & Sequence: Year 2**

Semester 1		Semester 2	
Quarter 1	Quarter 2	Quarter 3	Quarter 4
Professional Standards: 1.0, 3.0, 4.0, 5.C, 9.0 <u>Unit 1</u> <b>Introduction to HVAC</b> <ul style="list-style-type: none"> <li>Basic principles of HVAC-R.</li> <li>Describe the principles of HVAC-R installation and service.</li> <li>Identify career paths in HVAC-R.</li> </ul> Professional Standards: 3.0, 5.A, 5.B, 6.0 <u>Unit 2</u> <b>Trade Mathematics</b> <ul style="list-style-type: none"> <li>Convert units of measurement from the inch-pound system to the metric system, and vice-versa.</li> <li>Solve basic algebra equations.</li> <li>Identify and describe geometric figures.</li> </ul>	Professional Standards:1.0, 3.0, 4.0, 5.0 <u>Unit 3</u> <b>Basic Electricity</b> <ul style="list-style-type: none"> <li>Describe fundamentals of electricity.</li> <li>Explain basic electrical theory.</li> <li>Identify electrical measuring instruments used in HVACR work.</li> <li>Identify electrical components used in HVACR systems/ functions.</li> </ul> Professional Standards:1.0, 2.0, 3.0, 5.0 <u>Unit 4</u> <b>Introduction to Heating</b> <ul style="list-style-type: none"> <li>Explain fundamental concepts of heating and Combustion.</li> <li>Describe role of forced-air gas furnaces in residential heating.</li> <li>Describe hydronic and electric heating systems.</li> </ul>	Professional Standards: 1.0, 2.0, 3.0 <u>Unit 5</u> <b>Introduction to Cooling</b> <ul style="list-style-type: none"> <li>Explain fundamental concepts of refrigeration cycle.</li> <li>Identify common refrigerants/ identifying characteristics.</li> <li>Identify major components of cooling systems and how they function.</li> <li>Identify common controls used in cooling systems/ functions.</li> </ul> Professional Standards: 1.0, 2.0, 3.0 <u>Unit 6</u> <b>Introduction to Air Distribution Systems</b> <ul style="list-style-type: none"> <li>Explain factors related to air movement/ its measurement in air distribution systems.</li> <li>Explain mechanical equipment/ materials used to create air distribution systems.</li> <li>Identify different approaches to air distribution system design.</li> </ul> <b>*Technical Skills Assessment</b> <b>Industry Certification Testing</b>	Professional Standards:2.0, 3.0, 4.0, 5.B <u>Unit 7</u> <b>Basic Copper and Plastic Piping Practices/ Soldering and Brazing</b> <ul style="list-style-type: none"> <li>Identify different types of copper tubing and fittings.</li> <li>Demonstrate joining copper tubing mechanically.</li> <li>Recognize different types of plastic piping and show how it can be joined.</li> <li>Demonstrate the safe process of soldering copper tubing.</li> <li>Demonstrate the safe process of brazing copper tubing.</li> </ul> Professional Standards:2.0, 3.0, 4.0, 5.B <u>Unit 8</u> <b>Basic Carbon Steel Piping Practices</b> <ul style="list-style-type: none"> <li>Identify the various types of steel pipe and fittings.</li> <li>The tools/ methods used to cut and thread steel pipe.</li> <li>Demonstrate the methods of installing/ mechanically joining steel pipe.</li> </ul>