Environmental Systems and Refrigeration Technology (ESRT)

- ***Associate of Technical Science Degree***
  (requires completion of first- and second-year courses)
- ***Certificate of Completion:***
  - ***Basic HVACR and Controls (entire first year)***
  - ***Commercial/Industrial HVACR and DDC Controls***
    (entire second year plus OCED 102, MATH 100T, BCT 116)

The environmental systems and refrigeration technology (ESRT) program at WVC offers a high level of instruction and prepares graduates to seek a wide variety of entry-level jobs. These include service technicians, mechanics, maintenance personnel, application engineers, electronic temperature controls specialists and environmental systems designers. Positions may be available in agricultural storage facilities, office buildings, shopping malls, schools, industrial plants and many other facilities around the world.

The ESRT program blends traditional classroom instruction with practical, hands-on lab work. Classes include refrigeration principles, applied electricity, air conditioning, heating systems, control fundamentals, DDC and PLC controls, boiler systems, and basic welding. Additional course work emphasizing energy efficiency includes efficient HVAC systems, energy load calculations, commissioning and TAB (Test, Adjust and Balancing). It is recommended that students start the program in fall quarter.

The second year of the program is designed to allow students to work full time while in the program, by taking courses at night and short seminars offered on Thursdays/Fridays and/or evenings. The final quarter of the program includes an internship and an independent capstone project emphasizing students' career aspirations. With permission, some on-the-job training internships may be substituted for lab work.

Before entering the ESRT program, students are strongly advised to complete one year of high school algebra or its equivalent. Course work in computers, basic electricity/electronics and welding are also beneficial prior to entering the program. Prior to entry into the program, documentation of computer literacy is required. If students complete the ESRT associate of technical science (ATS) degree, they can earn electrical hours toward the Washington State Labor & Industry (06A) Electrical HVAC Specialty License. Upon graduation, students are also expected to have the OSHA 10 HVAC Safety card, the EPA 608 Refrigerant Handling Universal License and a current first aid card with CPR.

Environmental Systems and Refrigeration Technology (ESRT)

Suggested Course Sequence:
Associate of Technical Science Degree *(requires all first- and second-year courses)*
Basic HVACR and Controls Certificate of Completion *(complete all three quarters of first-year classes)*
Commercial/Industrial HVACR and DDC Controls Certificate of Completion *(complete all three quarters of second-year classes, plus OCED 102* or higher, MATH 100T* or higher, and BCT 116 or their equivalents)*

Offered at Wenatchee campus

First Year

Fall Quarter			**Credits**
ELEC	115	Applied Electricity	5
ESRT	102	OSHA 10 Safety Principles (Web)	1
ESRT	110	Refrigeration Principles	5
ESRT	114	Refrigerant Recovery/Recycle	1
ESRT	136	Indoor Air Quality	2
BCT	116	Professional Work Relations	3
Winter Quarter			
ELEC	125	Wiring Diagrams and Schematics.	5
ESRT	120	Heating Systems	5
ESRT	210	Boiler Systems	3
MATH	100T*	Technical Math or higher	5
Spring Quarter			
ELTRO	132	Intro. to Computer Controls and PLCs	5
OCED	102*	Writing in the Workplace/ Technical English or higher	5
ESRT	130	Air Conditioning and Heat Pumps	5
WELD	128	Basic Welding	3
		Total Credits for Certificate	**53**

**Placement score required.*

Second Year

Fall Quarter			**Credits**
ELTRO	202	Intro. to NEC	2
ELTRO	210	Program Software for PLCs	5
ELTRO	223	Programming Software for Tag-Based PLCs	3
ESRT	200	Commercial HVACR Equipment	5
ESRT	205	Blueprint Reading (Seminar)	2
ESRT	215	Commercial DDC HVAC Controls	3
Winter Quarter			
ELEC	225	Industrial Electricity/Controls	5
ELTRO	221	Graphic Interface Programs for PLCs	5
ESRT	220	Industrial Refrig. Systems	5
ESRT	222	Industrial Refrig. Lab ***or***	
ESRT	296	Work Experience	3
ESRT	223	Design and Load Applications	3
Spring Quarter			
ESRT	230	Industrial Refrigeration Maintenance and Safety	2
ESRT	238	HVAC Commissions, LEED & TAB Testing	3
ESRT	295	Capstone HVACR Project	2
ESRT	296	Work Experience	5
		Total Credits for Certificate	**53**
		Total Credits for Degree	**106**