

# HVAC

HVAC (Heating, Ventilation and Air-Conditioning) systems technicians work on residential and commercial buildings installing and maintaining electrical, gas and oil heating and air-conditioning systems. Rapidly increasing technology in HVAC work requires employers to seek well trained employees from technical school training or apprenticeship programs. CITC's four-year program has been designed by highly qualified subject matter experts with this in mind. CITC classes present theoretical and practical skills essential to your success as an HVAC installer or technician.



**NOTE: IT IS CRUCIAL THAT STUDENTS HAVE REQUIRED BOOKS PRIOR TO THE FIRST CLASS MEETING. A STUDENT WHO DOES NOT HAVE BOOKS BY THE END OF THE SECOND WEEK MAY BE SENT HOME AND BE CHARGED WITH AN ABSENCE.**

## HVAC LEVEL 1

Minimum: 201 hours per year

### HVAC 101: FALL QUARTER

Students will thoroughly review construction site and shop safety; trade mathematics; safe use of basic hand and power tools; blueprint reading; rigging; HVAC tools and an overview of HVAC careers. *Schedule for lab dates will be handed out the first night of class each quarter.*

### HVAC 102: WINTER QUARTER

Students will learn HVAC related trade math; basic electricity for HVAC; introduction to cooling and heating principles; and air distribution systems skills.

### HVAC 103: SPRING QUARTER

Students will be introduced to basic copper and plastic piping practices; basic carbon steel piping practices; soldering and brazing; and will review related National Electric Code (NEC) and Washington State rules (RCW/WACs). Includes OSHA 10 training.

#### Required Books - HVAC Level 1

*It is the student's responsibility to have the following book(s) on the first night of class:*

Modern Refrigeration & Air Conditioning Textbook, 20th Ed.	ISBN: 978-1-63126-357-6
Modern Refrigeration & Air Conditioning Workbook, 20th Ed.	ISBN: 978-1-63126-355-2
NCCER Core Curriculum Trainee Guide, 5th Edition	ISBN: 978-0-13-413098-9
NCCER HVAC Level 1 Trainee Guide, 4th Edition	ISBN: 978-0-13-518509-4
2017 National Electric Code (NEC)	ISBN: 978-1-4559-1277-3
Washington State Electrical RCW/WACs	Free download available through L&I

## HVAC LEVEL 2

Minimum: 201 hours per year

### HVAC 201: FALL QUARTER

Students will learn about alternating current; transformers and motors used in HVAC; compressors; refrigerants and oils; and leak detection, evacuation, recovery and charging. *Schedule for lab dates will be handed out the first night of class each quarter.*

### HVAC 202: WINTER QUARTER

Students will learn about metering devices; heat pumps; and basic maintenance. Students will also learn components of the National Electric Code (NEC) and Washington State rules (RCW/WACs) related to HVAC; review green building practices; and will complete a review to prepare for the EPA exam.

### HVAC 203: SPRING QUARTER

Students will learn about chimneys, vents and flues; sheet metal duct systems; fiberglass and fabric duct systems; commercial airside systems; air quality equipment; and will be introduced to hydronic systems.


#### Required Books - HVAC Level 2

*It is the student's responsibility to have the following book(s) on the first night of class:*

Modern Refrigeration & Air Conditioning Textbook, 20th Ed.	ISBN: 978-1-63126-357-6
Modern Refrigeration & Air Conditioning Workbook, 20th Ed.	ISBN: 978-1-63126-355-2
NCCER HVAC Level 2 Trainee Guide, 4th Edition	ISBN: 978-0-13-518512-4
NCCER Your Role in the Green Env. Trainee Gd, 3rd Edition	ISBN: 978-0-13-294863-0
2017 National Electric Code (NEC)	ISBN: 978-1-4559-1277-3
Washington State Electrical RCW/WACs	Free download available through L&I

## APPRENTICESHIP MONTHLY WORK LOGS

Apprenticeship monthly work logs can be submitted to the apprenticeship department via email: [worklogs@citcwa.org](mailto:worklogs@citcwa.org); fax: (425) 289-0085; mail to the CITC main office: 1930 116th Ave NE Bellevue, WA 98004; or in person to the CITC front office.



### NCCER BOOKSTORE

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[nccer.pearsonconstructionbooks.com](http://nccer.pearsonconstructionbooks.com)

## HVAC LEVEL 3

Minimum: 201 hours per year

### HVAC 301: FALL QUARTER

Students will learn about refrigerants and oils; compressors; metering devices; and retail refrigeration systems. *Schedule for lab dates will be handed out the first night of class each quarter.*

### HVAC 302: WINTER QUARTER

Students will learn about commercial hydronic systems; steam systems; planned maintenance; and water treatment practices.

### HVAC 303: SPRING QUARTER

Students will learn about troubleshooting electronic controls; troubleshooting oil heating; troubleshooting heat pumps; and troubleshooting accessories.

#### Required Books - HVAC Level 3

*It is the student's responsibility to have the following book(s) on the first night of class:*

Modern Refrigeration & Air Conditioning Textbook, 20th Ed.	ISBN: 978-1-63126-357-6
Modern Refrigeration & Air Conditioning Workbook, 20th Ed.	ISBN: 978-1-63126-355-2
NCCER HVAC Level 3 Trainee Guide, 4th Edition	ISBN: 978-0-13-518510-0
2017 National Electric Code (NEC)	ISBN: 978-1-4559-1277-3
Washington State Electrical RCW/WACs	Free download available through L&I

## HVAC LEVEL 4

Minimum: 201 hours per year

### HVAC 401: FALL QUARTER

Students will learn about water treatment; indoor air quality; energy conservation equipment; and National Electric Code (NEC) and Washington State rules (RCW/ WACs) related to HVAC. *Schedule for lab dates will be handed out the first night of class each quarter.*

### HVAC 402: WINTER QUARTER

Students will learn about building management systems; system air balancing; systems start-up and shut down; and construction drawings and specifications.

### HVAC 403: SPRING QUARTER

Students will learn about heating and cooling system design; commercial and industrial refrigeration systems; alternative heating and cooling systems; and complete the *Fundamentals of Crew Leadership* course. An extensive, comprehensive review prepares students for their journeyman exam.

#### Required Books - HVAC Level 4

*It is the student's responsibility to have the following book(s) on the first night of class:*

Modern Refrigeration & Air Conditioning Textbook, 20th Ed.	ISBN: 978-1-63126-357-6
Modern Refrigeration & Air Conditioning Workbook, 20th Ed.	ISBN: 978-1-63126-355-2
NCCER HVAC Level 4 Trainee Guide, 4th Edition	ISBN: 978-0-13-518506-3
2017 National Electric Code (NEC)	ISBN: 978-1-4559-1277-3
Washington State Electrical RCW/WACs	Free download available through L&I



## HVAC INSTRUCTORS

As a part of our dedication and commitment to training, we take pride in delivering top quality instructors. CITC's instructors are highly skilled journey-level workers who bring their knowledge and years of trade experience into the classroom. All CITC instructors have been certified by the National Center for Construction Education and Research.

**Peter Chatrand** started in the trades in 2001 and became a CITC faculty member in 2007.

**Dale Willemse** started in the trade in 1988 and became CITC faculty member in 2015.



## APPRENTICESHIP CAREER COACH



### Struggling with your Apprenticeship?

If you need a career coach, call  
(877) 428-0442

### ¿Tiene dificultades con su aprendizaje?

Para ayuda de un mentor, marque  
(877) 428-0442

# HVAC Schedule & Tuition

## Eastern Washington Region

HVAC LEVEL 1							
Spokane	101	Fall	4 wk/87 hr	Fri/Sat	8a-5p	September 28 & 29; October 26 & 27; November 30 & December 1; December 21 & 22 + Assignments	Tuition: \$1,070
Spokane	102	Wtr	3 wk/63 hr	Fri/Sat	8a-5p	January 25 & 26; February 22 & 23; March 22 & 23 + Assignments	Tuition: \$1,070
Spokane	103	Spr	3 wk/51 hr	Fri/Sat	8a-5p	April 26 & 27; May 31 & June 1; June 28 & 29 + Assignments	Tuition: \$1,070

## Western Washington Region

HVAC LEVEL 1							
Bellevue	101	Fall	15 wk/87 hr	Tue/Thu	5p-8p	September 4 - December 13	Tuition: \$1,425
Bellevue	102	Wtr	11 wk/63 hr	Tue/Thu	5p-8p	January 8 - March 19	Tuition: \$1,425
Bellevue	103	Spr	9 wk/51 hr	Tue/Thu	5p-8p	April 2 - May 28	Tuition: \$1,425
Vancouver	101	Fall	4 wk/87 hr	Fri/Sat	8a-5p	September 14 & 15; October 12 & 13; November 9 & 10 December 7 & 8 + Assignments	Tuition: \$1,425
Vancouver	102	Wtr	3 wk/63 hr	Fri/Sat	8a-5p	January 18 & 19; February 8 & 9; March 8 & 9 + Assignments	Tuition: \$1,425
Vancouver	103	Spr	3 wk/51 hr	Fri/Sat	8a-5p	April 12 & 13; May 10 & 11; June 7 & 8 + Assignments	Tuition: \$1,425
HVAC LEVEL 2							
Bellevue	201	Fall	4 wk/87 hr	Fri/Sat	8a-5p	September 7 & 8; October 5 & 6; November 2 & 3; November 30 & December 1 + Assignments	Tuition: \$1,425
Bellevue	202	Wtr	3 wk/63 hr	Fri/Sat	8a-5p	January 4 & 5; February 1 & 2; March 1 & 2 + Assignments	Tuition: \$1,425
Bellevue	203	Spr	3 wk/51 hr	Fri/Sat	8a-5p	April 5 & 6; May 3 & 4; May 31 & June 1 + Assignments	Tuition: \$1,425
HVAC LEVEL 3							
Bellevue	301	Fall	15 wk/87 hr	Mon/Wed	5p-8p	September 5 - December 12	Tuition: \$1,425
Bellevue	302	Wtr	11 wk/63 hr	Mon/Wed	5p-8p	January 7 - March 18	Tuition: \$1,425
Bellevue	303	Spr	9 wk/51 hr	Mon/Wed	5p-8p	April 1 - May 29	Tuition: \$1,425
HVAC LEVEL 4							
Bellevue	401	Fall	15 wk/87 hr	Tue/Thu	5p-8p	September 4 - December 13	Tuition: \$1,425
Bellevue	402	Wtr	11 wk/63 hr	Tue/Thu	5p-8p	January 8 - March 19	Tuition: \$1,425
Bellevue	403	Spr	9 wk/51 hr	Tue/Thu	5p-8p	April 2 - May 28	Tuition: \$1,425



All First Year classes include  
**OSHA 10 for Construction**

