

Heating Systems

TEAC - 1120 401

Course Student Learning Outcomes

- Explain the fundamentals of heating, heat transfer, and combustion.
- Explain the sequence of operation for residential forced-air furnaces.
- Troubleshoot a variety of electrical and mechanical furnace problems.
- Demonstrate mastery of RMGA Certification knowledge by passing the RMGA exam or its equivalent.

Course Prerequisites

TEAC-1100

Engagement Plan

I will respond to email within 24 hours Monday through Thursday. The best way to contact me is via the Canvas Inbox, as I will prioritize this email over other modes of communication.

Keys for Success (how to succeed in the course)

This course is structured to allow students to work at their own pace. However, this course must be completed by the end of the semester the course was registered in. While substantial preparation work can be performed outside of the classroom and lab, most of the lab assignments are hands-on and require that students be in attendance for these assignments as well as for most quizzes and all exams. Students are expected to manage their schedules and complete all current (registered) coursework by the end of the current semester. Any course not completed by the end of the semester will receive a

failing grade and the student will need to repeat the course before proceeding to other courses in the program.

Classroom and lab hours are Monday through Thursday 8:00AM–2:00PM and 6:00PM–10:00PM. However, if instructors have not had, or do not have, any students in the lab at 8:00PM, at their discretion, they may close the lab for the evening. Therefore, if you will be later than 7:30PM, please communicate with the instructor for that evening. The classroom and lab are located in room TAB-109 of the Technical Arts Building (TAB) on the Taylorsville campus, 1902 Community Blvd.

Required Text or Materials

Title: Heating and Cooling Essentials

ISBN: 978-1-63776-460-2

Title: Modern Refrigeration and Air Conditioning

ISBN: 979-8-89737-599-8

For more information on textbook accessibility, contact Accessibility & Disability Services at ads@slcc.edu.

Additional Materials

You are required to purchase a personal pair of safety glasses. General safety rated plastic glasses or prescription safety glasses are acceptable. You will also need a scientific calculator. You will also need the following hand tools and meters for the labs:

- Safety glasses or prescription glasses with safety lenses.
- Gloves, cut resistant ANSI A4, similar/equal to these found on Amazon.
- Earbuds or headphones that can plug into a laptop computer.
- USB drive to store and transfer your work
- HVACR Clamp Multi-Meter UEI DL479 or similar available at some supply houses or Amazon.
- 6 in 1 screwdriver (#1 and #2 Phillips screwdrivers, 1/4" and 3/16" slotted screwdrivers, 1/4" and 5/16" nut-drivers).

- Small 1/8" flat-blade screwdriver (control screwdriver) used for installing thermostats and other control devices.
- Hex wrench set, SAE (not metric), long-arm (not folding)
- Adjustable open-end wrench, 6".
- Adjustable open-end wrench, 8".
- Two pocket thermometers, UEI PDT650 or similar.
- Magnet (approx. 2"X3/4"X1/2") or The Old Switcheroo (Google to find source).
- Refrigeration service wrench, Yellow Jacket model 60613 or similar.
- Measuring tape, at least 16'.
- Electrical tape, 1 roll.
- Tubing cutter, Ridgid model 150 or similar.
- Deburring tool, Yellow Jacket model 60163 or similar.
- Jumper wires with alligator clips.
- Electrical tape.
- Tubing cutter, Ridgid model 150 or similar.
- Deburring tool, Yellow Jacket model 60163 or similar.

Brief Description of Assignments/Exams

See Assignment Schedule

Assignment Schedule

Due Date	Assignment Name	Assignment Type	Points
	Chapter 1 Video Assignment	Assignment	10
	Chapter 11 Assignment	Assignment	10

Due Date	Assignment Name	Assignment Type	Points
	Chapter 2 Video Assignment	Assignment	10
	Chapter 3 Video Assignment	Assignment	10
	Chapter 4 Video Assignment	Assignment	10
	Chapter 5 Video Assignment	Assignment	10
	Chapter 6 Video Assignment	Assignment	10
	Chapter 7 Video Assignment	Assignment	10
	Chapter 8 Video Assignment	Assignment	10
	Chapter 9 Video Assignment	Assignment	10
	Check Your Knowledge: H&C Chapter 30 Gas Heat with Air Conditioning	Quiz	31
	Check Your Knowledge: MRAC Chapter 33 Gas-Fired Heating System	Quiz	37
	Combustion Heating Quiz	Quiz	10

Due Date	Assignment Name	Assignment Type	Points
	Final Gas Furnace and RMGA Exam Form A- Requires Respondus LockDown Browser	Quiz	29
	Gas-Fired Heating Systems Exam	Quiz	96
	H&C Lab Activity 30-1: Disassembling and Reassembling a Gas Furnace Blower	Assignment	5
	H&C Lab Activity 30-2: Adjusting a Pilot Light and Thermocouple	Assignment	5
	H&C Lab Activity 30-3: Wiring a Limit Switch	Assignment	5
	H&C Lab Activity 30-4: Wiring a Furnace Circuit	Assignment	5
	H&C Lab Activity 30-5: Wiring a Two-Speed Blower Motor Circuit	Assignment	5
	H&C Lab Activity 30-6: Wiring a Circuit for a Furnace with Air Conditioning	Assignment	10
	Introduce Yourself	Discussion	0
	Introduce Yourself	Discussion	0

Due Date	Assignment Name	Assignment Type	Points
	MRAC Lab Activity_33A: Gas Pipe Sizing_ for Natural Gas	Assignment	5
	MRAC Lab Activity_33B: Gas Furnace Checkup	Assignment	5
	MRAC Lab Activity_33C: Blower Motor Testing	Assignment	5
	MRAC Lab Activity_33D: Testing Furnace Safety Switches	Assignment	5
	MRAC Lab Activity_33E: Introduction to Indoor Fan Controls	Assignment	5
	MRAC Lab Activity_33F: Gas Furnace Efficiency	Assignment	5
	MRAC Lab Activity_33G: PVC Venting_ Systems	Assignment	5

Grading Scale

Each assignment, quiz, and exam have an assigned point value. The course grade is determined by summing all of the assignments, quizzes, and exams and dividing the sum by the total possible points. A letter grade of A , B, or E (failing) will be assigned according to the percentage of points earned and the following table:

GRADE	RANGE
A	90-100%

B	80-89%
E	Less than 80%

How to Navigate to Canvas

Institutional Policies

As members of our academic community, we would like to invite you to review the Institutional Syllabus which covers important policies and procedures. This document contains important links for students on the code of student rights and responsibilities, academic integrity, and grading policies, Title IX and other important acknowledgements. By familiarizing yourself with this information, you can help us create a safe and respectful environment for everyone.

For more information, navigate to the Institutional Policies tab on the [Institutional Syllabus](#) page.

Learning Support and Tutoring Services

We are pleased to offer a range of tutoring and learning support services to help you achieve your academic goals. Whether you need assistance with a specific subject or want to improve your study skills, you have many options for tutoring or other support.

To learn more about the services we offer and how to access them, visit the [Institutional Syllabus](#) page under the Tutoring and Learning Support tab. We encourage you to take advantage of these resources to help you succeed in your studies. If you have any questions or would like to schedule a tutoring session, please don't hesitate to reach out to us. We are here to support you in any way we can.

Advising and Counseling Support Services

At our institution, we are committed to supporting your academic and personal growth. That's why we offer a range of advising and counseling services to help you navigate the challenges of college life. To learn more about the resources available to you and how to

access them, visit the [Institutional Syllabus](#) page under the Advising and Counseling Support Services tab. Our advising team and the support centers across campus are here to support you in achieving your goals and overcoming any obstacles you may face.

Student Academic Calendar

As students you should be aware of all important dates in the semester, such as the day that courses begin and end, as well as the drop date and the last day to withdraw. To learn more about those dates, navigate to the Student Academic Calendar below:

[SLCC Student Academic Calendar](#)