



Residential Energy Efficiency

Energy Auditor Course Syllabus

Description

The Energy Auditor course is based on a National Renewable Energy Laboratory/U.S. Department of Energy Job Task Analysis (JTA) of the same name. The course is broken down into two weeks of instruction. The first week is comprised of heating fundamentals and diagnostic testing. Also included in the first week are duct diagnostics and exhaust systems including ASHRAE 62.2 calculations. The second week is devoted to the envelope of the building. Week two includes inspection and assessment of the structure, client interaction, building science, basic math skills, and gathering infiltration data (blower door). The class curriculum is suitable for any student who wishes to pursue energy auditing on single family homes. Students must pass a pre-test administered through the ree.instructure.com website to attend this course. The Energy Auditor course is designed to prepare students to take the Home Energy Professional (HEP) Energy Auditor certification exam.

The majority of the class is spent in our state-of-the-art training labs, practicing the skills needed to complete a successful energy audit. During the second week students bring together all the skills learned when they conduct a full home energy audit. Students will take one written and three hands-on tests of energy assessment skills. Upon successful completion of the tests, students receive a certificate of completion.

To review the Energy Auditor Job Task Analysis, please see your binder or download it at: https://www.energy.gov/sites/prod/files/2018/04/f50/HEP-SF-EA-JTA_final.pdf.

Organization

This is a lecture-lab course. Topics are presented in a classroom setting and then followed up with student involvement in the lab. Classroom topics are delivered through instructor presentations as well as videos, while lab content involves hands-on practical exercises and demonstrations. The class is geared toward those with some background in residential construction or those who have minimal field experience in energy auditing. Student participation is very important.

Course Objectives

Students will be able to:

1. Recognize the different heating systems and fuel types being used
2. Properly perform combustion testing (SSE)
3. Calculate combustion air needed
4. Measure exhaust flow and perform ASHRAE 62.2 calculations
5. Perform duct diagnostic testing
6. Inspect and assess the building envelope
7. Perform basic math calculations
8. Properly gather infiltration data (blower door)
9. Use lab experience to give students a practical understanding of the lessons being taught

Course Topics	Percentage Weight of JTA in Course
1. Heating System Fundamentals	2%
2. Heating System Efficiency Ratings	
3. Combustion Air	12%
4. Worst Case Depressurization	
5. Duct Diagnostics	3%
6. ASHRAE 62.2	6%
7. Exhaust Fans and Measuring Flow	
8. Client Interaction	3%
9. Baseload	10%
10. Safety	2%
11. House as a System/Building Science	12%
12. Visual Assessments	10%
13. Math Basics	4%
14. Envelope Inspections and Assessments	21%
15. Work Scope Development	5%
16. Blower Door	8%
17. Auditing Software (NEAT and SIR)	2%

Grading Criteria and Passing Score

The exam consists of four sections: one written and three hands-on. Students must pass each section with an 80% score or higher. If a student does not pass a section, he or she will be allowed to retake that section in accordance with Residential Energy Efficiency Training Initiatives' (REE) Retesting Policy.

Grading Plan

1. Written Section	65 points (52 points to pass)
2. Blower Door Hands-On Section	21 points (17 points to pass)
3. CAZ Hands-On Section	35 points (28 points to pass)
4. Duct Tester Hands-On Section	15 points (12 points to pass)

Honor Code

Students are expected to follow REE's Honor Code. Absolutely no cheating is permitted. Violations will be dealt with according to the Student Conduct Policy.

Course Conduct Expectations

In addition to following all student policies, students are expected to adhere to the following:

1. Arrive on time and prepared for class
2. Cell phone use is NOT permitted during class
3. Attend all class sessions, in both the classroom and the labs
4. Participate in all classroom discussions and hands-on exercises

Recommended Textbooks

Hansen, D., Kardon, R., & Morrissey, P. (2011). *Code Check Plumbing and Mechanical 4th Edition: An Illustrated Guide to the Plumbing and Mechanical Codes*. Taunton Press, Incorporated.

Krigger, J., & Dorsi, C. (2012). *Residential Energy: Cost savings and comfort for existing buildings* (6th ed.). Helena, MT: Saturn Resource Management Inc.

Brumbaugh, J. E., & Brumbaugh, J. E. (2004). *Audel HVAC fundamentals: Vol. 1 Heating systems, furnaces, and boilers* (4th ed.). Indianapolis, IN: Wiley.

Krigger, J., Dorsi, C., & Tenter, D. (2011). *Saturn HVAC systems field guide*. Helena, MT: Saturn Resource Management Inc.

National Renewable Energy Laboratory (2017). *Standard Work Specifications for Home Energy Upgrades*.