

RC 202

Energy Audits and Conservation Practices

3 Credits

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RC 202 Version: 6



Energy Audits and Conservation Practices

Calendar Description

This course inspects how a home energy audit measures energy efficiency in a residential home. This course also examines methods to reduce energy consumption in residential homes.

Rationale

This is a required course in the first year of Sustainable Energy Technology. RC 202 focuses on interpreting a home energy audit and identifying methods of improving energy efficiency in residential homes.

In many areas of the world the rate of energy consumption is unsustainable. One approach to reduce energy consumption is to increase energy efficiency in residential homes. An accurate energy audit measures energy efficiency in buildings and is therefore useful for home design, construction and renovations.

Amann, Wilson & Ackerly (2012) state,

"For a typical two-car, single-family household, energy used in the home accounts for more than half of the family's total greenhouse gas contributions and energy costs!" (p.3)

Prerequisites

None

Co-Requisites

None

Course Learning Outcomes

Upon successful completion of this course, students will be able to

1. summarize the energy consumption patterns of a modern industrial society.
2. analyze the energy-use trends prevalent in North American homes.
3. critique an energy audit done on a single - family detached home.

4. identify the testing procedures for a home energy audit.
5. detail the energy efficiency qualities of the home envelope.
6. inspect the concept of a net-zero energy home in Canada.
7. describe solutions to air ventilation problems in homes.
8. describe energy efficient methods to heat and cool homes.
9. compare a variety of hot water heating methods.
10. estimate the annual electricity use in a home.

Resource Materials

Amann, J., A.Wilson, and K, Ackerly. 2012. Consumer guide to home energy savings. 10th ed.

New Society Publishers, Gabriola Island, BC.

Other Resources Required:

Reference Books:

- Access to Microsoft (MS) Word, MS PowerPoint, and MS Excel
- Access to a computer and the Internet (Available at the Learning Resource Services at the two Lakeland College campuses)
- Access to Lakeland College Library. Students can access the Lakeland College Library on-line

Other References:

Krigger, J., and C. Dorsi. 2008. The homeowner's handbook to energy efficiency. Saturn

Resource Management Inc., Helena, Montana.

Rehfeld, B. 2011. Home sweet zero energy home. New Society Publishers, Gabriola Island, BC.

Conduct of Course

RC 202 is delivered entirely on-line using the Desire2Learn (D2L) platform. RC 202 uses an on-line instructor who will regularly communicate with students using the Desire2Learn e-mail and News. Other communication tools include discussions and the D2L Chat room.

In RC 202 there is one partner assignment where students collaborate to write a short research paper. Collaborating with other students promotes learning, improves communication skills and requires some mutual planning. In RC 202 working with a partner comes with the expectation that each participant will contribute equally to the assignment.

In RC 202 is divided into seven modules with one discussion, five assignments, and five quizzes. All assignments in RC 202 have a due date that is shown in the D2L calendar.

Evaluation Procedures

- Module One: Discussion 1.1 Energy Conservation 15%
- Module Two: Assignment (Partners) 2.1 Residential Energy Use 10%
- Module Three: Assignment 3.1 Home Audit Interview 10%
Quiz 3.2 Energy Audit 10%
- Module Four: Quiz 4.1 An Energy Efficient Home Envelope 10%
Assignment 4.2 The Net-Zero Energy House in Canada 10%
- Module Five: Quiz 5.1 Air Quality and Cooling 10%
Assignment 5.2 Furnace Replacement 10%
- Module Six: Quiz 6.1 Water Heating Methods 5%
- Module Seven: Quiz 7.1 Lighting in Homes 5%
Assignment 7.2 Electricity Use Analysis 5%

Grade Equivalents and Course Pass Requirements

A minimum grade of D (50%) (1.00) is required to pass this course.

Letter	F	D	D+	C-	C	C+	B-	B	B+	A-	A	A+
Percent Range	0-49	50-52	53-56	57-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-100
Points	0.00	1.00	1.30	1.70	2.00	2.30	2.70	3.00	3.30	3.70	4.00	4.00

Students must maintain a cumulative grade of C (GPA - Grade Point Average of 2.00) in order to qualify to graduate.

Attendance

Active participation is required in all courses in the Sustainable Energy Technology program. In RC 202, active participation is required in discussions and one partner assignment.

Working with student partners has the expectation of openly communicating with partners, sharing research results, and sharing the responsibility for the assignment.

Students can request for an excused absence. An excused absence is one that is verified with your facilitator.

NOTE: Any exceptions to the above attendance policy (e.g. family or work-related issues) **must** be approved in writing by the Department Chair **prior** to the beginning of the course.

It is the student's responsibility to know their own absentee record.

Course Units/Topics

Welcome & Introductions

Module 1: The Energy Consumption of a Modern Industrial Nation

Module 2: Residential Energy Use

Module 3: Home Energy Audits

Module 4: The Home Envelope and Net-Zero Energy Housing

Module 5: Ventilation, Heating, and Cooling

Module 6: Water Heaters

Module 7: Reducing Home Electricity Use

Please consult the RC 202 Calendar for due dates for assignments, discussions, and quizzes.



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