

ENVI 120 – Home Energy Basics

Term:	Fall 2011
Course Title:	Home Energy Basics
Dept. & Num:	ENVI 120
Credits:	1
Prerequisites:	None
Dates:	TBD
Days and Times:	Fri 6pm-8pm, Sat 9am-6pm, Sun 9am-4pm
Location:	UAF BBC, Dillingham and Bristol Bay villages

Instructor:	Dr. Tom Marsik
Office Location:	UAF Bristol Bay Campus, Room 117
Position:	Assistant Professor
Phone:	842-5109
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Hours Available:	Available during the days the course is offered

Required Text:	Material provided by instructor: 1) Energy Savers Tips for Rural Alaska, SWAMC & AEA, 2009; 2) Energy Savers: Tips on Saving Energy & Money at Home, DOE NREL, 2001; 3) Selected parts (Part I.2 – The balance sheet, Part III.E – Heating II) of Sustainable Energy – without the hot air by David J.C. MacKay. UIT Cambridge, 2008. ISBN 978-0-9544529-3-3. Available free online from www.withouthotair.com 4) Selected parts (Chapter 2 – Building Science) of Alaska Residential Building Manual by Rich Seifert et al. UAF Cooperative Extension Service, 2008. Available free online from http://www.ahfc.state.ak.us/reference/alaska_residential_building_manual.cfm
Recommended Text:	Consumer Guide to Home Energy Savings, ACEEE, 2007

Course Description:

Basics of space heating and electricity use and production for Alaskan homes. Main topics include fundamentals of physics related to home energy, lighting and appliances, energy bills, building science, retrofits, home renewable energy systems. Course emphasizes how to decrease fossil fuel consumption of homes.

Course Goals:

The general goals of this course are to provide education that will help students understand energy flows in a home and make educated decisions regarding home energy use and production.

Student Learning Outcomes:

Upon successful completion of this course, the student will be able to:

- Recognize basic science concepts (such as transformations between forms of energy) as related to home energy flows.
- Identify types of basic home energy monitoring tools and demonstrate their use.
- Discuss home energy improvement options with respect to both space heating and electricity.
- Describe the procedure of setting up a renewable energy system for a home.
- Actively participate in setting up a residential-scale solar/wind hybrid system

Instructional Methods:

- Lectures
- Project
- Discussions
- Homework
- Readings
- Handouts

Course Calendar:

Friday

6:00pm-7:00pm Course introduction

7:00pm-8:00pm Energy flows in a typical home and ways to affect the flows

Reading assignment: Read through the whole first booklet - Energy Savers Tips for Rural Alaska

Saturday

9:00am-10:45am	Basic physics related to energy – electricity and heat
10:45am-11:00am	Break
11:00am-12:00pm	Energy monitoring tools
12:00pm-1:00pm	Understanding energy bills
1:00pm-2:00pm	Lunch break
2:00pm-3:00pm	Basic building science – air flow, moisture, condensation
3:00pm-3:45pm	Home retrofits
3:45pm-4:00pm	Break
4:00pm-6:00pm	Lighting and appliances at home

Reading assignment: Read through the whole second booklet - Energy Savers: Tips on Saving Energy & Money at Home

Sunday

9:00am-10:45am	Home renewable energy – passive and active
10:45am-11:00am	Break
11:00am-1:00pm	Class project - setting up a solar/wind hybrid system
1:00pm-2:00pm	Lunch break
2:00pm-3:00pm	Review
3:00pm-4:00pm	Final exam

Course Policies:

1. UAF requires students to conduct themselves honestly and responsibly, and to respect the rights of others.
2. Attendance is mandatory.
3. Late assignments will not be accepted without prior approval of instructor.
4. The instructor reserves the right to amend this course outline as needed.

Evaluation:

Final grades are calculated from the points earned in the following areas:

Attendance and Participation	10%
Students are expected to attend the entire 3-day classroom session and actively participate in group discussions.	
Class Project	25%
In the class project, students will actively participate in setting up a residential-scale solar/wind hybrid system. Under the observation of the instructor, they will demonstrate understanding of techniques used to set up such a system.	
Homework	30%
Each student will use an energy monitoring tool (typically a Kill-A-Watt meter) provided by the instructor to measure overnight the electrical consumption of an appliance of the student's choice (e.g. a refrigerator in his/her home), and based on the collected data make projections about the annual electricity consumption and associated cost. The student will then elaborate on the possibilities to reduce the amount of electricity consumed by the appliance and calculate potential savings.	
Final Exam	35%
An open book, open notes, final exam will cover material from the whole course.	

Grading Policy:

This course will be graded pass/fail. In order to receive a passing grade, students must receive a 70% or higher grade.

Support and Disability Services:

University of Alaska Fairbanks
Bristol Bay Campus – Student Services
PO Box 1070
Dillingham, Alaska 99576
907-842-5109
800-478-5109
Fax: 907-842-5692

Students can also go to the UAF website <http://www.uaf.edu> or to the College of Rural and Community Development website <http://www.uaf.edu/rural/> or to Bristol Bay Campus website <http://www.uaf.edu/bbc/index.html>.

UAF Disability Services for Distance Students

UAF has a Disability Services office that operates in conjunction with the College of Rural and Community Development (CRCD) campuses and UAF's Center for Distance Education (CDE). Disability Services, a part of UAF's Center for Health and Counseling, provides academic accommodations to enrolled students who are identified as being eligible for these services. If you believe you

are eligible, please visit <http://www.uaf.edu/chc/disability.html> on the web or contact a student affairs staff person at your nearest local campus. You can also contact Disability Services on the Fairbanks Campus at (907) 474-7043, fydso@uaf.edu