

RECEIVED OCT 1 8

51-UNC

Submit original with signatures + 3 copies

Vicki  
- posted

**TRIAL COURSE OR NEW COURSE PROPOSAL**

**SUBMITTED BY:**

Department	<b>CRCO Department of Science</b>	College/School	<b>CRCO</b>
Prepared by	<b>Tom Marsik</b>	Phone	<b>842-5109</b>
Email Contact	<b>tmarsik@alaska.edu</b>	Faculty Contact	<b>same</b>

See <http://www.uaf.edu/uafgov/faculty/cd/cdman.html> for a complete description of the rules governing curriculum & course changes.

1. **ACTION DESIRED (check one):** Trial Course  New Course

2. **COURSE IDENTIFICATION:** Dept  Course #  No. of Credits

Justify upper/lower division status & number of credits:

**This course is designed to serve as a course in the Environmental Studies (ENVI) Certificate program and the Occupational Endorsement in Sustainable Energy. ENVI 122 is an introductory level course with no prerequisites that concentrates on the basics of designing energy efficient buildings and energy performance verifications by means of computer simulations. Due to its introductory level, it is a 100-level course. Since it is a course that covers only basics, it can be delivered in 14 contact hours, which corresponds to one credit.**

3. **PROPOSED COURSE TITLE:**

4. **CROSS LISTED?** YES/NO  If yes, Dept:  Course #   
(Requires approval of both departments and deans involved. Add lines at end of form for such signatures.)

5. **STACKED?** YES/NO  If yes, Dept.  Course #

6. **FREQUENCY OF OFFERING:**   
(Every or Alternate) Fall, Spring, Summer - or As Demand Warrants

7. **SEMESTER & YEAR OF FIRST OFFERING** (if approved)

8. **COURSE FORMAT:**  
NOTE: Course hours may not be compressed into fewer than three days per credit. Any course compressed into fewer than six weeks must be approved by the college or school's curriculum council. Furthermore, any core course compressed to less than six weeks must be approved by the core review committee.

COURSE FORMAT: (check one)  1  2  3  4  5  6 weeks to full semester

OTHER FORMAT (specify)

Mode of delivery (specify lecture, field trips, labs, etc)

9. **CONTACT HOURS PER WEEK:**  LECTURE hours/weeks  LAB hours /week  PRACTICUM hours /week

Note: # of credits are based on contact hours. 800 minutes of lecture=1 credit. 2400 minutes of lab in a science course=1 credit. 1600 minutes in non-science lab=1 credit. 2400-4800 minutes of practicum=1 credit. 2400-8000 minutes of internship=1 credit. This must match with the syllabus. See <http://www.uaf.edu/uafgov/faculty/cd/credits.html> for more information on number of credits.

OTHER HOURS (specify type)

10. COMPLETE CATALOG DESCRIPTION including dept., number, title and credits (50 words or less, if possible):

ENVI 122 – Energy Efficient Building Design and Simulation (1 cr) - In this course, students gain basic practical knowledge related to the process of designing energy efficient buildings, as applied to both new construction and retrofits. Main topics covered include basic building science, principles and techniques of energy efficient construction, and building energy simulations.

11. COURSE CLASSIFICATIONS: (undergraduate courses only. Use approved criteria found on Page 10 & 17 of the manual. If justification is needed, attach on separate sheet.)

H = Humanities  N = Natural Science  S = Social Sciences

Will this course be used to fulfill a requirement for the baccalaureate core?  YES  NO

IF YES, check which core requirements it could be used to fulfill:

O = Oral Intensive, Format 6  W = Writing Intensive, Format 7  Natural Science, Format 8

12. COURSE REPEATABILITY:

Is this course repeatable for credit?  YES  NO

Justification: Indicate why the course can be repeated (for example, the course follows a different theme each time).

How many times may the course be repeated for credit?  TIMES

If the course can be repeated with variable credit, what is the maximum number of credit hours that may be earned for this course?  CREDITS

13. GRADING SYSTEM:

LETTER:  PASS/FAIL:

RESTRICTIONS ON ENROLLMENT (if any)

14. PREREQUISITES

These will be required before the student is allowed to enroll in the course.

RECOMMENDED

Classes, etc. that student is strongly encouraged to complete prior to this course.

15. SPECIAL RESTRICTIONS, CONDITIONS

16. PROPOSED COURSE FEES

Has a memo been submitted through your dean to the Provost & VCAS for fee approval? Yes/No

17. PREVIOUS HISTORY

Has the course been offered as special topics or trial course previously? Yes/No

If yes, give semester, year, course #, etc.:

Taught as ENVI 193 in Spring 2013. A similar special topics course taught also in Fall 2010, Fall 2011, and Summer 2013.

18. ESTIMATED IMPACT

WHAT IMPACT, IF ANY, WILL THIS HAVE ON BUDGET, FACILITIES/SPACE, FACULTY, ETC.

This is a one-credit course with no lab, thus it should have minimal influence on budget, facility, and space resources. Faculty has been hired to teach this course. This course is intended to be offered anywhere across Alaska as a face-to-face course. Courses taught in rural Alaska may require travel money, if no qualified instructor is present in that location. This money has been secured through a Title III grant from Department of Education for the Bristol Bay region for foreseeable future.

Office and classroom space will be provided by existing University urban and rural campuses

throughout Alaska. In villages without a University facility, training space can be found in the local schools, native associations, and businesses. No new facilities or space will be required.

A computer lab is needed for this class. UAF Bristol Bay Campus has a computer lab available that can be used for this class. If the class is taught in a location where a computer lab is not available, UAF Bristol Bay Campus has two portable computer labs for such situations.

**19. LIBRARY COLLECTIONS**

Have you contacted the library collection development officer (ffklj@uaf.edu, 474-6695) with regard to the adequacy of library/media collections, equipment, and services available for the proposed course? If so, give date of contact and resolution. If not, explain why not.

No  Yes  **September 13, 2013 - No resource impact.**

**20. IMPACTS ON PROGRAMS/DEPTS**

What programs/departments will be affected by this proposed action? Include information on the Programs/Departments contacted (e.g., email, memo)

**Environmental Studies and Sustainable Energy:**

This course will have a positive impact on the Environmental Studies and Sustainable Energy programs as it will broaden the courses and topics offered. This should attract more students into these programs and help prepare students for higher degree studies or entry-level employment in the environmental studies and sustainable energy fields. The impact was discussed in person with Dr. Todd Radenbaugh, the academic director of the Environmental Studies program, who is very supportive of this new course offering.

**Construction Trades Technology:**

This course will have a positive impact on the Construction Trades Technology program as it will broaden the options for elective courses in the Sustainable Energy track of the Construction Trades Technology Certificate. The impact was discussed by email with Michael Hirt, the Construction Trades Technology program head, who is supportive of this new course offering.

**21. POSITIVE AND NEGATIVE IMPACTS**

Please specify positive and negative impacts on other courses, programs and departments resulting from the proposed action.

This course will broaden the spectrum of UAF courses in the area of sustainable energy, which is a field of quickly growing importance. The course addresses energy efficiency - one of the main pillars of the sustainable energy field. Sustainable energy is a high demand field across Alaska with a lot of potential for growth.

This course will also benefit non-degree students interested in home improvements with respect to their energy use.

No significant negative impacts are anticipated.

**JUSTIFICATION FOR ACTION REQUESTED**


The purpose of the department and campus-wide curriculum committees is to scrutinize course change and new course applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory. Use as much space as needed to fully justify the proposed course.


Residents of rural Alaska are facing challenges with respect to the cost of energy as well as environmental and social sustainability of current practices. They are seeking education to both deal with their personal issues related to energy and follow careers in the energy and environmental fields. This course will help satisfy that demand.

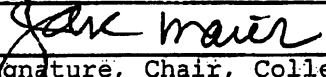
This course will serve as a course in the Environmental Studies Certificate program and the Occupational Endorsement in Sustainable Energy, which will broaden and enhance the topics covered by these and other programs, which in turn will attract more students.


UAF Bristol Bay Campus has experienced faculty in the area of sustainable energy to deliver this course and help maintain the quality of UAF education.

APPROVALS:

	Date	9/13/2013
Signature, Chair, Program/Department of:	Environmental Studies & Sustainable Energy	

	Date	10/04/13
Signature, Division Chair CRCD of:	Department of Science	

	Date	10/04/2013
Signature, Chair, College/School Curriculum Council for:	CRCD	

	Date	10/7/13
Signature, Dean, College/School of:	CRCD	

Signature of Provost (if applicable)	Date	
--------------------------------------	------	--

Offerings above the level of approved programs must be approved in advance by the Provost.

ALL SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE

Signature, Chair, UAF Faculty Senate Curriculum Review Committee	Date	
---	------	--


ADDITIONAL SIGNATURES (if required)

Signature, Chair, Program/Department of:	Date	
---	------	--

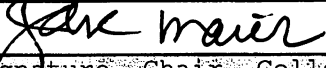
Signature, Chair, College/School Curriculum Council for:	Date	
---	------	--

Signature, Dean, College/School of:	Date	
--	------	--

APPROVALS:

	Date: 9/13/2013
Signature, Chair, Program/Department of: Environmental Studies & Sustainable Energy	

	Date:
Signature, Division Chair CRCD of: Department of Science	

	Date: 10/04/2013
Signature, Chair, College/School Curriculum Council for: CRCD	

	Date:
Signature, Dean, College/School of:	

	Date:
--	-------

Signature of Provost (if applicable)

Offerings above the level of approved programs must be approved in advance by the Provost.

ALL SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE

	Date:
Signature, Chair, UAF Faculty Senate Curriculum Review Committee	

ADDITIONAL SIGNATURES: (If required)

	Date:
Signature, Chair, Program/Department of:	

	Date:
Signature, Chair, College/School Curriculum Council for:	

	Date:
Signature, Dean, College/School of:	

--

**APPROVALS:**

	Date	
--	------	--

Signature, Chair,  
Program/Department of:

	Date	
--	------	--

Signature, Division Chair CRCD  
of:

	Date	
--	------	--

Signature, Chair, College/School Curriculum  
Council for:

	Date	
--	------	--

Signature, Dean, College/School  
of:

	Date	
--	------	--

Signature of Provost (if applicable)

**Offerings above the level of approved programs must be approved in advance by the Provost.**

**ALL SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE**

	Date	
--	------	--

Signature, Chair, UAF Faculty Senate Curriculum  
Review Committee

**ADDITIONAL SIGNATURES: (If required)**

	Date	
--	------	--

Signature, Chair,  
Program/Department of:

	Date	
--	------	--

Signature, Chair, College/School Curriculum  
Council for:

	Date	
--	------	--

Signature, Dean, College/School  
of:

**ATTACH COMPLETE SYLLABUS (as part of this application).**

Note: syllabus must follow the guidelines discussed in the Faculty Senate Guide <http://www.uaf.edu/uafgov/faculty/cd/syllabus.html>.

The department and campus wide curriculum committees will review the syllabus to ensure that each of the items listed below are included. If items are missing or unclear, the proposed course change will be denied.

**SYLLABUS CHECKLIST FOR ALL UAF COURSES**

During the first week of class, instructors will distribute a course syllabus. Although modifications may be made throughout the semester, this document will contain the following information (as applicable to the discipline):

**1. Course information:**

Title,  number,  credits,  prerequisites,  location,  meeting time (make sure that contact hours are in line with credits).

**2. Instructor (and if applicable, Teaching Assistant) information:**

Name,  office location,  office hours,  telephone,  email address.

**3. Course readings/materials:**

Course textbook title,  author,  edition/publisher.  
 Supplementary readings (indicate whether  required or  recommended) and  
 any supplies required.

**4. Course description:**

Content of the course and how it fits into the broader curriculum;  
 Expected proficiencies required to undertake the course, if applicable.  
 Inclusion of catalog description is *strongly* recommended, and  
 Description in syllabus must be consistent with catalog course description.

**5.  Course Goals (general) and  Student Learning Outcomes (more specific)**

**6. Instructional methods:**

Describe the teaching techniques (eg: lecture, case study, small group discussion, private instruction, studio instruction, values clarification, games, journal writing, use of Blackboard, audio/video conferencing, etc.).

**7. Course calendar:**

A schedule of class topics and assignments must be included. Be specific so that it is clear that the instructor has thought this through and will not be making it up on the fly (e.g. it is not adequate to say "lab". Instead, give each lab a title that describes its content). You may call the outline Tentative or Work in Progress to allow for modifications during the semester.

**8. Course policies:**

Specify course rules, including your policies on attendance, tardiness, class participation, make-up exams, and plagiarism/academic integrity.

**9. Evaluation:**

Specify how students will be evaluated,  what factors will be included,  their relative value, and  
 how they will be tabulated into grades (on a curve, absolute scores, etc.)

**10. Support Services:**

Describe the student support services such as tutoring (local and/or regional) appropriate for the course.

**11. Disabilities Services:**

The Office of Disability Services implements the Americans with Disabilities Act (ADA), and insures that UAF students have equal access to the campus and course materials.

State that you will work with the Office of Disabilities Services (203 WHIT, 474-7043) to provide reasonable accommodation to students with disabilities."

## ENVI 122 – Energy Efficient Building Design and Simulation

<b>Term:</b>	Spring 2014
<b>Course Title:</b>	Energy Efficient Building Design and Simulation
<b>Dept. &amp; Num:</b>	ENVI 122
<b>Credits:</b>	1
<b>Prerequisites:</b>	None
<b>Dates:</b>	TBD
<b>Days and Times:</b>	Fri 6pm-9pm, Sat 10am-6pm, Sun 10am-3pm
<b>Location:</b>	UAF BBC, Dillingham and Bristol Bay villages

<b>Instructor:</b>	Dr. Tom Marsik
<b>Office Location:</b>	UAF Bristol Bay Campus, Room 117
<b>Position:</b>	Assistant Professor
<b>Phone:</b>	842-5109
<b>Fax:</b>	842-5692
<b>Email:</b>	<a href="mailto:tmarsik@alaska.edu">tmarsik@alaska.edu</a>
<b>Hours Available:</b>	Available during the days the course is offered

<b>Required Text:</b>	1) Alaska Residential Building Manual, Rich Seifert et al., UAF Cooperative Extension Service, 2008. Available free online from <a href="http://www.ahfc.us/files/2813/5716/1325/building_manual.pdf">http://www.ahfc.us/files/2813/5716/1325/building_manual.pdf</a>
	2) Passive Houses in the U.S., K. Klingenberg et al., 2009

### Course Description:

In this course, students gain basic practical knowledge related to the process of designing energy efficient buildings, as applied to both new construction and retrofits. Main topics covered include basic building science, principles and techniques of energy efficient construction, and building energy simulations. The class also covers the basics of the Passive House Standard, which refers to super energy efficient buildings that don't need a conventional heat source; solar gain, body heat, and heat from electrical lighting and appliances are sufficient to cover the majority of needed heat.

### Course Goals:

The general goals of this course are to provide basic education in energy simulations of buildings and help students make educated decisions during the design process of new buildings and retrofits.

### Student Learning Outcomes:

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

- Discuss basic building science concepts and apply them in the energy efficient building design process.
- Describe common energy efficient building techniques.
- Explain the specifications of the Passive House standard.
- Use energy simulations software for building design at a basic level.
- Apply understanding of energy efficient building techniques to create suitable designs for conditions at specific locations.

### Instructional Methods:

- Lectures
- Simulation exercises
- Discussions
- Case studies
- Homework
- Readings

### Course Calendar:

#### Friday

6:00pm-7:00pm Course introduction

7:00pm-9:00pm Basic building science – heat, air, moisture

*Reading assignment: Read Chapter 2 (Building Science) of the Alaska Residential Building Manual*



**Saturday**

10:00am-11:00am	Energy efficient building techniques
11:00am-12:00pm	Passive House Standard specifications
12:00pm-1:00pm	Lunch break
1:00pm-2:00pm	Intro to building energy simulations; start Design Project (see details in the Evaluation section below)
2:00pm-3:00pm	Advanced simulations using PHPP and other tools; continue Design Project (see details in the Evaluation section)
3:00pm-4:00pm	Simulation exercises; finish Design Project (see details in the Evaluation section)
4:00pm-6:00pm	Case study – Net Zero Energy Ready Home in Dillingham, Alaska

*Reading assignment: Familiarize yourself with the case studies described in the Passive Houses in the U.S. book*

**Sunday**

10:00am-11:00am	Discussion of simulation results done as HW (see Homework section below)
11:00am-12:00pm	Case study – retrofit in Fairbanks
12:00pm-1:00pm	Lunch break
1:00pm-2:00pm	Review
2:00pm-3:00pm	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.

**Design Project** ..... 25%

In the class project, students will actively participate in designing an energy efficient building (the design is typically based on UAF BBC's experimental structure known as Passive Office, unless the whole group agrees on a different building) and verifying it's performance by simulations. Under the observation of the instructor, they will demonstrate understanding of the design process and simulations. Even though the project will be done together as a team, each individual's contribution will be evaluated using the following rubric:

	2 pts	1 pts	0 pts
<b>Ability to apply understanding of building science in the design process</b>	Student has a good understanding of building science and a good ability to use it to design an efficient building	Student has a fair understanding of building science but lacks the ability to apply it in the design process.	Student has a lack of understanding of building science and is unable to design a functional structure.
<b>Ability to calculate the building's parameters and enter them into the simulation software</b>	Student has a good ability to calculate the building's parameters and enter them into the simulation software.	Student has some difficulties in calculating the building's parameters and entering them into the simulation software.	Student is unable to calculate the building's parameters and enter them into the simulation software.
<b>Ability to interpret simulation results</b>	Student has good abilities to interpret the results and use the results to improve the building design.	Student has some difficulties in interpreting the results and unsure about how the design could be improved.	Student is unable to interpret the results.
<b>Attitude / Behavior</b>	Student is engaged in the project and respectful of others.	Student is engaged in the project but not respectful of others, or vice versa, or a little bit of both.	Student is disrespectful of others and not engaged in the project.

**Homework** ..... 30%

Each student will be required to perform an assessment of basic energy parameters of his/her home and simulate the energy performance of the home using provided software. The student will then identify ways to make his/her home more energy efficient,

perform energy simulations of the improved home, and elaborate on the effectiveness of the chosen improvements. The homework will be assigned on Saturday afternoon and due on Sunday morning.

**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](mailto:fydso@uaf.edu)