

**SENIOR CAPSTONE UNST 421****TOWARDS CARBON NEUTRALITY AT PORTLAND STATE UNIVERSITY**  
**Spring 2010**

Monday and Wednesday 10:15-12:05 in 201 Ondine Hall  
<http://web.pdx.edu/~arice/carboncapstone/421.htm>

**Instructor** Andrew Rice, 472 Science Building 2, arice@pdx.edu, 503-725-3095

**Office Hours** Monday 2-3PM, Wednesday 2-3PM, Thursday 3-4, and by appointment.

**Project Description**

The purpose of this Senior Capstone will be to evaluate the potential for Portland State University to become 'carbon neutral' and to involve students in energy and policy decisions with PSU administration to move toward this goal. Global climate change is a critical issue that has been identified by PSU students, faculty, staff, and administrators. Collectively the PSU community is committed to adopting strategies to mitigate the impact of campus activities on the Earth's climate. Through weekly readings and discussions, this course will also explore scientific, societal, economic, political, and ethical dimensions of global climate change.

**Course Objectives**

Students in this course will be directly responsible for:

- (1) developing comprehensive greenhouse gas inventories for PSU
- (2) assessing strategies for clean energy solutions
- (3) providing a series of recommendations to campus decision makers
- (4) documenting implementation of strategies and evaluating outcomes.

**Course Format**

*Monday* sessions will usually begin with updates on the progress of groups to the entire class and to discuss project issues (less than 30 minutes). Following this, the remainder of Monday classes will be a discussion of the reading material for the week. *Wednesday* sessions will usually be dedicated to small group meetings with the instructor. These will be used to discuss particulars of the group's projects. Attendance is mandatory at all class meeting times.

**Capstone Goals and Learning Objectives**

The interdisciplinary group of students in this course is expected to bring to the project and apply their advanced skill sets to make sound policy recommendations to PSU decision makers on developing a plan to move PSU towards carbon neutrality and zero climate impact. In doing so, PSU may serve as an incubator of sustainable processes and a model to the broader global community. Through this work students will:

- develop their interdisciplinary conceptualizations of the causes and consequences of, as well as solutions to, global climate change (UNST Inquiry and Critical Thinking)
- develop a strategy to present and disseminate the research results to their greatest effect (UNST communication)
- engage in effective dialog with students, faculty, and staff from a variety of academic, cultural, and socio-political backgrounds and viewpoints (UNST Diversity)
- examine moral and ethical imperatives to mitigate climate change (UNST Ethical and Social Responsibility)

### **Readings and Class Discussions**

Most Monday classes will include a weekly discussion of course readings. These are articles from the media, scholarly journals, and technical reports. Articles are closely tied to global climate change science, impacts, and mitigation. For each reading, you will need to turn in a ~1/2 page (typed and single spaced) summary or reaction piece AND one question or discussion point you have about the article. Come prepared to class and expect to participate in the discussion. Your grade for this aspect of the course will be based on write-up and classroom participation. Attendance is mandatory. You can miss one class discussion and write-up without penalty.

### **Working Groups and Group Meetings**

The main objective of this course is for students to fully develop strategies to mitigate PSU's greenhouse gas emissions and our cumulative climate impact. To achieve our goals, students will be broken into groups of 3-4 and each group will come up with a proposal. Groups are expected to self organize and meet weekly (or more often) outside of class time. The resulting projects will include literature research, information gathering, data analysis, fiscal impact assessment, and synthesis. Each member of the group will be responsible for one or more aspect of this work. With the exception of the first two weeks, Wednesday classtime (10-12) will be dedicated to meetings of groups with the instructor. Each groups will meet with the instructor every other week (additional meetings can be scheduled if necessary). At these meetings, the group will give an update of their proposals, progress, and discuss issues that come up in the process. They will be informal 'round-table' discussions. Each member of the group is expected to actively participate in these meetings. These meetings will last ~40 minutes.

### **Scholarly Notebook**

An essential aspect of the project is that it is carefully and well documented so that the work may be continued in the coming years. To facilitate this process, each student will keep a handwritten journal of their work in a dedicated notebook. It is intended for individual use and the format for the notebooks is not standard. However, make sure to make the notes are legible and include as much information as possible (e.g., dates, contacts and contact information, methods, etc...). Notebooks are to be brought to each class and meeting so that students may refer to them as needed and to take additional notes.

### **Group Proposals**

Each work group will have the task of writing and submitting a 1-2 page proposal about their proposed project. It should include a brief summary of the scope, objectives, and proposed methods. The proposal will be due Wednesday, April 28 in class. On that day, each group will give a 2-5 minute summary of what they propose to study.

### **Final Work Product**

The group projects will culminate in individually written reports that details the motivation behind the study, the methods of information gathering and analysis, results, and conclusions of the study. Final written reports are due on Monday, June 7 by 5PM. Each group will also be responsible for a single group presentation on the final day of class, Friday June 4. The entire group is responsible for the presentation, though typically one member will present the material. If the class decides, we can invite PSU students, faculty, and administrators to these presentations.

## Grading

25% Individual contribution to course readings and class discussions

10% Proposal

30% Final written report

25% Final presentation

10% Peer and self assessment

**Academic Honesty:** ‘Academic honesty is a cornerstone of any meaningful education and a reflection of each student’s maturity and integrity. The Student Conduct Code, which applies to all students, prohibits all forms of academic cheating, fraud, and dishonesty. These acts include, but are not limited to, plagiarism, buying and selling of course assignments for other persons, unauthorized disclosure and receipt of academic information, and other practices commonly understood to be academically dishonest’ – Portland State University Bulletin, General Catalog Issue, Vol. 40, No. 4, 2006-2007.

## Tentative Schedule (subject to change)

### Week 1

Monday Mar 29 Introduction to course

Wednesday Mar 31 Formation of groups Discussion of reading 1 (*Climate Change 101*)

### Week 2

Monday Apr 5 Discussion of reading 2 (*Carbon Emissions Inventory, Senior Capstone 2008*)

Wednesday Apr 7 Presentation and Discussion of reading 3 (*PSU Climate Action Plan*)

Noelle Studer - PSU Campus Sustainability Manager

### Week 3

Monday Apr 12 Discussion of reading 4 (*City of Portland Climate Action Plan*)

Wednesday Apr 14 Group meetings: Groups 1 & 2

### Week 4

Monday Apr 19 Discussion of reading 5

Wednesday Apr 21 Group meetings: Groups 3-5

### Week 5

Monday Apr 26 Discussion of reading 6

Wednesday Apr 28 Group Proposals due. Group summaries

### Week 6

Monday May 3 Discussion of reading 7

Wednesday May 5 Group meetings: Groups 1 & 2

### Week 7

Monday May 10 Discussion of reading 8

Wednesday May 12 Group meetings: Groups 3-5

### Week 8

Monday May 17 Discussion of reading 9

Wednesday May 19 Group meetings: Groups 1&2

### Week 9

Monday May 24 Discussion of reading 10

Wednesday May 26 Group meetings: Groups 3-5

### Week 10

Monday May 31 *Memorial Day* – No Class

Wednesday Jun 2 **Final Presentations**

### Week 11

Monday Jun 5 **Final report due**