

**The Ohio State University**  
**Colleges of the Arts and Sciences New Course Request**

International Studies

Academic Unit

International Studies

Book 3 Listing (e.g., Portuguese)

565 Global Climate Change: Economic Implications and Opportunities

Number	Title	UG	Credit Hours
Climate Economics		UG	5
18-Character Title Abbreviation		Level	Credit Hours

Summer      Autumn      Winter    X      Spring      Year 2009

Proposed effective date, choose one quarter and put an "X" after it; and fill in the year. See the OAA curriculum manual for deadlines.

**A. Course Offerings Bulletin Information**

Follow the instructions in the OAA curriculum manual. If this is a course with decimal subdivisions, then use one New Course Request form for the generic information that will apply to all subdivisions; and use separate forms for each new decimal subdivision, including on each form the information that is unique to that subdivision. If the course offered is less than a quarter or a term, please complete the Flexibly Scheduled/Off Campus/Workshop Request form.

Description (*not to exceed 25 words*): This course examines the economics of implications of climate change and climate policies for society, including discussion of major state, federal and international legislation.

Quarter offered:      Winter      Distribution of class time/contact hours: 2 2hr classes

Quarter and contact/class time hours information should be omitted from Book 3 publication (yes or no): Yes

Prerequisite(s): Aed Econ 200 or Econ 200

Exclusion or limiting clause: Not open to students with credit for Agricultural Economics 565

Repeatable to a maximum of \_\_\_\_NA\_\_ credit hours.

Cross-listed with: Agricultural Economics 565

Grade Option (Please check): Letter  S/U  Progress  What course is last in the series? \_\_\_\_\_

Honors Statement:      Yes  No

GEC:      Yes  No

Admission Conditions Course:      Yes  No

Off-Campus:      Yes  No

EM:      Yes  No

Honors Embedded Statement:      Yes  No

Service Learning Course:      Yes  No

Other General Course Information:

(e.g. "Taught in English." "Credit does not count toward BSBA degree.")

**B. General Information**

Subject Code \_\_\_\_\_ 010103 \_\_\_\_\_ Subsidy Level (V, G, T, B, M, D, or P) \_\_\_\_\_ M \_\_\_\_\_

If you have questions, please email Jed Dickhaut at [dickhaut.1@osu.edu](mailto:dickhaut.1@osu.edu).

1. Provide the rationale for proposing this course:  
 See attachment.

2. Please list Majors/Minors affected by the creation of this new course. Attach revisions of all affected programs. This course is (check one):  Required on major(s)/minor(s)       A choice on major(s)/minor(s)  
 An elective within major(s)/minor(s)       A general elective

3. Indicate the nature of the program adjustments, new funding, and/or withdrawals that make possible the implementation of this new course.  
No program adjustments will be necessary.

4. Is the approval of this request contingent upon the approval of other course requests or curricular requests?

Yes  No  List: \_\_\_\_\_

5. If this course is part of a sequence, list the number of the other course(s) in the sequence: NA

6. Expected Section Size: 30 Proposed number of sections per year: 1

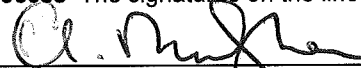

7. Do you want prerequisites enforced electronically? (see OAA manual for what can be enforced) Yes  No

8. This course has been discussed with and has the concurrence of the following academic units needing this course or with academic units having directly related interests (*List units and attach letters and/or forms*): Not Applicable   
College of Engineering, Geography, Economics (See Concurrence Letters Below)

9. **Attach a course syllabus that includes a topical outline of the course, student learning outcomes and/or course objectives, off-campus field experience, methods of evaluation, and other items as stated in the OAA curriculum manual and e-mail to [asccurrofc@osu.edu](mailto:asccurrofc@osu.edu).**

CONTACT PERSON: Karlene Foster E-MAIL: foster.24@osu.edu PHONE: 2-9657

**Approval Process** The signatures on the lines in ALL CAPS ( e.g. ACADEMIC UNIT) are required.

1. Academic Unit Undergraduate Studies Committee Chair	 X Anthony Mughan Printed Name	08/12/08 Date
2. Academic Unit Graduate Studies Committee Chair	Printed Name	Date
3. <b>ACADEMIC UNIT CHAIR/DIRECTOR</b>	 X Anthony Mughan Printed Name	08/12/08 Date
4. After the Academic Unit Chair/Director signs the request, forward the form to the ASC Curriculum Office, 4132 Smith Lab, 174 West 18 <sup>th</sup> Ave. or fax it to 688-5678. Attach the syllabus and any supporting documentation in an e-mail to <a href="mailto:asccurrofc@osu.edu">asccurrofc@osu.edu</a> . The ASC Curriculum Office will forward the request to the appropriate committee.		
5. <b>COLLEGE CURRICULUM COMMITTEE</b>	Printed Name	Date
6. <b>ARTS AND SCIENCES EXECUTIVE DEAN</b>	Printed Name	Date
7. Graduate School (if appropriate)	Printed Name	Date
8. University Honors Center (if appropriate)	Printed Name	Date
9. Office of International Education (if appropriate)	Printed Name	Date
10. <b>ACADEMIC AFFAIRS</b>	Printed Name	Date

# Global Climate Change: Economic Implications and Opportunities

## Course Rationale

### Proposed to be cross-listed as AED Econ/International Studies 565

Climate change is one of the most important global environmental and policy issues of our time. It has been argued that controlling climate change is the only way to prevent large-scale impacts on agricultural production, coastal zones, ecosystems, and weather. Controlling climate change, however, could be costly. Finding policies and incentives that work to reduce the threat of potentially large-scale alterations to the global climate system will require the efforts of government, business, and society-at-large.

This course is designed to examine a wide range of economic and policy issues involved in the debate over controlling greenhouse gases climate change. The course begins with a global view of the implications of population growth, rising incomes, and technology change on the demand for energy. We then trace out the potential implications of climate change on important sectors of the global economy, including the agricultural sector, water resources, and coastal communities. Given emerging concerns that climate change is inevitable no matter what actions society undertakes, a section of the course will focus on how markets facilitate or impede adaptation, and how incentives can be designed to encourage adaptive behavior in the private and public sector.

We turn next to the business of mitigation. Many of the voluntary systems that already are in place to encourage mitigation among consumers and businesses are reviewed, including the development of carbon offsets, green engineering, and green accounting. The course then examines how carbon taxes and cap-and-trade systems could be implemented in the US, using examples from within the U.S. (e.g., sulfur dioxide trading), and from around the world (e.g. the European system for carbon trading, ETS). Both voluntary and compulsory climate change mitigation actions reveal a number of business opportunities for the future. The last section of the course considers the actions state and national policy makers are taking in the U.S., and the relationship of these actions to international agreements, including the Kyoto Protocol.

By the end of the course, students should be able to:

- Understand how population, income growth, and technology change influence the demand for energy and its implications for climate change.
- Recognize current thinking on how climate influences food production, the distribution of water resources, and coastal infrastructure, and how climate change may affect these sectors.
- Recognize how markets impede or enhance adaptation and adaptive capacity in food production, water resources, and coastal infrastructure.
- Formulate and evaluate policies intended to encourage adaptation to climate change.
- Understand how voluntary and compulsory actions encourage mitigation of climate change.
- Understand how carbon taxes and cap-and-trade systems work.
- Understand important U.S. laws and international treaties related to climate change.
- Evaluate alternative state and national policies for climate change mitigation and understand how these actions relate to international policies like the Kyoto Protocol.

**AEDE/IS 565**  
**Global Climate Change: Economic Implications and Opportunities**  
**Winter 2009**

*Instructor*  
Brent Sohngen  
322 Agr Admin Bldg  
Phone: 688-4640  
E-mail: Sohngen.1@osu.edu

*Teaching Assistant*  
TBA

**Office Hours:** Dr. Sohngen will announce office hours the first week of class. Students are encouraged to set up a separate appointment with Dr. Sohngen if they cannot meet during that time. The teaching assistant will schedule regular office hours and you are encouraged to "drop in" during those hours. Feel free to communicate with Dr. Sohngen by phone or e-mail.

**Reading Materials:** No book will be assigned for this class. A course reading packet will be available with readings below. Most readings are available on-line, and students can feel free to obtain them by searching on their own.

**Objectives:** At the completion of the course, the student will be able to:

- Understand how population, income growth, and technology change influence the demand for energy and its implications for climate change.
- Recognize current thinking on how climate influences food production, the distribution of water resources, and coastal infrastructure, and how climate change may affect these sectors.
- Recognize how markets impede or enhance adaptation and adaptive capacity in food production, water resources, and coastal infrastructure.
- Formulate and evaluate policies intended to encourage adaptation to climate change.
- Understand how voluntary and compulsory actions encourage mitigation of climate change.
- Understand how carbon taxes and cap-and-trade systems work.
- Understand important U.S. laws and international treaties related to climate change.
- Evaluate alternative state and national policies for climate change mitigation and understand how these actions relate to international policies like the Kyoto Protocol.

**Prerequisites:** AED Econ 200 or Economics 200

### **Course Requirements**

*Case studies:* There will be three case studies in the course. The case studies will require reading and preparing answers to several questions in advance of the class in which the case is discussed. Students are expected to participate during the case study and to turn-in their written answers to the case study questions after the class period. Students will be graded on their written answers and their participation during the case study.

*Exams:* There will be a midterm and a final exam. The midterm will occur after the fifth week, and the final will occur during finals week.

*Final Paper:* A paper is required for this course and will be due the 9<sup>th</sup> week of classes. For the paper, students are expected to write a 15 page essay on one of several topics. The essay should be double-spaced, with 12 point font, 1" top and bottom margins and 1.25" right and left side margins. Several candidate topics are given below, and a full list will be provided at the beginning of class. Students can use their own topic with permission of the instructor. Potential topics include:

- Technology change in the energy sector will (*or* will not) be strong enough to ultimately reduce carbon emissions and avoid the problems of climate change.
- The impacts of climate change on the agricultural sector will imperil food security in developing countries.
- Ensuring that trade is free can alleviate the effects of climate change by shifting food resources from countries with ample production to those with limited production.
- Governments must act sooner rather than later to begin adaptation of coastal infrastructure that is susceptible to sea-level rise.
- Mandatory action on climate change is necessary because voluntary actions will never be enough to slow global warming.

- There are many good investment opportunities today in early actors, e.g., the companies that are developing new products to mitigate climate change.
- Recent legislation in California to counteract carbon emissions (AB 32) will be a successful law that helps the world avoid climate change.

For the paper, students are expected to state a question, and to use current scientific information discussed in class and obtained through their own independent research to argue their answer to the question. The topics listed above have been written in question format.

When writing the paper, students are required to cite literature. Class readings are fair game to be cited in the paper, however, students must do additional research on their own. Papers must contain at least 10 new citations that are not part of the course material. Citations can be obtained from scientific journals, popular press articles, and articles published in the internet, or blogs. The relevance of each citations must be clearly shown in the text of the paper, and all citations must be clearly documented in a bibliography at the end of the paper. We will discuss proper citation in class.

The rationale for this is simple. Climate science and policy is still evolving and there are well reasoned *yes* and *no* answers available in the literature already to nearly all of the questions in the list above. In order to make your points, you will need to examine evidence you can find in the literature, and describe why you believe the evidence you have read leads you to your answer. As we will discuss in class, this is essentially the method used by the Intergovernmental Panel on Climate Change when they assess the state of climate change science every 5 years.

Grading of the paper will depend on the logic of your arguments (60%), proper use of english (20%), and your use of citations (20%).

#### Course Grades:

Case Studies	30% (10% each)
Midterm	20%
Paper	25%
Final	25%
Total	100%

#### Grading Scale:

A 96-100	C+ 77-79	E <60
A- 90-95	C 73-76	
B+ 87-89	C- 70-72	
B 83-86	D+ 67-69	
B- 80-82	D 60-65	

#### Topics and readings (by week):

##### (1) Climate change fundamentals

###### Readings:

- Chapter 1 in Intergovernmental Panel on Climate Change, 4<sup>th</sup> Assessment Report, Report of Working Group I: "The Physical Science Basis." Cambridge: Cambridge University Press (pp. 93-121)
- Intergovernmental Panel on Climate Change, 4<sup>th</sup> Assessment Report, Working Group I, Summary for Policy Makers (pp 1- 18)

##### (2) Population, income, and technology effects on the energy sector

###### Readings:

- Chapters 1-3 in Clarke et al. 2007. "Scenarios of Greenhouse Gas Emissions and Atmospheric Concentrations, Synthesis and Assessment Produce 2.1a." US Climate Change Science Program.

##### (3) Climate change impacts on agriculture and food security

###### Readings:

- Chapter 5 in Intergovernmental Panel on Climate Change, 4<sup>th</sup> Assessment Report, Report of Working Group II: "Impacts Adaptation and Vulnerability." Cambridge: Cambridge University Press (pp. 274-313)

- Southgate, D. and B. Sohngen. 2007. "Weathering Global Warming in Agriculture and Forestry: It Can Be Done With Free Markets." Civil Society Report on Climate Change, pp. 61-76.

(4) Climate change impacts on water resources and coastal communities

Readings:

- Chapter 3 in Intergovernmental Panel on Climate Change, 4<sup>th</sup> Assessment Report, Report of Working Group II: "Impacts Adaptation and Vulnerability." Cambridge: Cambridge University Press (pp. 174-210)
- Chapter 6 in Intergovernmental Panel on Climate Change, 4<sup>th</sup> Assessment Report, Report of Working Group II: "Impacts Adaptation and Vulnerability." Cambridge: Cambridge University Press (pp. 316-356)

**Exam 1: Covers Sections 1-4**

(5) Can we adapt? Market and policy incentives.

Readings:

- Pielke et al. 2007. "Lifting the Taboo on Adaptation." *Nature* 445(February 8, 2007):597-98.
- Pielke, et al. 2008. "Dangerous Assumptions." *Nature* 452(April 3, 2008):531-32.
- Mendelsohn, R. (2006). "The Role of Markets and Governments in Helping Society Adapt to a Changing Climate." *Climatic Change* 78(1): 203-215.

(6) Introduction to Mitigation Policy.

Readings:

- Nordhaus, W.D. 1993. "Reflections on the Economics of Climate Change." *Journal of Economic Perspectives*, 7(4): 11-25.
- Chapters 4-5 in Clarke et al. 2007. "Scenarios of Greenhouse Gas Emissions and Atmospheric Concentrations, Synthesis and Assessment Produce 2.1a." US Climate Change Science Program.
- Pizer, W. (2007). "Climate Policy Design Under Uncertainty." Chapter 25 in *Human Induced Climate Change, an Interdisciplinary Assessment*, edited by M. Schlesinger et al. Cambridge: Cambridge University Press.

(7) Mitigation Policy: Voluntary incentives, carbon taxes and cap-and-trade systems.

Readings:

- Chapter 7 in "Natural Resource Economics, An Introduction," by Barry C. Field. Second Edition (2008). Long Grove, IL: Waveland Press.
- Pew Center on Climate Change. "Climate Change 101: Cap and Trade"
- Capoor and Ambrosi 2007, State and Trends of the Carbon Market 2007. World Bank Institute, Washington, D.C.

**Exam 2: Covers Sections 5-7**

(8) Emerging business opportunities

Case Study in Class: *Chicago Climate Exchange*

Readings:

- Case Study 1: "Lightening the Load: Reducing Costs and Emissions While Maintaining Performance at Staples." World Resources Institute, Climate Northeast Project.
- Case Study 2: "Purchasing Green Power in Competitive Markets: Citigroup's Experience." World Resources Institute, Climate Northeast Project.
- Gillenwater M. et al. 2007. Policing the voluntary carbon market. *Nature Reports Climate Change*. 11 October 2007 (published online)

(9) US climate policy: State level actions and emerging federal regulation

Case Study in Class: *Designing a U.S. Cap and Trade System*

Readings:

- Pew Center on Climate Change. "Climate Change 101: Cap and Trade"
- We will also review recent updates on legislative initiatives before Congress. *Readings to be announced and provided during class.*

(10) International agreements: Kyoto and Post-Kyoto  
Case Study in Class: *What's Should Come After the Kyoto Protocol?*

Readings:

- Chapter 13 in Intergovernmental Panel on Climate Change, 4<sup>th</sup> Assessment Report, Report of Working Group III: "Mitigation of Climate Change." Cambridge: Cambridge University Press (pp. 746-807)

Credit for case studies requires your attendance. Documented illness, death in the family, or other extreme circumstances are the only excused absences.

Make-up midterm exams will be given only in the event of excused absences.

### **Academic Misconduct**

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct ([http://studentaffairs.osu.edu/info\\_for\\_students/csc.asp](http://studentaffairs.osu.edu/info_for_students/csc.asp)).

### **Disability Services**

**Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated, and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 292-3307, TDD 292-0901; <http://www.ods.ohio-state.edu/>.**

**DEPARTMENTAL COURSE REVIEW CONCURRENCE FORM**

The purpose of this form is to provide a simple system of obtaining departmental reactions to proposed new courses, group studies, study tours, workshop requests, and course changes. A letter may be substituted for this form.

Academic units initiating a request which requires such a reaction should complete Section A of this form and send a copy of the form, course request, and syllabus to each of the academic units that might have related interests in the course. Initiating units should allow at least two weeks for responses.

Academic units receiving this form should response to Section B and return the form to the initiating unit. Overlap of course content and other problems should be resolved by the academic units before forwarding this form and all other accompanying documentation to the Office of Academic Affairs.

**A. Information from academic unit *initiating* the request:**

Initiating Academic Unit: AED Econ Date: 5/27/08

Registrar's Listing: AED Econ

Course Number: 565      Level: U  P  G       Credit Hours: 05

Course Title: Global Climate Change: Economic Implications and Opportunities

Type of Request:  New Course     Group Studies     Workshop     Study Tour     Course Change

Academic Units with related interests asked to review the request: Geography, Economics, SENR, John Glenn School of Public Affairs, Math and Physical Sciences, Bio Sci, FABE/ENG

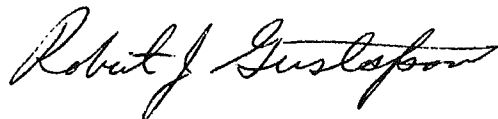
Date responses are needed:  
6/6/08

**B. Information from academic units *reviewing* the request:**

- The academic unit **supports** the proposal  
 The academic unit **does not support** the proposal.  
Please explain:

The academic unit suggests:

Robert J. Gustafson, Associate Dean, College of Engineering



Signature of Department Chair

Signature of Graduate Studies Chair

(if applicable)



**From:** becky.mansfield@gmail.com [mailto:becky.mansfield@gmail.com] **On Behalf Of** Becky Mansfield  
**Sent:** Monday, June 09, 2008 2:57 PM  
**To:** Susie Sheller  
**Subject:** Re: New Course Request for AED Econ-Intl. Studies 565

Susie,

I am writing to give Geography's concurrence to the proposed AEDE/International Studies course "Global Climate Change: Economic Implications and Opportunities." The course would be an excellent complement to the several courses that we offer that address climate change from geographical perspectives.

Sorry not to have gotten back to you sooner.

Becky

On Tue, May 27, 2008 at 3:33 PM, Susie Sheller <[sheller.1@osu.edu](mailto:sheller.1@osu.edu)> wrote:

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Becky Mansfield  
Department of Geography, Ohio State University  
1036 Derby Hall, 154 N Oval Mall, Columbus, OH 43210

ph: 614-247-7264, fax: 614-292-6213, [mansfield.32@osu.edu](mailto:mansfield.32@osu.edu)  
<http://geog-www.sbs.ohio-state.edu/faculty/bmansfield/web/index.html>

**From:** Masanori Hashimoto [mailto:hashimoto.1@osu.edu]  
**Sent:** Wednesday, June 04, 2008 10:56 AM  
**To:** Susie Sheller  
**Subject:** Re: Fwd: Reminder: New Course Request for AED Econ-Intl. Studies 565

We concur with this proposal. MH

*Masanori Hashimoto  
Professor and Chairperson and Honors Director  
Department Of Economics  
The Ohio State University  
410 Arps Hall  
1945 North High Street  
Columbus, Ohio 43210-1172*

*(614) 292-4196 office  
(614) 292-3906 FAX*

*<http://economics.sbs.ohio-state.edu/Nori/nori.html>  
Email: Hashimoto.1@osu.edu*

Date: Mon, 02 Jun 2008 10:03:16 -0400

>128.146.216.78  
>Date: Tue, 05 Aug 2008 14:16:42 -0400  
>To: southgate.1@osu.edu, pfister.1@osu.edu  
>From: eca@osu.edu  
>Subject: AGR AED ECON Course # 565. Available for Scheduling  
>X-Spam-Score: 0.60 () [Tag at 4.50] NO\_REAL\_NAME  
>X-CanItPRO-Stream: 11\_tagonly\_no\_subject  
>X-Canit-Stats-ID: Bayes signature not available  
>X-Scanned-By: CanIt (www . roaringpenguin . com) on 128.146.216.81  
>  
>The Scheduling Office has entered the following into the course  
>catalog: AGR AED ECON course # 565..  
>  
>The course is now available for scheduling.If you have any questions  
>about the scheduling process, please contact the University Registrar  
>Office via email at:  
>  
>850@exchange.ureg.ohio-state.edu  
>NOTE: This is a system generated email message. Please do not reply  
>directly to this message.

Aed Econ 565  
approved.