GEG 359: Resilience Economics

Syllabus (Spring 2025)

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1. Course Description

Resilience economics studies the economic aspects of how society adapts to climate change and natural disasters. The first half of the course explores the economic tools and methods used to analyze climate adaptation and natural disaster management. Essential elements include discounting, risk and uncertainty, distributional impacts, monetary and non-monetary evaluations, and cost-benefit analysis. The second half of the course explores how the interactions between humans and the environment determine the causes, consequences, and distribution of climate change and natural disasters. Particularly, we will discuss the difficulties society faces relating to adaptative strategies from an economic perspective. Critical issues include agriculture, energy, health, and extreme events. Throughout the course, we will work on various case studies based on current events worldwide.

2. Learning Objectives

Upon completion of the course, students will be able to:

- Understand fundamental principles of economics.
- Apply principles of economics to real-world situations and explain them in their own words.
- Comprehend different tables and figures to deliver take-home messages.
- Participate in discussions on climate adaptation and natural disaster management from an economic perspective.
- Develop writing and presentation skills through course assignments.
- Analyze and discuss case studies using fundamental theories, empirical evidence, existing literature, and recent events about climate adaptation and natural disaster management.

3. Course Logistics

3.1 Class meetings: We will meet in person on Tuesdays and Thursdays at 9:30–10:45 am Eastern Time in Knight Physics 109.

3.2 Attendance and participation: Attendance is essential for you to perform well in class. Laptops are permitted for notetaking and classwork only. Cell phones are to be disabled in class.

3.3 Office hours: I will hold in-person office hours on Tuesdays and Thursdays at 4:00–5:00 pm in Suite 115J, 1300 Campo Sano Ave. Appointments through email are required. If sickness or any other reason renders in-person meetings difficult or unwise, I am happy to switch to Zoom office hours (on a case-by-case basis, and please email me for the Zoom link).

3.4 Email and communication: Please email me at haoluan.wang@miami.edu with any questions, concerns, or ideas you may have for this class. Emailing me directly is preferred to messaging me through Blackboard/Ultra. Please put "GEG 359" in the subject line. Do not be shy about sending follow-up emails if I forget to reply. Any course-related notifications will be announced on Blackboard/Ultra, and you will also be notified through your UM email.

4. Course Materials

Lecture slides and course materials are available through Blackboard/Ultra or the library. Recommended textbooks and journal articles include:

- Markandya, A., Galarraga, I., de Murieta, E.S. (2014). *Routledge Handbook of the Economics of Climate Change Adaptation.* London: Routledge.

- Whitmarsh, L. (2011). Scepticism and uncertainty about climate change: Dimensions, determinants and change over time. *Global Environmental Change*, 21(2): 690-700.

- Grijalva, T.C., Lusk, J.L., & Shaw, W.D. (2014). Discounting the distant future: An experimental investigation. *Environmental and Resource Economics*, 59: 39-63.

- Doswald, N., Munroe, R., Roe, D., Giuliani, A., Castelli, I., Stephens, J., Möller, I., Spencer, T., Vira, B., Reid, H. (2014). Effectiveness of ecosystem-based approaches for adaptation: Review of the evidence-base. *Climate and Development*, 6(2): 185-201.

- Lobell, D.B., Baldos, U.L.C., Hertel, T.W. (2013). Climate adaptation as mitigation: The case of agricultural investments. *Environmental Research Letters*, 8: 015012.

- Wang, H. (2024). Socio-demographic disparities in the familiarity with coastal climate adaptation strategies: Implications for coastal management and climate justice. *Natural Hazards*, 1-17.

- Waghwala, R.K., Agnihotri, P.G. (2019). Flood risk assessment and resilience strategies for flood risk management: A case study of Surat City. *International Journal of Disaster Risk Reduction*, 40: 101155.

5. Grading Breakdown

Class participation	10 points
News article presentation	10 points
In-class quizzes	15 points
Case study briefs	15 points
Short essay	20 points
Group project and presentation	30 points
Total	100 points

Point	Grade	Point	Grade	Point	Grade	Point	Grade
96-100	A+	84-88	B+	72-76	C+	60-64	D+
92-96	A	80-84	B	68-72	C	56-60	D
88-92	A-	76-80	B-	64-68	C-	0-56	F

5.1 Class participation (10 points): Attending classes in person is expected. Attendance will be taken when the class attendance rate is less than 75%. If an absence is unavoidable, you should contact the professor in advance for an excuse. Actively engaging during lectures will help you keep up with course materials, ask questions, and interact with your classmates.

5.2 News article presentation (10 points): Each student is expected to give an in-class short presentation based on news articles regarding the causes and consequences of a natural disaster event. The student can choose the event and news articles of his/her interest. The presentation is expected to be about 5 minutes. Students are expected to make PowerPoint slides for the presentation. The date for each presentation will be decided at the beginning of the semester after the roster is finalized. All news article presentations will be given at the beginning of the class.

5.3 In-class quizzes (15 points): Three short quizzes are to be tested on students' understanding of lecture materials. The date for each quiz is given in the course schedule below. All the quizzes will be given at the beginning of the class and are NOT cumulative.

5.4 Case study briefs (15 points): Six case study briefs (each worth 2.5 points) are to be written based on case study sessions. Students are expected to read the assigned article before the class. Instructions for each case study brief will be given during the case study sessions. Each case study brief is due a week after the case study session.

5.5 Short essay (20 points): Students are expected to write a short essay on climate adaptation and natural disaster management. Data collection and some quantitative analyses are required. The instructions for the short essay will be given during the short essay writing session. The short essay should be a *minimum* of five pages, single-spaced, *not* including figures, tables, and references. The short essay is due Tuesday, April 24, 2025, at 11:59 PM.

5.6 Group project and presentation (30 points): One group project (~5/6 students per group, depending on the class size) will be assigned on a topic announced in class. Students will be given time in class (i.e., three group project sessions) to work on the project together. Students are expected to spend additional time on the project outside of class. The group will present the project at the end of the semester and submit a project report with a *minimum* of five pages, single-spaced, *not* including figures, tables, and references. The report for the group project is due Wednesday, May 7, 2025, at 11:59 PM.

Late work without documentation of illness or other emergencies will be accepted with a 20% drop for every day of lateness up to 5 days late, deducted after the assignment is evaluated for content. *No late submissions are permitted for the group project and presentation*. Make-ups for in-class quizzes are only permitted for students with a university-approved excused absence. Opportunities for extra credits may be provided for the whole class. However, no extra credit will be granted on an individual basis.

6. Campus Policies

6.1 Academic Integrity: Students should familiarize themselves with the University of Miami Honor Code. To learn about the Honor Code, visit https://doso.studentaffairs.miami.edu/honor-council/honor-code/index.html. Cheating or plagiarism will not be tolerated and will be handled accordingly.

6.2 Academic Resources: The library provides several academic services to students through the Learning Commons at https://www.library.miami.edu/learningcommons/. For students seeking assistance with assignments, I recommend making an appointment with the Writing Center at https://english.as.miami.edu/writing-center/index.html.

6.3 Disability Services: As stated by the Camner Center for Academic Resources: "Students have the responsibility to self-disclose and request accommodations through the Office of Disability Services. Students with approved accommodations must present the Professor Memo to faculty with fair notice before needing or using the accommodation." For more information, visit https://camnercenter.miami.edu/disability-services/index.html.

6.4 COVID-19: Students who test positive for COVID-19 will be required to quarantine/isolate off campus, subject to changes in university policies.

6.5 Religious Holiday Policy: Students must inform the lecturer within the first three class days of any anticipated absences due to the observance of religious holidays.

7. Course Schedule

#	Date	Topic	Readings*	Note
	Jan 14	Course introduction and expectations	Syllabus	
	Part I: Economics and Adaptation			
1	Jan 16	Introduction to the economics of adaptation to climate change	MGM Ch. 1	
2	Jan 21	State of the art on the economics of adaptation	MGM Ch. 2	
	Part II: Uncertainty, Equity, Valuation and Efficiency			
3	Jan 23	Uncertainty in a climate context	MGM Ch. 5	
	Jan 28	*Short essay writing session*	-	
4	Jan 30	Case study #1	Whitmarsh	
5	Feb 4	Distributional impacts and equity	MGM Ch. 6	
6	Feb 6	Discounting	MGM Ch. 7	
	Feb 11	*Group project session #1*	-	Quiz #1
7	Feb 13	Case study #2	Grijalva	
8	Feb 18	Ecosystem-based adaptation	MGM Ch. 9	
9	Feb 20	Case study #3	Doswald	
	Feb 25	*Short essay Q&A session*	-	
	Part III: Adaptation in Activity Sectors			
10	Feb 27	Climate change and the energy sector impacts and adaptation	MGM Ch. 10	
11	Mar 4	Adaptation in agriculture	MGM Ch. 12	
12	Mar 6	Case study #4	Lobell	
	Mar 11	**NO CLASS – SPRING RECESS**		
	Mar 13	**NO CLASS – SPRING RECESS**		
	Mar 18	*Group project session #2*	-	Quiz #2
13	Mar 20	Adaptation in coastal areas	MGM Ch. 13	
14	Mar 25	Case study #5	Wang	
	Mar 27	*Guest speakers from Kind Designs*	-	
15	Apr 1	Climate change adaptation and human health	MGM Ch. 14	
16	Apr 3	Flood risk management assessment	MGM Ch. 16	
17	Apr 8	Case study #6	Waghwala	
18	Apr 10	Economics of adaptation in low-income countries	MGM Ch. 18	
	Apr 15	*Group project session #3*	-	Quiz #3
	Apr 17	*Group project presentation*	-	
	Apr 22	*Group project presentation*	-	
	Apr 24	*Group project presentation*	-	Short Essay
	May 7	**Group project submission**		

*: **MGM** = Markandya, A., Gala raga, I., de Murieta, E.S. (2014)
Whitmarsh = Whitmarsh, L. (2011)
Grijalva = Grijalva, T.C., Lusk, J.L., & Shaw, W.D. (2014)
Doswald = Doswald, N., Munroe, R., Roe, D., Giuliani, A., Castelli, I., Stephens, J., Möller, I., Spencer, T., Vira, B., Reid, H. (2014)
Lobell = Lobell D.B., Baldos, U.L.C., Hertel, T.W. (2013)
Wang = Wang, H. (2024)
Waghwala = Waghwala, R.K., Agnihotri, P.G. (2019)