New York City College of Technology

Social Science Department

Environmental Economics – Econ 2505

Spring 2016

Econ 2505 Environmental Economics; sec. D-728

W-301; Mon. 11:30 – 2:00 PM

## **Prof. S. MacDonald (Economics)**

Office: Namm 624; Hours: Mon and Wed 3 – 4pm; Mon 5 – 6pm; Tue 3 - 3:30pm

718-260-5084 smacdonald@citytech.cuny.edu

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**CATALOG DESCRIPTION**: This interdisciplinary course examines current environmental issues from a macroeconomic perspective, focusing on both the long and short-term economic viability of various proposals to address current environmental challenges. Traditional goals of economic efficiency will be examined in the context of the need to expand renewable energy sources, green design, sustainable construction and resource allocation and other efforts to combat climate change on a global scale.

COURSE PREREQUISITE:

CUNY proficiency in reading and writing and either Econ 1101 or Econ 1401

Readings\*

**Required**: All required readings for the course will be provided. Links to readings will be posted on Open Lab each week. All students in the class will be required to open an Open Lab account if you have not already done so, and to join the section of Env. Econ you are registered for. All assigned articles are required readings; you may be required to post thoughts and responses to assigned questions about a particular reading on Open Lab. In these cases, the posts must be completed no later than 12pm Sat. prior to Monday’s class. You should also be prepared to discuss any assigned readings in class.

**Other:** You will also be required to conduct independent field-based research for the semester research project. Details to follow

WEEKLY SEQUENCE OF TOPICS

**Session 1: 2/3 Course Introduction and Overview**

* Interdisciplinary course: what is an interdisciplinary course?
* Review syllabus and course requirements
* Using Open Lab and joining the course
* Field-based research project and the interdisciplinary theme
* Final presentation of research project
* Sign up for Sustainable Architecture and Industries tour at: [**https://my.getinsellout.com/providers/turnstile-tours/skus/city-tech-brooklyn-navy-yard-sustainable-architecture-industry-tour/info**](https://urldefense.proofpoint.com/v2/url?u=https-3A__my.getinsellout.com_providers_turnstile-2Dtours_skus_city-2Dtech-2Dbrooklyn-2Dnavy-2Dyard-2Dsustainable-2Darchitecture-2Dindustry-2Dtour_info&d=AwMFaQ&c=pRW6ZPn_LDv0DnDIAK65Ad0CA4hBS-2mAmNa2_oHfF0&r=zCuBwID1wlzlSQR3mL-HLl4iuabm7tgyr6G-7-VDKFE&m=u4FGadfGBf1WBdXPYAq7nl0ghd95fiUJiV7TuMPRCv4&s=yEfK27zz7uT1dNsSSr0czrEFnXlBcC0efro_76bGoks&e=)

**1)Discussion:** Review of/Introduction to key Economic concepts and definitions (from Econ 1101/or 1401); how are they relevant to Environmental Economics; how can these concepts inform your research?

* + Economic efficiency
	+ Marginal benefit; marginal change
	+ Opportunity cost
	+ Scarcity
	+ Individuals as rational decision makers
	+ Negative externalities
	+ Cost/benefit analysis

**2)How can these concepts be applied in the context of real world environmental problems?** A look at the challenges to nations of expanding investment in renewable energy in the face of cheap oil and gas.

**Read and discuss article:** “Climate Deal’s First Big Hurdle: The Draw of Cheap Oil,” *New York Times*, Jan. 25, 2016.

What is the meaning of the term “sustainable”? What does the author say about the kinds of environmental problems posed by plummeting oil prices? What kinks of changes does the author believe nations can make in order to achieve a more sustainable future?

How might an environmental economist apply one or more of **economic concepts** to an understanding of this issue?

**3)** Now consider how some of these economic concepts might be relevant to your research

Discuss the importance of a ***theoretical focus*** that relates how these concepts are connected to the research you will do in the course. (formulating a hypothesis, central argument or question)

**4)** Discussion of possible topics of interest for research project: **a)** **5 minutes of free-writing** on issues or topics most interesting to you about the environment or your field of study **b)** **Identify two or three questions** you might ask of the topic(s) that you just wrote about; **by week 3: Decide on your two top choices for the research project**; **Final topic choice by week 5**

**Session 2: 2/10 The economic perspective on ecological crises** **and how to address them: A critique of traditional policy proposals**

**Assigned reading for session 2:**  Read Atkinson and Hackler article and any one of the other two articles here for week 2; links to articles posted on Open Lab

* 1)**Robert D. Atkinson and Darrene Hackler**. October 2010. “Economic Doctrines and Approaches to Climate Change Policy,” *The Information Technology and Innovation Foundation*; 2)**Henry M. Paulson, Jr.** “The Coming Climate Crash.” New York Times, June 22, 2014; 3) **International Emissions Trading Association**, “Why Emissions Trading is More Effective Than a Carbon Tax”

1. **Comment on posted discussion questions on Open Lab** for session 2; due on Mon 2/8. Prepare for discussion of these questions in class; discussion of how economic theory influences policy proposals; class discussion
* According to the authors, how have economists traditionally viewed environmental problems? How have they proposed to remedy them?
* How does the different perspective discussed in the **Atkinson** article lead to alternative proposals to address environmental problems? What do the authors mean by ‘innovation economics?’
* Discussion of the policies proposed by **Paulson** and **IETA**; how are the two proposals different?
1. Look at research topic ideas you wrote about last week: **Discuss how you can incorporate an interdisciplinary perspective into your research?** **What is your understanding of what interdisciplinary research is? Why is it important for studying environmental issues?** (i.e., how will you include the perspective of at least one other discipline other than Economics)? Which disciplinary perspectives do you believe would be most relevant for your topic?

**Session 3: 2/17: Organized Class Field Tour/Field Research: Sustainable Architecture and Industry Tour-Brooklyn Navy Yard: 12:00 – 1:30 followed by optional visit to Bldg. 92 exhibit center**

End tour with unguided visit to exhibit center at Bldg. 92

**Meet at site by 11:45 AM**.

**Post your summaries of findings/observations/photos from tour on designated Open Lab site (posts no later than 12:00 noon Sunday, March 13);** include a brief summary that identifies three findings that were the most interesting or significant to you.

1. **Prepare specific questions you want to discuss/ask on the day of your visit.**

**Session 4: 2/24 The challenges to achieving sustainable economic growth and renewable resources in a consumer driven market economy**

**Discuss impressions of tour; observations, etc.**

**Readings for session 4** (links posted on Open Lab); **read any two of the following articles)**

1. William R. Emmons, “Don’t Expect Consumer Spending to be the Engine of Economic Growth in Once Was,” *The Regional Economist*, Jan. 2012, Federal Reserve Bank of St. Louis

2. World Economic Forum “Consumers: Changing the Terms of Engagement” (**pgs. 13 – 21**) *in The Consumption Dilemma: Leveraging Points for Accelerating Sustainable Growth,* April 2011

3. Gary S. Cross and Robert N. Proctor (2014), *Packaged Pleasures: How Technology and Marketing Revolutionized Desire*. Chicago: University of Chicago Press. Ch. 2.

**Discuss:**

* + The consumer as central to the survival and thriving of market economies
	+ Moving from the ‘disposable’ society to the practice of renewability
	+ The problem with economic growth as conventionally viewed and measured
	+ The challenges to promoting a sustainable economy and economic ‘growth’ and renewable resources in a consumer driven market/capitalist economy
	+ The consumer as central to the survival and thriving of market economies
	+ How to move from the ‘disposable’ society to the practice of renewability
	+ The problem with economic growth as conventionally viewed and measured
	+ Importance of cultural norms in driving consumption (e.g. showering, laundering, new clothes, technologies, etc.)

Watch and discuss **“The Story of Stuff**” <https://www.youtube.com/watch?v=3eWBg8ojno4>

[**https://www.youtube.com/watch?v=LT579\_Nrnqo&index=4&list=PLjIaf0SlDZUCDxaDVUHVjzfPRjMvSKfIf**](https://www.youtube.com/watch?v=LT579_Nrnqo&index=4&list=PLjIaf0SlDZUCDxaDVUHVjzfPRjMvSKfIf)

<https://www.youtube.com/watch?v=0PgQPsYzyfg>

**OR “Consumed”** [**https://www.youtube.com/watch?v=bOKl04TWVsU**](https://www.youtube.com/watch?v=bOKl04TWVsU)

\*Followed by discussion (discussion questions will be posted on Open Lab week prior).

**2)** **Discussion of ideas (2 to 3) for research project and be prepared to share them with class**; review research project requirements and discuss possible sites for field-based research; review/discuss formulation of research topic; review research methodologies; questionnaire development; documentation formats: notes, photo documentation, etc.

* Identify two or three questions you might ask of the topic you are considering? One-paragraph to share and get feedback on
* Review guidelines for summaries of how your field research will help to inform your project: summaries should identify two or three key findings you observed as most interesting and significant; prepare questionnaires; formulating interview questions for the visit.
* Think about possible sites for your field- research, and prepare specific questions you want to discuss on the day of your visit. You will conduct your visit on your own time – any day/time when class is not in session**.**  What specific site(s) might you visit to better understand your topic? what central question or argument do you think you may want to focus on?
* What specific site(s) are you thinking of visiting and gathering information from in order to better understand the issue? Examples include visiting and studying specific recycling facilities, going to a community garden, studying specific plans to improve ecological footprint of a transportation system, etc.
* Conducting formal and informal interviews and documentation of visit.

**Some suggestions to pursue on your own based on your research: (depending on topic and interest)**

1) Urban Grange Farm – Queens (Saturdays- 11: - 3:00 free; make reservation in advance)

2) Urban Grange Farm – Brooklyn Navy Yard (Wednesdays @ 10:00 and 11:00 AM/book online

2) A local neighborhood/community – survey of the environmental characteristics of the community

4) Building 92 at Brooklyn Navy Yard: **other options:** Urban Ecology tour (starts late March)

5) visit Bldg 92 site and exhibits

6) Visit a local hotel or restaurant involved in sustainable practices (sourcing locally produced foods; organic foods; other sustainable practices

7) Park Slope Food Co-Op

8) Lower East Side Ecology Center

9) SIMS Municipal Recycling Center in Sunset Park

10) Gowanus Canal Conservancy

11) Newtown Creek Alliance

12) A hotel or restaurant that has incorporated sustainable practices in food sourcing, energy use, etc.

**Your field research should be completed between weeks 7 and 9**.

**Session 5: 3/2 Environmental History of New York City (PPT)\***

This lecture focuses on environmental history of New York City, in particular history of sanitation programs; history of industry and growth of the urban environment; superfund sites: their origins (Newtown Creek and Gowanus Canal); wildlife; watershed; economic evolution and transformation.

**Assigned readings for session 5:**  (links posted on Open Lab)

1.Marc Linder and Lawrence S. Zacharias (1999). *Of Cabbages and Kings County: Agriculture and the Formation of Modern Brooklyn.* Excerpt.

# 2.David Soll (2013) *Empire of Water: An Environmental and Political History of the New York City Water Supply*. Cornell University Press. Excerpt.

**Comment on posted discussion questions on Open Lab** for session 5; **due no later than Sat. 2/27**. Prepare for discussion of these questions in class.

**Additional assignment for session 5:** Write a one – two paragraph summary of the specific topic you think you want to focus your semester research project on and post this on Open Lab. In your summaries, please answer the following questions:

1. **Discuss research activities; exchange summaries and get feedback/suggestions; submit your draft summaries.**
2. **Review preparation of an abstract for research project; preparing a literature review (secondary source material) and**
3. **Review format for preparing an annotated bibliography (review session in class)**
4. **Prepare for discussion of reading**

**Session 6: 3/9 Guest lecturer 1: Prof. Pa Her, Psychology, Dept. of Social Science, *What are the Psychological influences on consumer behavior and environmental impacts?***

Introduction to annotated bibliography; workshop with student ideas; formulating interview questions and documentation for class tour/field research.

**Session 7: 3/16: Guest lecturer 2: Prof. (?) Sociology, Dept. of Social Science: *Food Systems and Sustainability***

**Review for midterm on March 30 (review questions will be posted on Open Lab on 3/20)**

 **\*\*NO CLASSES ON WED. MARCH 23 – CLASSES FOLLOW A FRIDAY SCHEDULE\*\***

**Session 8: 3/30 Midterm Exam**

**Session 9: 4/6: Sustainable Agriculture and Natural Resource Use.**

This lecture focuses on local communities and their responses to climate change and environmental problems. We will discuss various initiatives, including Community Supported Agriculture, urban farming, and focus on the efforts of community members to monitor pollution in their environments; urban agriculture.

**Assigned readings for week 9: posted on Open Lab**

1) Nathan McClintock (2010), "Why Farm the City? Theorizing Urban Agriculture Through a Lens of Metabolic Rift," *Cambridge Journal of Regions, Economy and Society* 3: 191 – 207.

2) Gwen Ottinger (2010), “Buckets of Resistance: Standards and the Effectiveness of Citizen Science,” *Science, Technology, and Human Values* 35(2): 244 – 270.

**Film “Urban Grange Farm**” [**http://www.growingagreenerworld.com/episode322/**](http://www.growingagreenerworld.com/episode322/)

* Discussion: Can urban rooftop gardening become a model for sustainable food production in urban spaces?
* What are the potential benefits to local communities? Local businesses?
* Ideas discussed in the readings

**Due on April 6\***

**1.Draft of one-1 and ½ pg. summary & draft annotated bibliography (with at least 3 sources)**

**2)A one to two-paragraph summary of your field research which includes your discussion of specifically how the field research supports your research project.**

**Session 10: 4/13. Guest lecturer #2: Prof. Susan Phillip - *Department* of *Hospitality Management, Promoting sustainable tourism***

**(**Reading to be assigned by guest lecturer)

**Session 11: 4/20: How is economic progress and growth measured? Are considerations of economic and social well-being and ecological sustainability accounted for?**

**Assigned readings for week 10: Posted on Open Lab**

1) Stuart L. Hart*, Beyond Greening: Strategies for a Sustainable World*, *Harvard Business Review,* Vestas, Jan – Feb 1997

2) Bouton, Lindsay and Woutzel, *New Models for Sustainable Growth in Emerging-Market Cities,* McKinsey and Co., 2012

3) Lyuba Zarsky, *Climate Resilient Industrial Development Paths: Design Principles and Alternative Models,* Global Development and Environment Institute, Working Paper No. 10 -01, Feb. 2010

 **\*\*NO CLASSES ON WEDNESDAY APRIL 25 – SPRING BREAK\*\***

**Session 11: 5/4. Local Perspective on Climate Change: How have cities and local communities begun to respond to the effects of climate change? How have they prepared to protect their economies, population and infrastructure?**

**Assigned readings for session 11:**

1) James Atlas, *Is This The End?* November 25, 2012. New York Times, Opinion

2) Alan Feuer, *Building for the Next Big Storm: After Hurricane Sandy*, *New York Rebuilds for the Future*, Oct. 25, 2014, New York Times

**Discussion and in-class project**; **“The Big U”** and other protective projects proposed around the New York metropolitan area.

**\*\*circulate sign-up sheet for final presentations (final presentations on 5/18 and 5/25)**

**Session 12: 5/11** **The 2014 Global Climate Talks; Global Economic Impacts of Climate Change; What goals have the nations involved in the recent climate talks agreed to? What is the significance of the agreement reached between the U.S. and China in late 2014?**

During this lecture we think globally about the issues surrounding climate change and sustainability. Implications of Global Climate talks and international agreements following the summit in Nov. 2015

**Assigned readings for session 12: Read any two of the following articles for 5/9**

1) Intergovernmental Panel on Climate Change, “Climate Change 2014: Impacts, Adaptation, and Vulnerability”

2)Center for Integrative Environmental Research (CIER) at the University of Maryland. October 2007, “Executive Summary: The US Economic Impacts of Climate Change and the Costs of Inaction”

3*)* Robert D. Bullard, *Differential Vulnerabilities: Environmental and Economic Inequality and Government Response to Unnatural Disasters, Social Research, 75, 2008: 753-784*

4) Cheryl McEwan and David Bek (2009), "The political economy of alternative trade: Social and environmental certification in the South African wine industry." *Journal of Rural Studies* 25: 255-266

5) Susanne Freidberg (2010) "Freshness from afar: the colonial roots of contemporary fresh foods," Food and History, 8, 1, 257-278.

**(alternative for session 13) 5/11. Energy and Sustainability**

**Reading for week 13:**

Schafft, K.A., Glenna, L.L., Borlu, Y., & Green B. (2014). Local impacts of unconventional gas development within Pennsylvania’s Marcellus Shale region: Gauging boomtown development through the perspectives of educational administrators, *Society & Natural Resources 27*, 389-404.

Economic perspectives on the environmental impact of hydraulic fracturing; how fracking has threatened/impacted local economies and communities nationwide; impact on local ecosystems; human health; plant life; water; how the practice raises for sustainable communities and economic growth (PPT)

<http://www.environmentamerica.org/reports/ame/costs-fracking>

**Gasland part II:** [**https://www.youtube.com/watch?v=rvzdc8l\_4xM**](https://www.youtube.com/watch?v=rvzdc8l_4xM)

1. What are the economic costs of fracking?
2. How can these costs be measured? Health affects; loss of natural resources (land, water, air purity)
3. Threat to the viability of local economies

**Session 14: 5/18 In class presentations (Group 1). Hard copies due at the beginning of class:**

1. Final annotated bibliography;

2. One-page summary of research project;

3. Presentation

**Session 15: 5/25 Final Presentations (Group 2): Hard copies due at the beginning of class:**

1. Final annotated bibliography;

2. One-page summary of research project;

3. Presentation

**COURSE INTENDED LEARNING OUTCOMES/ASSESSMENT METHODS:** To develop an understanding of the fundamental concepts of environmental economics. Specifically, course objectives include the following:

|  |  |
| --- | --- |
| LEARNING OUTCOMES1  | ASSESSMENT METHODS |
| 1. Students in the course should be able to demonstrate an understanding of many dimensions of sustainability as they relate to the potential for renewed economic growth.
 | 1. The midterm and final exams, which will include essay questions, will test students’ understanding of sustainability issues as they relate to economic practices and policy |
| 1. Demonstrate a knowledge of the importance of changing economic behavior – from consumers, to business practices to government – to build upon the move toward sustainable economic practices
 | 2. Class discussions of assigned articles and other supplementary readings in class and on course blog site on Open Lab.  |
| 1. Identify a range of tools from environmental economics that can be applied to solving real world environmental challenges that impact the U.S. economy.
 | 3. Exams and class discussions will serve as tools to encourage students to make the connections between environmental goals and addressing economy-wide and global economic issues. |
| 1. Develop a breadth and depth of knowledge of how to begin to apply the concepts of sustainability to consumer, business and trade practices.
 | 4. Through the written research project and/or case study and final presentations, students will focus on a problem/issue, the challenges posed by that issue and critically examine various solutions. |

GENERAL EDUCATION LEARNING OUTCOMES/ASSESSMENT METHODS

|  |  |
| --- | --- |
| LEARNING OUTCOMES | ASSESSMENT METHODS |
| 1. KNOWLEDGE: To develop a understanding of the key concepts that relate to environmental economics, the central topics and theories of how to address environmental problems through economic policy.
 | 1. Discussion of readings, material presented by guest lecturers and field visits that both test an understanding of basic concepts and that require students to express their understanding in writing (short essay quizzes)  |
| 1. SKILLS: Develop and apply the tools of environmental economics to be able to critically question, analyze, and discuss environmental economic problems and issues; Develop and strengthen the ability to discuss concepts and thoughts in writing.
 | 2.Completion of essay questions on exams; class discussions of questions tied to topics covered in class and to supplemental short readings and articles on timely relevant issues; students analyze, evaluate and consider policy options  |
| 1. INTEGRATION: Apply the tools acquired in the course to be able to build upon an understanding of environmental issues and sustainability across disciplines, both in the social sciences and other disciplines.
 | 3. Research project which requires students to select and define a topic, problem or issue and examine possible solutions drawing upon and employing the tools of related disciplines; Final in-class summaries of research; participation in Emerging Scholars poster session. |
| 1. VALUES, ETHICS, AND RELATIONSHIPS: Develop an understanding of and ability to apply diverse perspectives to the understanding of sustainability/environmental economics; work creatively with others in group problem solving; develop a respect for diverse viewpoints and apply the skills and concepts covered in the course to the analysis of related issues and concepts across other disciplines
 | 4.Weekly in-class group assignments; assignments encourage student discussion and sharing of ideas and perspectives; focused discussions that encourage students to question and think critically to develop their own perspectives on issues covered in the class .  |

From: Important General Education Learning Goals

Scope of assignments and other course requirements\*

Students in this course will be required to complete a written research project resulting in a final 2-pg. paper. This may be an individual or group project consisting of a topic chosen from those covered in the course or a case study tied to a particular topic in the student’s major course of study. Students are also encouraged to participate in the Spring 2016 Poster Presentation, presenting their research project, or preliminary work (either individually or in teams). There will also be a midterm and the final presentation, paper and ann. Bibliography will constitute the final exam. Class discussions of assigned readings – students will be expected to be prepared to discuss assigned questions based on the readings. The course will be writing intensive.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 METHOD OF GRADING – elements and weight of factors determining the students’ grade\*

Midterm exam 25%

In-class group project: Week 11 15%

First draft of research summary and annotated bibliography (week 9) 10%

Final presentation on semester research project ; final summary; annotated bibliography 10 %

Final research summary and annotated bibliography 20%

Participation: class discussions; entries on blog on Open Lab; attendance 20%

**GRADING POLICY:** calculated according to the college grade scale:

Letter Grade Meaning of Letter Grade Number Grade

A Exceptional 100-93

A- Superior 92.9-90

B+ Very good 89.9-87

B Good 86.9-83

B- Above Average 82.9-80

C+ Slightly Above Average 79.9-77

C Average 76.9-70

D Poor 69.9-60

F Failure 59.9-0

\*Scope of Assignments and Method of Grading to be determined at discretion of the instructor.

ACADEMIC INTEGRITY POLICY STATEMENT

Students and all others who work with information, ideas, texts, images, music, inventions, and other intellectual property owe their audience and sources accuracy and honesty in using, crediting, and citing sources. As a community of intellectual and professional workers, the College recognizes its responsibility for providing instruction in information literacy and academic integrity, offering models of good practice, and responding vigilantly and appropriately to infractions of academic integrity. Accordingly, academic dishonesty is prohibited in The City University of New York and at New York City College of Technology and is punishable by penalties, including failing grades, suspension, and expulsion. The complete text of the College policy on Academic Integrity may be found in the catalog.

COLLEGE POLICY ON ABSENCE/LATENESS

A student may be absent without penalty for 10% of the number of scheduled class meetings during the semester as follows:

**Class Meets Allowable Absence\*\***

 **1 time/week 2 classes**

 2 times/week 3 classes

 3 times/week 4 classes

\*\*Each department and program may specify in writing a different attendance policy for courses with laboratory, clinical or field work. If the department does not have a written attendance policy concerning courses with laboratory, clinical or field work, the College policy shall govern.

**Policies:**

 **\*\*NO TEXTING OR OTHER USE OF CELL PHONES WHILE CLASS IS IN SESSION\*\***

1. **Final exam: The final presentation, research summary and annotated bibliography is the final exam**; there is no option to make this up if it is missed.
2. **Assigned Posts on Open Lab must be completed in the Assigned time period to receive credit;**  **Chapter readings must be completed prior to the next class**. In-class reviews are important to complete as part of the course. **These are 20% of the course grade.**
3. **Class discussion, participation, attendance and posts on Open Lab constitutes 20% of final grade**
4. **More than two** **absences will adversely affect your** **final grade.** If you must miss a class, please provide prior notification by email or in person. My email address and phone number are listed on the front of syllabus.
5. **Students must arrive on time for class and stay for the entire class; consistent lateness and leaving class early will negatively affect your final grade.**
6. **Texting, emailing and other use of cell phones is prohibited during class time; they must be turned off and put away while class is in session.**
7. **Phones may not be used during exams; calculators are permitted only.**
8. **There will be a 10 minute break halfway through each class.**