

Energy, Water, and the Environment
NATS 2333-001
Spring 2014

Course Syllabus

Course Information

NATS 2333-001 Energy, Water and the Environment
Spring 2014 T-Th 1:00-2:15 pm Location: SLC 2.203

Professor Contact Information

Professor Stephanie M. Taylor
Office: FN 3.308D
Office Phone: (972) 883-6044
Email: StephanieM.Taylor@utdallas.edu

Office Hours: Tuesday 3:00-4:00pm, Wednesday 3:00-4:00pm, BY APPOINTMENT

TA Contact Information

Matt Varvir
Office: FN 3.214
Email: mlv130130@utdallas.edu

Office Hours: Monday and Wednesday 2:00-3:00pm, and by appointment

Course Pre-requisites, Co-requisites, and/or Other Restrictions

Good working knowledge of algebra

Course Description

NATS 2333- Energy, Water, and the Environment (3 semester hours) An introduction to the impacts that humans have on the environment, with emphasis on impacts resulting from energy and water use. The course is designed for students who are not seeking a technical major and who wish to enhance their use of science and engineering principles and techniques in making decisions affecting both their own use of energy and water and use by the United States and the world. The course includes discussions of ways to ameliorate and/or adapt to the impacts. (3-0) Y

Energy, Water, and the Environment addresses the issues of human impact on the environment and how we, as stewards, can make sound technical decisions about strategies to ameliorate those effects. Topic will include --from the perspectives including energy supply, water resources, and the environment -- global climate change, energy and water basics and conservation, fossil fuels, nuclear energy, and alternative sources of energy (solar, wind,

hydroelectric, biomass). A major part of a student's grade will be based on a project designed to educate individuals about "Energy Water and the Environment".

It is hoped that students with both science and policy interests will enroll, and that discussions within the class will bring the strengths of both groups to the task. The course material does not require that students bring a strong prior science background. The necessary basic chemistry and physics will be covered as part of the course. The arguments will routinely use algebra (with an occasional need for some calculus).

Student Learning Objectives/Outcomes

Students who successfully complete this course should be able to describe global climate change, green house effects, impacts, strategies, and modeling, to evaluate data in these areas, and to assess strategies for mitigating adverse affects of global climate change. They will be aware of and capable of carrying out basic calculations regarding energy conservation, water resources, fossil fuel use, nuclear energy, and alternate sources of energy (solar, wind, hydroelectric, biomass). Teaching strategies will include lectures, reading assignments, video assignments, in class discussion, discussion boards, and projects.

Core Curriculum:

This course satisfies the Natural Sciences requirement of the Texas Core Curriculum (Texas Core Area 030 - Natural Sciences –Chart II). Embedded test questions will be used to evaluate accreditation compliance

Required Textbooks and Materials

Both of the books listed below may be available in newer editions. I recommend that students buy the cheapest version they can find. We may have to cross-reference sections and/or pages.

Energy Environment and Climate

[ISBN-978-0-393-92763-4 (pbk)] (EEC)

by Richard Wolfson provides technical content at a level that should be useful and accessible.

Global warming: the complete briefing

[ISBN-13 978-0-521-52870-0] (GW)

by John Houghton, co-chair of the Intergovernmental Panel on Climate Change's (IPCC) working group and lead editor of the first three IPCC reports, provides a highly readable introduction to Global Climate Change and to stewardship.

Suggested Course Materials

The reports of the Intergovernmental Panel on Climate Change are available at www.ipcc.ch.

It is recommended that students not purchase paper copies.

Assignments & Academic Calendar

Schedule and Topics (subject to change)

For most of the semester each class period will consist of (1) introduction of technical

material, generally via lecture (2) practice with that technical material, and (3) discussion of the policy implications of that technical material(and relevant prior technical material). The mix may vary. “How would you choose?” questions will be addressed. The thrust is that capable stewardship requires thoughtful use of both technical and policy skills.

Reading material appropriate to the lecture is listed in the right hand column. Material in parentheses is supplementary to the primary reading. Other material, including books, handouts, web links, etc. may be assigned.

Lecture Number	Date	Topic	Text
1	1/14/2014	Class Organization, Introduction	EEC Chapters 1,2
2	1/16/2014	Climate	GW Chapters 1, 4 (EEC Chapter 14)
3	1/21/2014	Greenhouse Effects	GW Chapters 2, 3 (EEC Chapter 12)
4	1/23/2014	Climate Change Impacts	GW Chapter 7
5	1/28/2014	Climate Change Impacts	GW Chapter 7
6	1/30/2014	Modeling, Feedbacks	GW Chapters 5, 6 (EEC Chapter 13, 15)
7	2/4/2014	Adapting to climate change, Decoupling energy and climate	GW Chapters 8, 9, 10 (EEC Chapter 16)
8	2/6/2014	Water Resources 1	Handout
9	2/11/2014	Water Resources 2	Handout
10	2/13/2014	Water Resources 3	Handout
11	2/18/2014	Water Resources 4	Handout
12	2/20/2014	Energy Basics	EEC Chapters 3
13	2/25/2014	Energy Basics	EEC Chapters 4
14	2/27/2014	Energy and Heat	EEC Chapters 4
15	3/4/2014	Home Energy Conservation	PPT and Home Sweet Home
16	3/6/2014	In class exam	
	3/11/2014	Spring Break	
	3/13/2014	Spring Break	
17	3/18/2014	Fossil Fuel Energy	EEC Chapter 5
18	3/20/2014	Fossil Fuel Environmental	EEC Chapter 6
19	3/25/2014	Coal/Carbon Sequestration	Handout
20	3/27/2014	Hydrogen	EEC Chapter 11
21	4/1/2014	Hydrogen	EEC Chapter 11
22	4/3/2014	Nuclear Energy	EEC Chapter 7
23	4/8/2014	Nuclear Energy	EEC Chapter 7

24	4/10/2014	Nuclear Energy - waste	Handout
		Nuclear Energy Waste: Geologic	
25	4/15/2014	Repositories	Handout
26	4/17/2014	Solar - heating and photovoltaic	EEC Chapter 9
27	4/22/2014	Wind	EEC Chapter 10
28	4/24/2014	Biomass	EEC Chapter 10
29	4/29/2014	Hydroelectric, geothermal	EEC Chapters 8, 10
		Presentations of Project	
	5/1/2014	Summaries	
	5/6/14-5/15/14	Finals week	

These descriptions and timelines are subject to change at the discretion of the Professor.

Grading (subject to change)

30% Effective participation, including but not limited to, classroom and discussion board participation, homework, and other assignments
20% In Class Exam
25% Final Exam [Date not yet determined; Final Exam week is May 6-May 15]
25% Project

Course & Instructor Policies

Students are expected to attend class regularly, to prepare for each class session, to participate thoughtfully in class discussions, and to exhibit the best aspects of professional behavior. In all class room discussions, civility, tolerance, and reliance on data and logic are expected. If it is necessary to miss class, the student should contact the professor and make arrangements to complete any work missed. The class room policies are as described in other sections of this syllabus, and no extra credit, special assignments, et cetera, will be given.

Technical Support

If you experience any problems with your UTD account you may send an email to: assist@utdallas.edu or call the UTD Computer Helpdesk at 972-883-2911.

Field Trip Policies

Off-campus Instruction and Course Activities

Off-campus, out-of-state, and foreign instruction and activities are subject to state law and University policies and procedures regarding travel and risk-related activities. Information regarding these rules and regulations may be found at the website address http://www.utdallas.edu/BusinessAffairs/Travel_Risk_Activities.htm. Additional information is available from the office of the school dean. Below is a description of any travel and/or risk related activity associated with this course.

Student Conduct & Discipline

The University of Texas System and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of their business. It is the responsibility of each student and each student organization to be knowledgeable about the rules and regulations which govern student conduct and activities. General information on student conduct and discipline is contained in the UTD printed publication, *A to Z Guide*, which is provided to all registered students each academic year.

The University of Texas at Dallas administers student discipline within the procedures of recognized and established due process. Procedures are defined and described in the *Rules and Regulations, Series 50000, Board of Regents, The University of Texas System*, and in Title V, Rules on Student Services and Activities of the university's *Handbook of Operating Procedures*. Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations (SU 1.602, 972/883-6391) and online at <http://www.utdallas.edu/judicialaffairs/UTDJudicialAffairs-HOPV.html>

A student at the university neither loses the rights nor escapes the responsibilities of citizenship. He or she is expected to obey federal, state, and local laws as well as the Regents' Rules, university regulations, and administrative rules. Students are subject to discipline for violating the standards of conduct whether such conduct takes place on or off campus, or whether civil or criminal penalties are also imposed for such conduct.

Academic Integrity

The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrate a high standard of individual honor in his or her scholastic work.

Scholastic Dishonesty, any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

Plagiarism, especially from the web, from portions of papers for other classes, and from any other source is unacceptable and will be dealt with under the university's policy on plagiarism (see general catalog for details). This course will use the resources of turnitin.com, which searches the web for possible plagiarism and is over 90% effective.

Copyright Notice

The copyright law of the United States (Title 17, United States Code) governs the making of photocopies or other reproductions of copyrighted materials, including music and software. Copying, displaying, reproducing, or distributing copyrighted works may infringe the copyright owner's rights and such infringement is subject to appropriate disciplinary action as well as criminal penalties provided by federal law. Usage of such material is only appropriate when that usage constitutes "fair use" under the Copyright Act. As a UT Dallas student, you are required to

follow the institution's copyright policy (Policy Memorandum 84-I.3-46). For more information about the fair use exemption, see

<http://www.utsystem.edu/ogc/intellectualproperty/copypol2.htm>

Email Use

The University of Texas at Dallas recognizes the value and efficiency of communication between faculty/staff and students through electronic mail. At the same time, email raises some issues concerning security and the identity of each individual in an email exchange. The university encourages all official student email correspondence be sent only to a student's U.T. Dallas email address and that faculty and staff consider email from students official only if it originates from a UTD student account. This allows the university to maintain a high degree of confidence in the identity of all individual corresponding and the security of the transmitted information. UTD furnishes each student with a free email account that is to be used in all communication with university personnel. The Department of Information Resources at U.T. Dallas provides a method for students to have their U.T. Dallas mail forwarded to other accounts.

Withdrawal from Class

The administration of this institution has set deadlines for withdrawal of any college-level courses. These dates and times are published in that semester's course catalog. Administration procedures must be followed. It is the student's responsibility to handle withdrawal requirements from any class. In other words, I cannot drop or withdraw any student. You must do the proper paperwork to ensure that you will not receive a final grade of "F" in a course if you choose not to attend the class once you are enrolled.

Student Grievance Procedures

Procedures for student grievances are found in Title V, Rules on Student Services and Activities, of the university's *Handbook of Operating Procedures*. In attempting to resolve any student grievance regarding grades, evaluations, or other fulfillments of academic responsibility, it is the obligation of the student first to make a serious effort to resolve the matter with the instructor, supervisor, administrator, or committee with whom the grievance originates (hereafter called "the respondent"). Individual faculty members retain primary responsibility for assigning grades and evaluations. If the matter cannot be resolved at that level, the grievance must be submitted in writing to the respondent with a copy of the respondent's School Dean. If the matter is not resolved by the written response provided by the respondent, the student may submit a written appeal to the School Dean. If the grievance is not resolved by the School Dean's decision, the student may make a written appeal to the Dean of Graduate or Undergraduate Education, and the dean will appoint and convene an Academic Appeals Panel. The decision of the Academic Appeals Panel is final. The results of the academic appeals process will be distributed to all involved parties. Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations.

Incomplete Grade Policy

As per university policy, incomplete grades will be granted only for work unavoidably missed at the semester's end and only if 70% of the course work has been completed. An incomplete

grade must be resolved within eight (8) weeks from the first day of the subsequent long semester. If the required work to complete the course and to remove the incomplete grade is not submitted by the specified deadline, the incomplete grade is changed automatically to a grade of **F**.

AccessAbility Services

It is the policy and practice of The University of Texas at Dallas to make reasonable accommodations for students with properly documented disabilities. However, written notification from the Office of Student AccessAbility (OSA) is required. If you are eligible to receive an accommodation and would like to request it for a course, please discuss it with an OSA staff member and allow at least one week's advanced notice. Students who have questions about receiving accommodations, or those who have, or think they may have, a disability (mobility, sensory, health, psychological, learning, etc.) are invited to contact the Office of Student AccessAbility for a confidential discussion.

The primary functions of the Office of Student AccessAbility are to provide:

1. academic accommodations for students with a documented permanent physical, mental or sensory disability
2. non-academic accommodations
3. resource and referral information and advocacy support as necessary and appropriate.

OSA is located in the Student Services Building, suite 3.200. They can be reached by phone at (972) 883-2098, or by email at disabilityservice@utdallas.edu.

If you anticipate issues related to the format or requirements of this course, please meet with the Coordinator of AccessAbility Services. The Coordinator is available to discuss ways to ensure your full participation in the course. If you determine that formal accommodations are necessary, it is very important that you be registered with AccessAbility Services to notify them of your eligibility for reasonable accommodations. AccessAbility Services can then plan how best to coordinate your accommodations. It is the student's responsibility to notify his or her professors of the need for such an accommodation. AccessAbility Services provides students with letters to present to faculty members to verify that the student has a disability and needs accommodations. Individuals requiring special accommodation should contact the professor after class or during office hours.

Religious Holy Days

The University of Texas at Dallas will excuse a student from class or other required activities for the travel to and observance of a religious holy day for a religion whose places of worship are exempt from property tax under Section 11.20, Tax Code, Texas Code Annotated. The student is encouraged to notify the instructor or activity sponsor as soon as possible regarding the absence, preferably in advance of the assignment. The student, so excused, will be allowed to take the exam or complete the assignment within a reasonable time after the absence: a period equal to the length of the absence, up to a maximum of one week. A student who notifies the instructor and completes any missed exam or assignment may not be penalized for the absence. A student who fails to complete the exam or assignment within the prescribed period may receive a failing grade for that exam or assignment. If a student or an instructor disagrees about the nature of the absence [i.e., for the purpose of observing a religious holy day] or if there is similar

disagreement about whether the student has been given a reasonable time to complete any missed assignments or examinations, either the student or the instructor may request a ruling from the chief executive officer of the institution, or his or her designee. The chief executive officer or designee must take into account the legislative intent of TEC 51.911(b), and the student and instructor will abide by the decision of the chief executive officer or designee.