Physics 1351 Energy and Environment

Fall 2017

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Description of Course Content:
This course, PHYS 1351: Energy and Environment, satisfies the University of Texas at Arlington core curriculum requirement in Life and Physical Sciences.
This course explores the fundamental laws of nature and natural processes related to energy production, transport, storage, and uses. The objective of this course is to provide students with an in-depth understanding of the Physics of Energy and its relation to the Earth Environment. The course is designed for non-major students with two hours lecture and one 2-hour laboratory per week.

This course will address four core curriculum objectives:
- Critical Thinking Skills - to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.
- Communication Skills - to include effective development, interpretation and expression of ideas through written, oral and visual communication.
- Empirical and Quantitative Skills - to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.
- Teamwork - To include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.

STUDENT LEARNING OBJECTIVES
Upon completion of this course, students will be able to:

1) Understand Energy fundamentals and how Energy is used in an Industrial Society
2) Describe Fossil Fuels
3) Describe the Physics of conservation of Energy and the practical use of the concept.
4) Describe the Physics of the Heat Engines
5) Analyze how we obtain and use energy
6) Describe how we can obtain alternatives use of energy and explore renewable Energy Sources, such as, Solar Energy, Wind Energy…
7) Describe the Promise and Problems of Nuclear Energy
8) Describe how transportation affects our society and our individual lives.
9) Analyze the problem of Pollution and Environment/global warming

Prerequisites:
While there are no formal prerequisites, a familiarity with high school mathematics is needed.

Required Materials:
2- A calculator
3- >Clickers

Descriptions of major assignments and examinations:
1- There will be HWs assigned after covering the material of each chapter.
2- A short quiz after every lecture
3- There will be three Tests (drop the lowest).
4- A Final exam.
5- Energy Lab

Signature Assignment:
In order to assess the four core objectives for this course (Critical Thinking Skills, Communication Skills, Empirical and Quantitative Reasoning Skills, and Teamwork) students will submit a signature assignment. The signature assignment will be the last lab, for which you will prepare a report using your team’s work on this lab.

- For the first part of the report each team member will report about his/her current use of energy and its impact on the Environment. After studying the material of the book, describe what changes you will make regarding the use of energy to preserve the Environment.
- For the second part of the report, imagine one of the team members has been selected as President of the United States. He/she appoints the other team members as the “Energy Cabinet” with distinct duties for each member addressing the different issues related to energy production, transport, storage, and uses. Describe changes your team will propose regarding the use of energy in the US to preserve the Environment. You must address energy production, transport, storage, and uses.
- This assignment will require some library research, data gathering and graphs to support your case, and then come up with some new and creative ideas for a positive change and impact on the Environment and society. The report should provide sufficient details in terms of the effectiveness of the data, and outlined suggestions.
- Your report will consist of a minimum of 6 pages. The lab TA will provide the format for the report as well as the grading rubric early in the semester.

Grading:
Grading policy:
10% Quizzes
10% HW
20% Test 1  
20% Test 2  
20% Lab  
20% Final Exam

**Grading Scale**

- A: 90 & up  
- B: 80 to 89  
- C: 70 to 79  
- D: 60 to 69  
- F: 59 & below

**Tentative Tests dates**

1- Test 1: End of Feb  
2- Test 2: End of March  
3- Test 3: End of April  
4- Final Exam: University assigned date

**Expectations for Out-of-Class Study**: A general rule of thumb is this: for every credit hour earned, a student should spend 3 hours per week working outside of class. Hence, a 3-credit course might have a minimum expectation of 9 hours of reading, study, etc.] Beyond the time required to attend each class meeting, students enrolled in this course should expect to spend at least an additional 9 hours per week of their own time in course-related activities, including reading required materials, completing assignments, preparing for exams, etc.

**Make-up Exams**: There will be no makeup tests, except in special circumstances in which case they must be arranged in advance.

**Grade Grievances**: Any appeal of a grade in this course must follow the procedures and deadlines for grade-related grievances as published in the current undergraduate / graduate catalog.

**Drop Policy**: Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. Students will not be automatically dropped for non-attendance. Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (http://wweb.uta.edu/aao/fao/).

**Disability Accommodations**: UT Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including The Americans with Disabilities Act (ADA), The Americans with Disabilities Amendments Act (ADAAA), and Section 504 of the Rehabilitation Act. All instructors at UT Arlington are required by law to provide “reasonable accommodations” to students with disabilities, so as not to discriminate on the basis of disability.
Students are responsible for providing the instructor with official notification in the form of a letter certified by the Office for Students with Disabilities (OSD). Students experiencing a range of conditions (Physical, Learning, Chronic Health, Mental Health, and Sensory) that may cause diminished academic performance or other barriers to learning may seek services and/or accommodations by contacting:

The Office for Students with Disabilities, (OSD) www.uta.edu/disability or calling 817-272-3364.

Counseling and Psychological Services, (CAPS) www.uta.edu/caps/ or calling 817-272-3671.

Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

Title IX: The University of Texas at Arlington does not discriminate on the basis of race, color, national origin, religion, age, gender, sexual orientation, disabilities, genetic information, and/or veteran status in its educational programs or activities it operates. For more information, visit uta.edu/eos. For information regarding Title IX, visit www.uta.edu/titleIX.

Academic Integrity: Students enrolled all UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

I pledge, on my honor, to uphold UT Arlington’s tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.

I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

UT Arlington faculty members may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System Regents’ Rule 50101, §2.2, suspected violations of university’s standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student’s suspension or expulsion from the University. Indicate how violations to the academic integrity policy will affect the course grade.

Lab Safety Training: [Required for laboratory courses in the Colleges of Engineering and Science] Students registered for this course must complete all required lab safety training prior to entering the lab and undertaking any activities. Once completed, Lab Safety Training is valid for the remainder of the same academic year (i.e., through the following August) and must be completed anew in subsequent years. There are no exceptions to this University policy. Failure to complete the required training will preclude participation in any lab activities, including those for which a grade is assigned.
Electronic Communication: UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at http://www.uta.edu/oit/cs/email/mavmail.php.

Student Feedback Survey: At the end of each term, students enrolled in classes categorized as “lecture,” “seminar,” or “laboratory” shall be directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student’s feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington’s effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit http://www.uta.edu/sfs.

Final Review Week: A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week unless specified in the class syllabus. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

Emergency Exit Procedures: [Required for face-to-face courses; should be omitted for online courses] Should we experience an emergency event that requires us to vacate the building, students should exit