

PRAIRIE VIEW A&M UNIVERSITY
DEPARTMENT OF PHYSICS
PHSC 3083- SCIENCE OF EVERYDAY LIFE
COURSE SYLLABUS
SPRING 2010

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*"If you want to build a ship, don't drum up
people together to collect wood and don't
assign them tasks and work, but rather
teach them to long for the endless
immensity of the sea."*

– Antoine Saint Exupery

*"To the world, you may be one person,
but to one person, you may be the world"*
– Anonymous

*"My mother said I must always be
intolerant of ignorance but understanding
of illiteracy. That some people, unable to go
to school, were more educated and more
intelligent than college professors." – Maya
Angelou*

CATALOG DESCRIPTION:

Credit 3 semester hours. Presents a description of daily phenomena, demonstrating how science provides a basis for comprehending them and discusses relationships between various apparently unrelated phenomena.

COURSE DESCRIPTION

The purpose of this course is to provide you with an adequate preparation in the science of everyday life to teach science to school students. The course will be conducted in the form of lectures, student presentations and research projects consisting of a set of meetings, reading assignments, writing and submission of weekly reports, preparation of a comprehensive syllabus for a course in physics and chemistry or composite science, and a final comprehensive presentation to selected faculty in the College of Arts & Sciences and the College of Education.

Text for the Course:

There is no specific text for this course. Reading materials will be either provided to you in class or via links to websites. Some of the lecture material will be taken from the following books:

1. How Things Work – The Physics of Everyday Life, by Louis Bloomfield, Third Edition, John Wiley & Sons, Inc. (2006).
2. How Stuff Works: <http://www.howstuffworks.com/>
3. Mad About Modern Physics – Braintwisters, Paradoxes and Curiosities, by Franklin Potter and Christopher Jargodzki, John Wiley & Sons, Inc. (2005).
4. The Flying Circus of Physics, Second Edition, by Jearl Walker, John Wiley & Sons, Inc. (2007).
5. How to Dunk a Doughnut – The Science of Everyday Life, by Len Fisher, Weidenfeld and Nicolson (2002).
6. The Last Word from New Scientist – Questions and Answers on Everyday Science, Edited by Mick O'Hare, Oxford University Press (2000).
7. The Science of Everyday Life Everyday Kitchen, Household Science makes Learning Fun http://early-childhood-development.suite101.com/article.cfm/the_science_of_everyday_life
8. Inventing the 20th Century – 100 Inventions that Shaped the World: From the Airplane to the Zipper, by Stephen van Dulken, Barnes & Noble (2007)
9. You Are Here – Exposing the Vital Link Between What We Do and What That Does to our Planet, Thomas M. Kostigen, Harper One (2008)

GOALS

By the end of the course, you should be able to, at a minimum:

- Demonstrate an understanding of the science behind the most natural and commonly observed phenomena by providing clear explanations;
- Demonstrate a comprehension of the scientific process – observation, inference, model building – by analyzing a given system;
- Discuss the new Texas 4x4 graduation plan, compare with the previous 3x3 plan, and offer a prescription for the steps necessary to take to adapt to the new plan;
- Compare science education standards in Texas, a few selected states across the nation and a few selected countries; and
- Develop a detailed lesson plan for physics/physical science curriculum for the grade level of your interest.

SKILLS NEEDED/DEVELOPED

Computer Skills: Use of computers to conduct research, write term papers and make presentations

Critical Thinking: Familiarity with Bloom's Taxonomy

Scientific Reasoning: Logical analysis of a system or a phenomenon toward actionable results

Communication Skills: Presentations, Participation on panel discussions

Career Preparation: Appreciation for the relevance of physics to the other courses appropriate to your major including employment and/or graduate or professional training.

PERFORMANCE EVALUATIONS

Your overall performance in the semester, and your final grade, will be determined on the following:

Research Papers:

Mid-Term Research Paper	- 100 points
Final Term Paper	- 100 points

Presentations:

In-Class Presentations (2)	- 25 points each
Mid-Term Presentation	- 50 points
Final Presentation	- 100 points

Panel Discussions (2):

Participation	- 25 points each
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Examinations:

Mid-Term Examination	- 100 points
Final Examination	- 200 points

Total	- 750 points
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Final Presentation

You will make a final presentation to the entire class and selected faculty. This presentation may be based on the subject of your final report. Details will be discussed in the class.

Final Examination

The final examination will be held during the week May 7-12, 2010.

Course Resources

Contemporary Talks:

A CD with several useful papers, reports, presentations and newspaper articles will be provided to you. You are required to familiarize yourself with the content of these materials. You should be particularly aware of the content of the following materials.

Science of Everyday Life:

1. What is Science? by Richard Feynman, Presented at the fifteenth annual meeting of the National Science Teachers Association, 1966 in New York City, and reprinted from The Physics Teacher Vol. 7, issue 6, 1968, pp. 313-320
<http://southerncrossreview.org/32/feynman3.htm>
2. http://www.stmary.ws/physics/home/links/physics_in_everyday_life.htm

General Background Information:

1. Rising Above The Gathering Storm: Energizing and Employing America for a Brighter Economic Future (2005)
2. Creating A High School Diploma that Counts, American Diploma Project Network
3. Less Than Proficient, A Review of the Draft Science Framework for the 2009 National Assessment of Educational Progress, Thomas B. Fordham Foundation Report (2005)
4. Teacher Education: Coming Up Empty, Thomas B. Fordham Foundation Publication (2006)
5. No Dream Denied, A Pledge to America's Children, National Commission on Teaching and America's Future (2003)
6. Students failing in science proficiency <http://www.timesguardian.com/2006/011106/011106-3.html>

Standards, Reports and Presentations:

1. The State of State SCIENCE Standards, Thomas Fordham Institute (2005)
http://www.edexcellence.net/detail/news.cfm?news_id=352
2. College Board 2007 Results on graduation statistics from U.S. schools
<http://www.collegeboard.com/press/releases/152694.html>

STUDENTS WITH DISABILITIES

If you need accommodations in this class related to a disability, please make an appointment with me as soon as possible. My office is located in Room 330C, New Science Building. The building is accessible to people with disabilities. There is an Office of Disability Services on the campus located in Evans Hall Room 315, Tel: (936) 261-3580.

CONDUCT AND ETHICS

A strict code of ethics will be imposed during the entire session. You shall take a pledge that you will not copy, steal or plagiarize someone else's work nor will you tolerate anyone else doing the same. You must ensure that all your reports are written by you in your own words. Any material taken from a published report (in print or on the web) must be given appropriate credit by providing a reference. Read the copyright statement carefully so that the conditions under which the report or some material from it is cited, are met. It shall be the policy in this course to discourage any such activity to the extent possible rather than punish. **HOWEVER, IN FAIRNESS TO ALL CONCERNED, CHEATING AND PLAGIARISM WILL BE DEALT WITH SEVERELY WHEREVER THEY ARE FOUND.** You are advised to read and abide by the rules and the regulations of the University as mentioned in the Catalog, in particular the topics Student Life and Academic Regulations. Graduating means more than completing a certain number of hours and obtaining a reasonable GPA. You must strive to develop a code of strict conduct, acquire a sense of discipline, serve as a role model to your juniors and in particular experience the feeling of accomplishment.

If you have any questions or have any problems that you think I may be able to help with, please do not hesitate to contact me. I am here to help. Learning does hurt. But I am here to make it hurt a little less.

HAVE A PRODUCTIVE AND AN ENJOYABLE SEMESTER!

University Rules and Procedures

Disability statement (See Student Handbook):

Students with disabilities, including learning disabilities, who wish to request accommodations in class should register with the Services for Students with Disabilities (SSD) early in the semester so that appropriate arrangements may be made. In accordance with federal laws, a student requesting special accommodations must provide documentation of their disability to the SSD coordinator.

Academic misconduct (See Student Handbook):

You are expected to practice academic honesty in every aspect of this course and all other courses. Make sure you are familiar with your Student Handbook, especially the section on academic misconduct. Students who engage in academic misconduct are subject to university disciplinary procedures.

Forms of academic dishonesty:

1. Cheating: deception in which a student misrepresents that he/she has mastered information on an academic exercise that he/she has not mastered; giving or receiving aid unauthorized by the instructor on assignments or examinations.
2. Academic misconduct: tampering with grades or taking part in obtaining or distributing any part of a scheduled test.
3. Fabrication: use of invented information or falsified research.
4. Plagiarism: unacknowledged quotation and/or paraphrase of someone else's words, ideas, or data as one's own in work submitted for credit. Failure to identify information or essays from the Internet and submitting them as one's own work also constitutes plagiarism.

Nonacademic misconduct (See Student Handbook)

The university respects the rights of instructors to teach and students to learn. Maintenance of these rights requires campus conditions that do not impede their exercise. Campus behavior that interferes with either (1) the instructor's ability to conduct the class, (2) the inability of other students to profit from the instructional program, or (3) campus behavior that interferes with the rights of others will not be tolerated. An individual engaging in such disruptive behavior may be subject to disciplinary action. Such incidents will be adjudicated by the Dean of Students under nonacademic procedures.

Sexual misconduct (See Student Handbook):

Sexual harassment of students and employers at Prairie View A&M University is unacceptable and will not be tolerated. Any member of the university community violating this policy will be subject to disciplinary action.

Attendance Policy:

Prairie View A&M University requires regular class attendance. Excessive absences will result in lowered grades. Excessive absenteeism, whether excused or unexcused, may result in a student's course grade being reduced or in assignment of a grade of "F". Absences are accumulated beginning with the first day of class.

Student Academic Appeals Process

Authority and responsibility for assigning grades to students rests with the faculty. However, in those instances where students believe that miscommunication, errors, or unfairness of any kind may have adversely affected the instructor's assessment of their academic performance, the student has a right to appeal by the procedure listed in the Undergraduate Catalog and by doing so within thirty days of receiving the grade or experiencing any other problematic academic event that prompted the complaint.