

**School for New Learning
DePaul University
Course Syllabus: SW 326 Energy: What It Is and How We Use It
Winter 2009**

1. General Information

Faculty: John Tallarovic
SNL O'Hare Campus
Tallarovic@yahoo.com
847-294-8180/847-287-6039

Location: O'Hare

Dates/Time: Monday, 6:30pm

2. Course Description and Faculty Biographical Sketch

Energy, what is it? It's something many of us take for granted while we use it throughout the day. Where does it come from and how exactly do we use it? Because it is so interwoven into our daily lives, we need to be aware of how we use energy and the resulting consequences. This course will explore what energy is, the different ways we consume it and the technologies behind the different ways we use energy. Specific topics include fuels, energy conversion, heat engines, electricity, nuclear power, energy from water, wind power, and solar energy. Finally, we'll take a look to the future and discuss resources, costs and prices, and alternatives.

The instructor is an aerospace engineer for the Federal Aviation Administration working on the certification of powerplant systems in aircraft. He is also in the Air Force Reserve. Previously, Mr. Tallarovic worked testing ejection seats and flight testing F-16 aircraft. Academic interests primarily include trying to infect students with his passion for mathematics and science.

3. Competencies

S-1-A: Can explore natural phenomena or the world of everyday experiences using scientific methods, and can use theories to interpret observations.

1. Identifies aspects of the natural world or everyday experiences that spark interest or curiosity or that pose problems.
2. Applies a generally accepted model(s) of scientific inquiry to (1).
3. Uses or develops a theory, model, or set of principles to interpret observations and experience.

We use energy every day in obvious and not so obvious ways. Consider your everyday experiences with energy and discover how those uses fit within established scientific theories. Students make observations and draw well-supported, justified generalizations.

S-2-C: Can describe, categorize, and explain development or change within physical or biological systems.

1. Articulates the process by which change occurs in at least one physical or biological system, or
2. Describes the sequence of development or evolution in that system.
3. Analyzes the variations in the development or change of physical or biological systems.

The technology used to exploit energy resources has changed considerably over the millennia, particularly in the past 200 years. Examine the way energy systems have changed or developed over time. This can include petroleum, coal, nuclear resources.

S-3-D: Can use scientific knowledge to understand varying perspectives on a policy issue.

1. Identifies and describes a current public policy issue that has significant scientific or technological elements.
2. Analyses the scientific theories, methods, or standards taken by two or more perspectives on this issue.

Citizens are constantly faced with important public policy decisions. Few have as much of a daily impact or far reaching implications as energy usage. It is essential that citizens can sort through all the rhetoric and emotion surrounding contemporary energy issues and make informed decisions. Students demonstrate this competence by taking the role of a scientifically literate citizen and investigating various scientific or technological perspectives on a public policy issue. Students should compare and contrast the varying scientific perspectives relevant to the debates on this issue.

S-4: Can describe and explain connections among diverse aspects of nature.

1. Describes one or more natural systems.
2. Explains how parts of the system are interconnected.
3. Demonstrates how such connections are found elsewhere in nature.

Each of the fuels we use (fossil, nuclear, etc.) is part of a natural system that extends to other systems. Explore those systems and explain how they interact with each other. Articulate how exchange occurs among seemingly disparate parts of nature and how interconnection among systems is basic to nature and results in an integrated whole. “Connections” is the most important word in this competence. All seemingly distinct parts of nature, including humans, are integrally connected to all other parts.

4. Learning Experience

Learning Strategies consist of lectures, in-class demonstrations, homework assignments, discussions, a field trip and an examination. Other learning tools required: a calculator, use of MS Word, Excel, and Powerpoint.

For students earning a second competence, learning strategies will include research paper, and research presentation in addition to the above.

Required readings: Text: “Energy Systems and Sustainability, Power for a sustainable future”; Godfrey Boyle, Bob Everett, and Janet Ramage; Oxford University Press, First Edition, 2003; ISBN 0-19-926179-2

Attendance and Participation: Attendance and participation are essential. In the event of an absence it is imperative that you (1) let me know ahead of time, and (2) contact a classmate ahead of time to be your "tutor" for the missed session.

5. Outcomes

By the end of this course, students will understand and be able to explain the scientific principles behind energy conversion; including fossil fuels, nuclear, solar, and other renewable energy sources.

6. Evidence the Students will Submit

For students earning one competence, the evidence submitted will consist of Homework, Class Participation, and the Final Exam

For students earning two competences, the evidence submitted for the second competence will consist of a presentation and research paper. The subject of the research paper will focus on the second competence. Students will be grouped together into teams of 3 to 4 according to competence for the research paper. All members of the team are expected to contribute to the project. The intent of this group project is for students to further explore one focused facet of energy to a depth that is beyond the scope of what will be presented in the class. The presentation will cover the highlights of what is contained in the report.

The presentations should include slides (electronic or viewgraph/overheads) and be approximately 20 minutes long, with 5-10 minutes following for questions.

The research paper should contain the following elements, as a minimum:

1. A header at the top of the first page with
Names of the students
Energy
Due Date
Competence Filled
2. References: A minimum of three and no more than ½ of total from web sites
3. Length: 12-16 pages, it must be long enough to develop your main thought
4. Font: 12 point, double spaced
5. Margin: 1 inch all around
6. Introduction paragraph: This is the most important single paragraph in your paper. It sets the tone and direction for the entire report and should briefly summarize the point you are trying to make. Give the reader some reason to look forward to reading the paper.
7. Summary and Conclusion section where you will wrap-up your thoughts.

DePaul University's guidelines on academic integrity will be followed. The DePaul Student Handbook defines plagiarism as follows: "Plagiarism includes but is not limited to the following: (a) The direct copying of any source, such as written and verbal material, computer files, audio disks, video programs or musical scores, whether published or unpublished, in whole or in part, without proper acknowledgement that it is someone else's. (b) Copying of any source in whole or in part with only minor changes in wording or syntax even with acknowledgement. (c) Submitting as one's own work a report, examination paper, computer file, lab report or other assignment which has been prepared by someone else. This includes research papers purchased from any other person or agency. (d) The paraphrasing of another's work or ideas without proper acknowledgement." Plagiarism will

result in a failure of the assignment or possibly of the course. If you are unsure of how to cite a source, ask!

7. Criteria for Assessment

Grading Procedures:

Homework	25%
Class Participation	10%
Final Exam	25%
Presentation	20%
Research Paper	20%
TOTAL	100%

Each student's presentation will be graded individually using the criteria below:

Subject Knowledge, 30%

Student comfortable with subject?

Can student answer questions?

Slides Content, 30%

Slides easy to understand? Included Intro and transition slides?

Graphics/bullets sized to give balanced look?

Do slides match what is presented?

What the Students Says, 40%

Does speaker communicate clearly?

Content Proper? Is the length appropriate?

Is the pace correct (not too slow or fast)?

Does speaker keep audience interested?

The research paper will be graded on Content (40%), Organization (20%), Style (20%), and Mechanics (20%) using the guidelines given by the DePaul writing staff. A single grade, shared by all authors, will be given for the research paper.

Written Work Will be Evaluated As Follows:

A= designates work of high quality; reflects thorough and comprehensive understanding of the issues at hand; reflects a clearly identifiable thesis and argument that demonstrates cogent and creative development and support of idea.

B= designates work of good quality; reflects clearly organized and comprehensive understanding of issues at hand; presents substantive thesis and argument with evident development and support of ideas.

C= designates work which minimally meets requirements set forward in assignment; reflects some organization and development of ideas but develops argument in superficial or simplistic manner; may only address part of the assignment or be otherwise incomplete.

D= designates work of poor quality which does not meet minimum requirements set forth in the assignment; demonstrates poor organization of ideas and/or inattention to development of ideas, grammar, and spelling; treatment of material is superficial and/or simplistic; may indicate that student has not done reading assignments thoroughly.

Students have the option of taking the course Pass/Fail. If they intend to do so, they must inform me of that early in the course. Once students commit to taking a course Pass/Fail, they cannot switch back to a letter grade.

Unfinished work or work requiring revision will be given an Incomplete (IN) grade. In order to qualify for the IN, students must have regularly attended class, and must have completed two thirds of assignments. Work not submitted by the due date must be submitted within 2 weeks, and will be assessed on a P/F basis only.

8. Class Schedule

Week	Date	Material Covered	Homework Due
1. In-Class	1/5/09	Ch 1, Introductory Overview	None
2. On-Line	1/12/09	Ch 2, Primary Energy Ch 3, What do we use Energy For? Ch 4, Forms of Energy	Assignment 1
3. In-Class	1/19/09	Ch 5, Coal Ch 6, Heat to Motive Power	Assignment 2
4. On-line	1/26/09	Ch 9, Electricity	Email Research Paper Topic & Discussion Board Topic #1
5. In-Class	2/2/09	Ch 7, Oil and Gas	None
6. In-Class	2/9/09	**Power Plant Tour**	Email Research Paper Outline
7. On-Line	2/16/09	Ch 8, Oil and Gas Engines	Assignment 3
8. In-Class	2/23/09	Ch 10, Nuclear Power Ch 12, Costing Energy	Discussion Board Topic #2
9. In-Class	3/2/09	Ch 13, Penalties	Assignment 4
10. On-Line	3/9/09	Ch 14, Remedies	
11. In-Class	3/16/09	Presentations and Final	Presentation and Research Paper

Addenda

DePaul University Academic Integrity Policy

DePaul University is a learning community that fosters the pursuit of knowledge and the transmission of ideas within a context that emphasizes a sense of responsibility for oneself, for others and for society at large. Violations of academic integrity, in any of their forms, are, therefore, detrimental to the values of DePaul, to the students' own development as responsible members of society, and to the pursuit of knowledge and the transmission of ideas. Violations include but are not limited to the following categories: cheating; plagiarism; fabrication; falsification or sabotage of research data; destruction or misuse of the university's academic resources; alteration or falsification of academic records; and academic misconduct. Conduct that is punishable under the Academic Integrity Policy could result in additional disciplinary actions by other university officials and possible civil or criminal prosecution. Please refer to your Student Handbook or visit <http://studentaffairs.depaul.edu/homehandbook.html> for further details.

DePaul University Incomplete Policy

Undergraduate and graduate students have two quarters to complete an incomplete. At the end of the second quarter (excluding summer) following the term in which the incomplete grade was assigned, remaining incompletes will automatically convert to "F" grades. In the case of the Law School incompletes must be completed by the end of the semester following the one in which the incomplete was assigned. Ordinarily no incomplete grade may be completed after the grace period has expired. Instructors may not change incomplete grades after the end of the grace period without the permission of a college-based Exceptions Committee. This policy applies to undergraduate, graduate and professional programs. NOTE: In the case of a student who has applied for graduation and who has been approved for an Incomplete in his or her final term, the incomplete must be resolved within the four week grace period before final degree certification.

The SNL student who wishes to receive the grade of IN must formally request in writing that the instructor issue this grade. This request must be made before the end of the quarter in which the student is enrolled in a course. The policy is contained at: <http://www.snل.depaul.edu/current/policies.asp#Incomplete>

Students who feel they may need an accommodation based on the impact of a disability should contact the instructor privately to discuss their specific needs. All discussions will remain confidential.

To ensure that you receive the most appropriate accommodation based on your needs, contact the instructor as early as possible in the quarter, preferably within the first week of class, and make sure you have contacted:

PLuS Program (for LD, AD/HD) at 773-325-4239 in the Schmidt Academic Center, room 220 or;

The Office for Students with Disabilities (for all other disabilities) at 773-325-7290, DePaul University Student Center, room 307.