FTS100  Energy: Where are we and what’s next

Gustavus Adolphus College  Fall 2005

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Homepage:  http://physics.gac.edu/~huber/classes/fts100/

Required:  
A calculator that allows trigonometric functions and scientific notation
(You don’t need a high-end graphing calculator: ask your instructor if you have questions)

Course Topics
1. Numeracy (How to use and interpret numbers, tables and graphs)
2. Basic Physical Concepts (Work, Energy, Power, Electricity and Magnetism)
3. Overview of Past, Present and Projected Energy Usage
4. Overview of Energy Resources (Fossil Fuels, Solar, Nuclear)
5. Conservation and Personal Energy Choices

Course Policy and Evaluation
1. Class Meetings: The class will meet four days per week (MTWF) at 12:30-1:20 for lectures, discussions, group problem solving, videos and exams. Students are expected to have read assigned materials before coming to class.

2. Attendance: Regular attendance at all classes is expected. Students are responsible for informing themselves of all announcements and assignments made in the classroom. Arrive at class on time - excessive tardiness may be reflected by a reduction of the final course grade.

3. Writing Designation: This course has been approved as a writing course. (Students are required to take three designated writing courses during their four years at Gustavus). The writing assignments for this course are described in a separate handout. Some of the writing assignments will be distributed to other members of the class for peer review.

4. Exams: There will be three one-hour exams and a two-hour final exam. The hour exams will include short answer and multiple choice questions, and longer essay and computational problems.

5. Missed Exams: Students are expected to arrange with the instructor in advance to take an exam at other than the announced time. Permission to make up a missed exam after the fact will be at the discretion of the instructor and should not be assumed.
6. **Quizzes:** There will be short quizzes on roughly a weekly basis. These will be announced at least two classes days prior to the quiz. Some of these will be individual problems and some will be in small groups.

7. **Homework:** Problems sets will be assigned approximately every week. Homework sets should be neat and organized. Each student will submit their own assignment, but you may discuss the problems with each other. Late homework will be accepted at the discretion of the instructor with some loss of points.

8. **Reading Journal:** In this, and all of your classes, it is essential that you read the textbook before coming to class. To encourage this, you will be keeping a reading journal for this class. This reading journal will be initialed by the instructor at the beginning of class periods where there is a reading assignment. Roughly twice per semester, the instructor will collect the reading journals and assign a grade for the journals; this grade will be primarily based on acceptable completion of the following information:
   
i. Date and reading assignment.
   
ii. List about three main points the author wishes to make.
   
iii. List at least one or two interesting “side trails” that could be explored or questions that you have about the reading.
   
iv. List some connections (generally several, but there may be fewer at the beginning of the semester) between this material and previous readings or classroom discussions.
   
v. Briefly assess how well the author backs up the key points. Give at least one example of strong evidence, or conversely at least one example of a claim grounded primarily in the author's values and beliefs.

This preparatory work will be valuable in developing habits for advanced preparation for all of your course work.

9. **Side Trails:** If you think of our reading as being a trail we are walking along, there are many interesting side trails branching off from it. Often those side trails are marked by notes or supplementary items in the text, though some may become apparent to you from the text itself. There may be recent development related to the reading, which constitutes a side trail the author couldn't possibly have noted. Side trails can be a lot of fun to explore; this course gives you the opportunity to discover that. Every day when we have a reading assignment, one or more students will be assigned to identify and scout out a side trail and report back what he or she finds to the group.

10. **Group Problems:** At various times throughout the semester, class time will be used for working on problems in small groups. The group problems will be completed during class and submitted before you leave. Each participating member of the group will receive the same grade.

11. **Computer Usage and Electronic Mail:** Frequently during the semester, we will be using computers for Electronic Mail (e-mail), discussions, to turn in assignments, and to access internet resources. You will be assigned a computer account by the department of GTS (Gustavus Technology Services) and you should check your e-mail on a regular basis.
12. **Presentations:** During the course, at several times during the semester there will be individual or group presentations. You will have at least 3 class days of advanced notice before any formal presentations. A ten minute presentation based on your term paper will take place during class on November 14-21.

13. **Participation:** An important component of this course is group discussion. The participation component of the grade will be based on attendance and regular participation in group discussions. NOTE: There are a variety of ways that one can participate in group discussions - these include contributing information, summarizing discussion (in both written and verbal form), acting as "devils advocate," brainstorming and being a group leader. You should try to take on all of these roles at various times during the semester.

14. **Classroom Respect:** In this course, as well as in all other courses that you take at Gustavus, it is essential that you treat others in the course with respect. As a discussion course, the general atmosphere of the course will be less formal than many lecture-style courses that you may be taking. Obey the golden rule: treat others as you would like to be treated. A few general rules for maintaining a respectful classroom:
   a. Arrive to class on time, preferably a few minutes early. Wait until class is over to leave. Don’t walk out midway through class or be loading up your backpack to leave before we are done with class. If you must leave during class, please let your instructor know in advance.
   b. Respect the opinions of others. No personal attacks, slurs, derogatory remarks, etc. are tolerated in or outside of the classroom. Do not raise your voice or interrupt others during a discussion.
   c. Topics that we discuss with the class stay with this class (no saying to others “you will never guess what so-and-so said”)
   d. Drinking water and soft-drinks in class is acceptable, but eating in class is not allowed.
   e. The use of cell phones, or other electronic communication devices, is not allowed during class time. These devices should be set to a silent mode so that they will not interrupt the class.

15. **Academic Honesty:** Having signed and agreed to abide by the College’s Honor Code, students thereby pledge that, in all academic exercises, examinations, papers, and reports, they shall submit their own work. Footnotes, or some other acceptable form of citation must accompany any use of another's words or ideas. In the context of this course, students are expected to collaborate and to discuss their out-of-class assignments. However, submitting under one’s own name work that is copied from another source is a violation of the Honor Code. (The full text of the Gustavus Academic Honesty Policy may be found in the Gustavus Adolphus College Academic Catalog). 
16. **Evaluation:**
25% Hour Exams & Quizzes
10% Final Exam
10% Short Papers
10% Argumentative Essay Paper (10% Outline, 30% Draft, 60% Final)
15% Term Paper (10% Outline, 30% Draft, 60% Final)
15% Homework, Group Problems, and Reading Journal
15% Presentations, Side Trails & Participation

Final course grades will be assigned using the following scale as a guide:

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Grade</th>
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<tbody>
<tr>
<td>94-100</td>
<td>A</td>
</tr>
<tr>
<td>90-94</td>
<td>A-</td>
</tr>
<tr>
<td>86-90</td>
<td>B+</td>
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<tr>
<td>82-86</td>
<td>B</td>
</tr>
<tr>
<td>78-82</td>
<td>B-</td>
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<tr>
<td>74-78</td>
<td>C+</td>
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<tr>
<td>58-62</td>
<td>D</td>
</tr>
<tr>
<td>0-58</td>
<td>F</td>
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</tbody>
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Assignment of final letter grades will also take into account the instructor's subjective evaluation of the student's attendance, initiative, preparation (particularly quantity and quality of homework), and evidence of improvement.

17. **Incompletes:** A grade of incomplete will only be given for work not completed due to circumstances beyond the control of the student (*this is the college policy*).

18. **Exam Dates**
- Exam 1: Tuesday, October 4, 2005
- Exam 2: Wednesday, November 2, 2005
- Exam 3: Wednesday, November 23, 2005
- Final Exam: Monday, December 19, 2005