***PC 121H – Energy and Society***

**Spring 2009**

**Frederick Community College**

**Instructor Information**

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| **Name**: Bob Ford | **Office**: C117 |
| **E-mail**: [bford@frederick.edu](mailto:bford@frederick.edu) | **Phone Number**: 301.846.2628 |
| **Office Hours**: M 8:30 – 10:30  T/Th 11 – 12:30  W 2 – 3  or by appointment | **Campus Mail Box Number**: 122 |

**Course Information**

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| **Credits**: 3 | **Last Day to Drop**: 3 April 2009 |
| **Prerequisites**:   *EN 50A and EN 52* ***OR*** *ESL 95 and ESL 99, MA 82* ***OR*** *MA 91* | **Co-requisites**: None |
| **Meeting Day(s)**: TBD | **Meeting Time(s)**: TBD |

**Course Description**

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| Explores the nature and properties of energy. Emphasizes a scientific understanding of energy and is role in the global society. Examines current and alternative energy sources used to meet the needs of a growing and developing society. Some Friday or Saturday field trips. |

**Core Learning Outcomes**

*Upon successful completion of the course you will be able to*:

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| 1. Apply the fundamental principles of energy. |
| 1. Explain the physical and technological principles underlying current and alternative energy systems. |
| 1. Analyze the impact of energy systems on human societies. |
| 1. Collect, analyze and present scientific data. |
| 1. Apply lifelong learning strategies to energy use decision-making. |
| 1. Evaluate critically energy-related claims in the popular press. |

# Text(s) for Course

## Risstinen, R. A. and J. K. Kraushaar. 2006. *Energy and the environment* (2nd ed.). New York: John Wiley and Sons. Inc. (*ISBN 978-0-471-73989-0*)

## Learning Strategies

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A variety of learning strategies will be employed in this course. A major one will be problem-based learning (PBL). PBL is a student centered learning strategy fostering content mastery through identifying and solving a series of real life problems. All students will respond to each problem by working as part of a team. A brief description of the activities is described below. Additional details will be provided.

# Evaluation Methods

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| **GENERAL ASSIGNMENT POLICY**: All written assignments **MUST** be submitted **NO LATER THAN** 11:00 a.m. on the scheduled dates using *Assignment section* of the course *Blackboard companion site*. I will **NOT** remind you of due dates. Late assignments will **NOT** be accepted and you will be given zero (0) points for the assignment. Do **NOT** use a cover sheet and place your name(s) in the upper RIGHT hand corner of the first page only. Use 1.5 or double spacing with 3/4 to 1 inch margins and 10 -12 point font. The PBL reports are formal research papers and must include inline citations and a reference list for all materials and sources used in writing the report using APA or similar format. (A reference guide for using APA style format is available at <http://www.frederick.edu/library/CitingAPA.doc>. See the “Map and Compass …” handout for an example using in-line citations and a reference list.) Papers **MUST** conform to the assignment guidelines and this policy in order to receive credit. See **Assignment Due Dates** (attached) for due dates and assignment value. |

**Tests** -- Three (3) tests will be given during the term. Tests will be comprehensive and will be a combination of multiple choice, true/false, short answer, and essay questions covering class discussion, assigned readings, field trips, laboratory activities and other class assignments. If you miss a test, you must call me *PRIOR* to the scheduled test time. The make-up test must be taken by the next scheduled class period.

**Question sets** -- Prepare one (1) multiple choice and one (1) discussion question (complete with answers) covering course material (readings, lecture, laboratory and/or other class activities). The multiple choice question should have between 3 and 5 possible responses (detractors). The essay question should require **APPLICATION** of an ecological concept or address a human environmental impact and a minimum response of one paragraph. Each question set **MUST** cover material presented since the previous question set. You are allowed one drop grade.

**Popular literature (MoLOR) critiques** -- When we encounter energy claims in the popular media (newspaper, radio, television or on the Internet), we often accept them as true without question. Why should we believe the claims being made? What evidence does the source provide? Is it scientific evidence? What criteria make evidence scientific? Chose three (3) articles making a scientific claim about an energy issue or concern and prepare a written critiques of teach using the MoLOR method (details provided in the “Critiquing Science Claims” folder on the *Course Blackboard* site). Provide a copy of the article with your critique.

**Field trips** -- There will be several MANDATORY field trips during the course. Details will be provided as known.

**Point Summary**

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| --- | --- | --- |
| **Assignment** | **Point Value** | **Total** |
| Tests | 3 @ 100 | 300 |
| Critiques | 3 @ 25 | 75 |
| Poster/Presentation | 100 | 100 |
| Question Sets | 5 @ 5 | 25 |
| Virtual Field Trips | 100 | 100 |
| **TOTAL** | | 600 |

**Grading Scale**

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| --- | --- |
| Total Points | Grade |
| above 540 | A |
| 480 – 639 | B |
| 420 – 479 | C |
| 360 – 419 | D |
| below 359 | F |

# Attendance Policy

Class attendance is not mandatory, but is expected. **YOU** are responsible for any material covered should you miss a class. Past experience suggests there is a high correlation between class attendance and class performance. Attendance for the field trips is **MANDATORY**. Failure to participate may result in a loss of 25 points for each field trip missed. Attendance Policies outlined in the *Frederick Community College Catalogue* will be implemented.

**Cell Phone Policy**

Cell phones **MUST** be turned **OFF** prior to the beginning of class and MUST remain **OFF** until the end of class (this includes laboratory). Anyone violating this policy will be asked to leave class for the day.

**Electronic Communication**

All electronic communication **MUST** use the *myFCC* system. If you use an alternative e-mail address I **CANNOT** ensure that I will receive your message. Any e-mail sent to my e-mail address ([bford@frederick.edu](mailto:bford@frederick.edu)) **MUST** include BI 201 at the beginning of the subject line. Instructions for using *myFCC* are available on the FCC webpage (([www.frederick.edu](http://www.frederick.edu)). Click on the *myFCC* button at the top of the page to access the instructions)). Also, effective use of the course *Blackboard* site requires that you update your *Personal Information* to include your *myFCC* email address for course communications. You do this by logging on to *Blackboard* and clicking on the *TOOLS* button. Then click on *Personal Information* followed by *Edit Personal Information*.

# Disabilities Statement

FCC provides reasonable accommodations to otherwise qualified students with disabilities in accordance with the Americans with Disabilities Act of 1990 (ADA) and Section 504 of the Rehabilitation Act of 1973 (Section 504) and amendments. Students with disabilities who are in need of accommodations must contact the Services for Students with Disabilities (SSD) office at 301-846-2408 (A Building, Room 106A) in order to request and apply for services. The SSD office will require appropriate documentation of a disability. Questions related to accommodations or services can be directed to the SSD office. Additional information related to services can be viewed at the following FCC web page: http://www.frederick.edu/student\_services/disability.aspx. If you currently receive services from the SSD office, please submit your Student Success Plan to me and make an appointment with me to discuss your accommodations and needs in class. I will hold any information you share with me in strict confidence unless you give me permission to do otherwise.

## PC 121 – Tentative Topical Outline

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|  | ***Topic*** | ***Readings*** |
| 1 | The Nature of Science | Lawson, Beveridge and others (*Blackboard* folder) |
| 2 | What is energy? And Energy Types | R & K, chap 1 |
| 3 | Units of Energy | R & K, chap 1 |
| 4 | Energy Conversions | R & K, chap 1 |
| 5 | Energy Use: Heat Engines and Other Things | R & k, chap 1 & 3 |
| 6 | Traditional (Nonrenewable?) Energy Systems: Fossil Fuels | R & K, chap 2 |
| 7 | Nuclear | R & K, chap 6 |
|  | Alternative (Renewable?) Energy Systems | |
| 8 | Solar – Thermal | R & K, chap 4 |
| 9 | Solar - Photovoltaics | R & K, chap 4 |
| 10 | Biofuels | R & K, chap 5 |
| 11 | Wind | R & K, chap 5 |
| 12 | Geothermal | R & K, chap 5 |
| 13 | Hydropower: Lakes, Tides and Oceans | R & K, chap 5 |
| 14 | Energy Conservation | R & K, chap 7 |
| 15 | What is our Energy Future? |  |

**PC 121 Assignment Due Dates – Spring 2009**

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| --- | --- | --- | --- | --- |
| **Due Date** | **Assignmenta** | | **Value** | **Score** |
| Feb 12 | Q1 | | 5 |  |
| Feb 24 | Q2 | | 5 |  |
| Feb 24 | C1 | | 25 |  |
| Feb 26 | T1 | | 100 |  |
| Mar 12 | Q3 | | 5 |  |
| Mar 31 | C2 | | 25 |  |
| Mar 31 | Q4 | | 5 |  |
| Apr 2 | T2 | | 100 |  |
| Apr 3 | LAST DAY TO WITHDRAW W/O PENALTY | | | |
| Apr 6 -11 | **Spring Break – No Classes** | | | |
| Apr 28 | Q5 | 5 | |  |
| May 12 | C3 | 25 | |  |
| May 12 | Q6 | 5b | |  |
| May 14 | T3 | 100 | |  |
| TBD | P/P | 100 | |  |
| **TOTAL** | |  | |  |

**a** Assignments are coded as follows:

Q = Question set T = Test

C = critique PP = Presentation/Paper

**b REMINDER:** Only five (5) of the six (6) question sets count towards your final grade.