February 20, 2015

MEMORANDUM

TO: Jim Woosley, Speaker, Faculty Senate

FROM: Janice Epstein, Co-Chair, Core Curriculum Council
       Dale Rice, Co-Chair, Core Curriculum Council

SUBJECT: Approval actions of the Core Curriculum Council

On December 1, 2014, the following course was approved for the International and Cultural Diversity graduation requirement and was accidently left out of the report to Faculty Senate. We recommend that this addition to the ICD, effective fall 2015, should be considered and approved by the Texas A&M University Faculty Senate.

International and Cultural Diversity

MARS 432  Peak Oil, Global Warming and Resource Scarcity (Galveston)
Texas A&M University

International and Cultural Diversity Cover Sheet

Request for a course to be included in the University Graduation Requirement for International and Cultural Diversity

1. This request is submitted by (department name): Marine Sciences (Galveston)

2. Course prefix and number: MARS 432

3. Texas Common Course Number: Click here to enter text.

4. Complete course title: Peak Oil, Global Warming & Resource Scarcity

5. Semester credit hours: 3

6. Frequency the class will be offered: 1/year

7. Number of sections per semester: 1 (Fall semester)

8. Number of students per semester: 20

9. Historic annual enrollment for the last three years:
   - 2013-2014: 16
   - 2012-2013: 13
   - 2011-2012: 18

10. Statement on how this course meets the criteria for International and Cultural Diversity:
    POGWARS looks at the three issues of Peak Oil, Global Warming and Resource Scarcity from a global perspective. The United Nations projects global population to reach 11 billion by 2100. Over 80% of that increase from today's 7.2 billion will be in the least developed countries of the world. Less than 5% of the current world population is in the United States yet the US consumes nearly 30% of the world's resources. This course looks at non-renewable/renewable energy resources through multiple lenses (e.g. the energy-rich vs energy-poor nations, the wealthy vs the poor counties, the rapidly growing population countries vs those declining in population). There are more people in India without access to electricity (almost 400 million) than the entire population of the United States (320 million). From the Global Warming perspective this course addresses the issues of who are the major greenhouse gas emitters (i.e. US and China) vs who "pays the price" of those emissions vis-à-vis sea level rise (i.e. Bangladesh and the Pacific Island nations), changes in rainfall (i.e. Sub-Saharan Africa), etc. From the Resource Scarcity perspective the course covers issues such as are there enough resources such as copper and lithium to allow the transition to renewables and who has the raw resource and who needs it. Feeding the world's growing population and the need for phosphorus, etc. The entire class revolves around the three big POGWARS issues and how those issues can be or will be addressed both globally and regionally. With emphasis on comparing "have" nations and "have not" nations.

11. Course Instructor

   [Signature]

   Date: 10/10/14

12. Department Head

   [Signature]

   Date: 10/10/14

13. College Dean/Designee

   [Signature]

   Date: 10/10/14

Submit this form and current course syllabus to fso-ccc@tamu.edu or Kristin Harper, TAMU 1125.

See form instructions for submission/approval process.
Peak Oil, Global Warming and Resource Scarcity
MARS 432 – Fall 2014

Text: There is no text book for the course, rather there will be three readers comprising key papers on the three topics (Peak Oil, Global Warming, and Resource Scarcity). The first reader will be ready by Wednesday (9/03) or Friday (9/5) at the latest.

Instructor: Dr. Glenn A. Jones (email: jonesg@tamug.edu; office phone: 741-4360; cell phone 409-392-1665).

Office Hours: Formal: MWF 12N to 2pm. Informal: we can meet after class in the Sea Aggie Center, or we can meet in my office (OCSB 356), after making prior arrangements after class, through email or by phone.

Class: MWF 11:00-11:50 am, SAGC 401.

Learning Outcomes:
In addition to the facts/content related to the specifics of this course, by the end of the semester you should have been exposed to and learned the following broader skills: 1) Apply knowledge from a wide range of courses to solve problems and make decisions. 2) Evaluate, analyze, and integrate information from a variety of sources including peer-reviewed publications, newspapers, opinion pieces, and blog-type sites. 3) Effectively communicate original and creative ideas through the writing of “white papers” and active debate with your peers. 4) Recognize an ethical dilemma and apply rational decision-making in order to address it. 5) Recognize diverse economic, political, and cultural opinions and practices. 6) Exhibit the skills necessary to acquire, organize, reorganize and interpret new knowledge. 7) Participate effectively in teams.

Course Description:
This course reviews the latest thinking about peak oil (energy), resource depletion, and human-induced climate change. Peak Oil (energy) is the point of historic maximum global non-renewable energy production. Climate Change is the alteration of established climate systems due to anthropogenic (human-induced) global warming. The 21st century will be one of unprecedented change and challenge. World population is projected to increase to 11 billion by 2100 from the 7.2 billion today, and over 80% of that increase will occur in the less developed countries of the world. Today, the United States comprises 5% of the world’s population and uses nearly 30% of the world’s resources. In contrast, 1.2 billion of the world’s population do not have access to electricity (50% of those are in sub-Saharan Africa and 30% are in India). Within the first third of the course, we will compare how the developed countries and the least developed countries of the world will gain access to, and use the non-renewable energy sources which are projected to peak by mid-century.

In the second third of the course we review the Intergovernmental Panel on Climate Change (IPCC) projections of increasing greenhouse gases and resultant changes in global temperature, sea-level rise, and regional patterns of drought/rainfall. Here we review how the developed vs. non-developed countries are projected to deal with the issues of global warming (e.g. response to sea-level rise in New York vs. Bangladesh, response to rainfall changes in Southern California
vs. sub-Saharan Africa, and the ethical responsibility of developed countries, who are responsible for increased greenhouse gas emissions, to help the least-developed countries who face the brunt of the consequences of global warming.

In the final third of the course we discuss the resource constraints to feeding, and providing renewable energy to a world with 11 billion. Specific programs such as the UN’s Energy for All and USAID’s Power Africa are discussed in light of resource limitations in available phosphorus for fertilization and food production, copper and lithium availability to provide the resources needed for wind turbines and rare-earth elements for solar panels to replace/supplement the non-renewable energy sources. The extent of these resource limitations will have important consequences in how the world develops in the latter half of the 21st century.

This course is designed to bring an increased awareness of the issues of Peak non-renewable energy, global warming and resource scarcity; the scientific/social/political debates surrounding them; review the individual/local/national/global options for living in a globally-warmed world with declining non-renewable energy and other natural resources; the issues raised in Hardin’s Lifeboat Ethics and how the developed, developing and least developed countries of the world will either become more homogeneous (e.g. Energy for All) or more heterogeneous (e.g. the have nations garner more of the world’s resources at the expense of the have not nations).

Note: Two documentaries will be shown. The documentary “A Crude Awakening” will be shown sometime in late September. This will be shown outside of class at a day/time agreed to by the class. For the outside-of-class documentary pizza will be supplied if a nighttime slot is chosen. “Earth: The Operator’s Manual” will be shown in class sometime in late-October.

Tentative Schedule:

Sep 01–Sep 05: The age of petroleum and Hubbert’s Peak.

Sep 08–Sep 12: The Peak Oil debate: Pros and Cons.

Sep 15–Sep 19: Peak Oil and the United States.

Sep 22–Sep 26: Peak Oil and China, India and the third world.

Sep 29–Oct 01: Modeling depletion after the peak

Oct 03: First exam. From class material, the Peak Oil reader, the Crude Awakening documentary and info obtained as part of your group project.


Oct 13–Oct 17: The evidence for (and against) human-induced climate change.


Nov 07: Second exam. From class material, the Global Warming reader, the “Operator’s Manual” documentary, and info obtained as part of your group project.

Nov 10–Nov 14: Alternative energy sources: Prospects and limitations

Nov 17–Nov 21: Reaching the peak for non-petroleum resources

Nov 24–Nov 26 (?): Political and economic implications of peak resources and global warming

Dec 01–Dec 03: Sustainability and the mitigation of a global economic collapse.

Dec 05: Third exam. From class material, the Resource Scarcity reader, and info obtained as part of your group project.

Dec 16 (11a – 1p): This is the final exam time slot. It will be used for group presentations.

Grading:

Final grade assessment: There are 400 assignable points. A = 360-400, B = 320-359, C = 280 – 319, D = 240–279, F = below 240.

1. In-class exams (300 pts)
   There will be three exams (3 x 100 pts), and no comprehensive final. Exams will consist of approximately 6 in-class essay questions, and possibly one take-home question, that if asked will be handed out one week before the scheduled in-class exam.

2. Group project (total 100 points)
   Project is worth 25% of your final grade, do not think that you can get by without contributing to your group’s overall effort. If you do not pull your own weight the entire group will suffer.

   This project is designed to get you comfortable working collaboratively with others, expose you to research, and give you a chance to teach others about what you have learned. Specific instructions will be handed out during the second week of classes.

   There will be seven groups of 3 each and you will be in your group for the entire semester. You will choose a POGWARS topic/problem that is timely and important both locally and nationally/internationally. There must be at least 2 groups addressing a peak oil issue, at least two groups addressing a climate change issue, and at least 2 groups addressing a resource
scarcity issue. Of course a cleverly chosen topic can address two or three of the main issues discussed in this class. There will be milestones to be met during the semester where you will have to submit your topic with rationale for its choice, Submit a literature search using Web of Science to review the published literature. This is a very powerful tool for researchers in identifying the peer-reviewed literature. Submit a detailed outline of how you will be presenting your project. Submit a tightly written 200 word abstract as if you are proposing to present at the January 2015 NCSE meeting in Washington, D.C. Submit a first draft of your paper. Submit a final paper and make an approximate 12-15 minute (about 4-5 minutes from each member of your group) power point presentation to the class on December 16th. About 20 minutes will be reserved at the end for an open discussion and critique of the presentations and to identify the best mitigation and the best adaptation strategies for society as it progresses through the 21st century.

Note: Kevin Warner (IDP graduate student) will be assisting and we will work with you in organizing your project and helping to make the logistics as smooth as possible. Please feel free to contact him, or me, at any time while working on the project. Kevin’s email address is kewarner@tamu.edu and his desk is on the 3rd floor in Office Suite 340-366, graduate student desk #1.

Institutional Policy Statements

THE AMERICANS WITH DISABILITIES ACT: The Americans with Disabilities Act (ADA), is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact the Counseling Office, Seibel Student Center. For additional information visit http://www.tamug.edu/counsel/services/dssprocedures.htm.

ACADEMIC DISHONESTY: For many years Aggies have followed a Code of Honor, which is stated in this very simple verse: "Aggies do not lie, cheat, or steal, nor do they tolerate those who do." Please refer to the Honor Council Rules and Procedures on the web http://www.tamug.edu/HonorSystem for more information.

ABSENCES: Information concerning absences can be found in the University Student Rules Section 7 (http://www.tamug.edu/stulife/Academic%20Rules/Rule%207.pdf). The university views class attendance as an individual student responsibility. All students are expected to attend class and to complete all assignments. For a University excused absence, the student should contact the Counseling Office to request a letter for the instructor stating that the Associate Vice President for Student Affairs, or his or her designee has verified the student's absence as excused. Please consult the University Student Rules for reasons for excused absences, detailed procedures and deadlines. If the absence is excused in the process as outlined in the University
Student Rules, the student must be given the opportunity to make up the work. The instructor is under no obligation to provide an opportunity for the student to make up work missed because of an unauthorized absence. See Part III, Student Grievance Procedures, Section 49, Unexcused Absences, for more information on appealing an instructor's decision.

FAMILY EDUCATIONAL AND RIGHTS TO PRIVACY ACT (FERPA): FERPA is a federal law designed to protect the privacy of educational records, to establish the right of students to inspect and review their educational records and to provide guidelines for the correction of inaccurate and misleading data through informal and formal hearings. To obtain a listing of directory information or to place a hold on any or all of this information, please consult the Admissions & Records Office. Items that can never be identified as public information are a student’s social security number or institutional identification number, citizenship, gender, grades, GPR or class schedule. All efforts will be made in this class to protect your confidentiality.