THE FACULTY SENATE

December 13, 2005

MEMORANDUM

TO:        President Robert M. Gates
SUBJECT:   Approval of University Curriculum Committee Item (FS.23.81)

At its regular meeting on December 12, 2005, the Faculty Senate approved the following
curriculum item from the University Curriculum Committee and submits it for your approval.
Attached is a copy of the material sent to our Senators.

Special Consideration
Dwight Look College of Engineering
Department of Petroleum Engineering
Certificate in Energy Engineering

Thank you for your time and consideration. Please inform me of your action on this matter.

John L. Fike
Speaker

Attachment

cc:     Dr. David Prior
       Dr. Karan Watson
       Dr. Paul Meyer
       Ms. Linda Lacey
       Dr. G. Kemble Bennett

Approved:

Robert M. Gates, President

2-10-06 Date
MEMORANDUM

TO:        John M. Niedzwecki
           Executive Associate Dean and
           R.P. Gregory '22 Chair Professor

           Dr. Jo Howze
           Associate Dean, Academic Programs

FROM:      Dr. Stephen A. Holditch
           Department Head and Noble Endowed Chair
           Harold Vance Department of Petroleum Engineering

SIGNATURE:  [Signature]


The Harold Vance Department of Petroleum Engineering is proposing an undergraduate certificate program in Energy Engineering. The proposed certificate has been developed by Dr. Christine Ehlig-Economides. This package includes the following documents:

- Proposed Undergraduate Certificate Program in Energy Engineering
- Supporting information from departments offering courses included as approved electives for the certificate program
- New Course Proposal for ENGR 101 Energy Resources: Resources, Utilization, and Importance to Society
- Supporting information from departments of visiting lecturers for the ENGR 101 course

With two exceptions, this proposal involves only existing courses. The first exception is a required new freshman level course, and a new course proposal is included in this package. The other exception is a senior level elective course from Nuclear Engineering, and timing for introduction of this course is not critical to the program.

A proposal was submitted to NSF in May for CCLI funding for preparation of course materials and Honors projects emphasizing sustainable development for two courses: the freshman course required for the certificate and one senior course. If this funding is approved, the plan is to apply for additional funds in spring 2006 with an intention to develop sustainable development modules for the other senior elective courses that do not already have this emphasis.

The intention is to have the ENGR 101 course listed in Catalog 129 for fall 2006 and to initiate offering the certificate program at the same time.
Certificate Proposal
TEXAS A&M UNIVERSITY
DWIGHT LOOK COLLEGE OF ENGINEERING

Proposed Undergraduate Certificate Program
in Energy Engineering

Reason for Being

Recent events have underscored the importance of energy to virtually every commercial enterprise and to individual well being. Existing engineering disciplines touch on energy related topics such as thermodynamics (virtually all engineers), primary energy source extraction (petroleum engineers) and processing (chemical engineers), energy conversions (chemical and mechanical engineers), power generation and transmission (nuclear, mechanical, and power systems/electrical engineers), engine design and efficiency (mechanical and aerospace engineers), energy efficient building design (mechanical and civil engineers), and many others. While there is no shortage of energy overall, interruptions, whether due to disruptions in supply of a primary fuel resource like crude oil, a shortage of electric power, or an electric power transmission failure, have consequences ranging from mere inconvenience to massive lay-offs and economic recession.

Energy is taken for granted by engineers and the general public until an event like the Arab Oil Embargo in 1973, the California blackouts in 2000, or the Northeast power failure in 2003 remind everyone just how dependent productivity and the standard of living are on energy. The typical reactions to energy related problems are to evoke policy solutions such as price controls or draconian conservation measures such as the 55 mph speed limit. Such responses have been largely counterproductive and often outright detrimental.

Energy use invariably has an effect on the environment, whether it is on the water supply, the air we breathe, or depletion of nonrenewable resources. Concepts of sustainable development help to clarify choices in the way energy is used, but such concepts are not yet addressed in mainstream textbooks and established engineering approaches to design and problem solving. There is a need to ingrain sustainable development thinking, or more importantly engineered sustainable development, as a mind set as pervasive as thermodynamics to engineering education.

The objective of the Energy Engineering Certificate would be to provide a framework for engineers and suitably prepared science majors to gain exposure to energy dominated course work from several engineering disciplines with an added commitment to introduce engineered sustainable development into all courses included as electives in the program.
Industry representatives have shown interest in hiring students with this certificate, and letters from a number of corporate executives are included as Attachment 1 to the proposal package.

This certificate will be advertised through departmental advisors and on the Engineering Academic Programs Office website. It will be marketed as value added to the student’s curriculum, similar to other certificate programs.

Who and What the Program is Designed For

The Undergraduate Energy Engineering Certificate is intended to address the interests of industry in educating engineering BS graduates with an interdisciplinary understanding of the importance of energy to any engineering application. The elective courses for the certificate program have been selected with the following criteria in mind:

- Senior level course
- Lack of course prerequisites that would limit ability for the majority of engineering or science disciplines to take the course
- Commitment to develop engineered sustainable develop principles into the course materials over time

As such, the certificate program would be accessible to most engineers and many science majors, particularly physics and chemistry majors and mathematics majors with sufficient science exposure. The ability to offer the certificate to non-engineering majors helps to increase the number of graduates with substantial exposure to engineering thinking, which can be quite different from that of the scientist, particularly as pertains to approaches to sustainable development. Engineered sustainable development will emphasize engineering solutions that address environmental constraints by making the standard of living as good or better while avoiding the need to the resort to regulations that discourage industrial development or that inhibit what people do and the way they live.

Benefits

The value of the certificate to the student will be to broaden his or her exposure to energy and engineered sustainable development applications and thereby differentiate the student from peers.

Industry will value graduates with the Energy Engineering Certificate because they will have a more diverse background enabling them to reach out of the box engineering solutions. Further, the graduates will have a focus that would foster entrepreneurial thinking and expand their employment horizons beyond the traditional industry jobs.

Description

The proposed undergraduate Energy Engineering Certificate will consist of four 3-4 hour courses. The only required course will be offered at the freshmen level and above as ENGR 101 - Energy: Resources, Utilization, and Importance to Society. A plan for
introducing the freshmen course is included as Appendix 1 to this proposal. The remaining courses will be senior level electives in engineering or architecture to be selected from the following list:

- Energy Conservation in Residential Architecture (ARCH 421)
- Process Safety Engineering (CHEN 455)
- Power System Fault Analysis and Protection (ELEN 459)
- Power System Operation and Control (ELEN 460)
- Internal Combustion Engines (MEEN 410)
- Principles of Heating, Ventilating, and Air Conditioning (MEEN 436)
- Principles of Building Energy Analysis (MEEN 437)
- Energy and the Environment (NUEN 483)
- Special Topics in Nuclear Engineering (NUEN 489)
- Petroleum Project Evaluation (PETE 403)

Some of the courses on the list, such as MEEN 436 and MEEN 437, already have content addressing engineered sustainable development. A proposed mechanism to add sustainable development content to the remaining courses is to add Honors projects to each course emphasizing engineered sustainable development strategies. Successful completion of the Honors project would earn Honors credit for the course for eligible Honors students. The initial introduction of the sustainable development concepts in Honors projects facilitates development of new course materials and modern learning strategies with a smaller highly motivated group of students.

Because the elective courses have prerequisites that most engineers are already required to take, prerequisites are not explicitly listed as requirements for the certificate. Students must have the appropriate prerequisites to take the elective courses, and a list of acceptable prerequisites will be coordinated with department student advisors.

List of Faculty
Architecture:
  Charles Culp (ARCH 421)

Chemical Engineering
  Sam Mannan (CHEN 455)

Electrical Engineering
  Karen Butler-Purry (ELEN 459, ELEN 460)
  Gang Huang (ELEN 459, ELEN 460)
  Mladen Kezunovic (ELEN 459, ELEN 460)

Mechanical Engineering
  Tom Laik (MEEN 410)
  Dan Turner (MEEN 436)
  David E. Claridge (MEEN 437)
Nuclear Engineering
   Ramesh Talreja (ENGR 101)
   John Poston (ENGR 483)
   William Burchill (NUEN 489)

Petroleum Engineering
   Christine Ehlig-Economides (ENGR 101)
   Tom Blasingame (ENGR 101)
   Duane McVay (PETE 403)

Statement Whether the Certificate is Dependent on Conferral of Degree

The proposed undergraduate Energy Engineering Certificate Program will be conferred upon completion of the BS degree in engineering or the BS degree in science and award of the diploma.

The proposed course PETE 289 - Energy: Resources, Utilization, and Importance to Society was proposed as a trial Honors course for fall 2005 but was not sufficiently advertised. It will be offered in spring 2006. The Honors program has enthusiastically accepted the course, and much more effort is being made to publicize the course for the spring 2006 semester. Forms for the trial course were approved by the College of Engineering.

The New Course Application form for ENGR 101 - Energy: Resources, Utilization, and Importance to Society is included in this package along with the course syllabus. The intention is to have the Honors course listed in Catalog 129 for Fall 2006, and to start offering the regular course in Fall 2007.

The Honors students will be involved in an application of the Cognitive Apprenticeship Model of Dr. Brian P. Coppola, University of Michigan Chemistry Department. Dr. Coppola employs upper class students who have taken his freshman course as undergraduate peer teachers. A major rationale for the freshman Honors offering is to identify freshman with the potential to eventually do research and become professors and encourage them even as undergraduates to fulfill this potential. The reason to offer the course only for Honors students the first 2 years is to develop a group of upper class students who can become undergraduate peer teachers when the course is first offered to all students. These students will also be encouraged to enroll in the Energy Engineering Certificate program, which will offer additional exposure and project opportunities emphasizing engineered sustainable development.

Honors students in ENGR 101 will be grouped in teams with each team expected to do a project related to the sustainable development theme.

September 21, 2005

MEMORANDUM

TO: Dr. Christine Economides  
Chair, Undergraduate Curriculum Committee  
Harold Vance Department of Petroleum Engineering

THROUGH: Dr. Phillip Tabb  
Professor and Head  
Department of Architecture

FROM: Dr. Stephen A. Holditch  
Department Head and Noble Endowed Chair  
Harold Vance Department of Petroleum Engineering

SUBJECT: Concurrence of Department of Architecture Regarding Proposed Undergraduate Certificate Program in Energy Engineering

Attached is a copy of the proposal for an Undergraduate Certificate Program in Energy Engineering. This proposal lists the following senior level courses as electives from which the certificate candidate must choose any 3:

- Energy Conservation in Residential Architecture (ARCH 421)
- Process Safety Engineering (CHEN 455)
- Power System Fault Analysis and Protection (ELEN 459)
- Power System Operation and Control (ELEN 460)
- Internal Combustion Engines (MEEN 410)
- Principles of Heating, Ventilating, and Air Conditioning (MEEN 436)
- Principles of Building Energy Analysis (MEEN 437)
- Energy and the Environment (NUEN 483)
- Special Topics in Nuclear Engineering (NUEN 489)
- Petroleum Project Evaluation (PETE 403)

Please confirm by Wednesday, September 28, that the courses in the above list that are offered from your department can accommodate students from outside your department who wish to qualify for the certificate. Although the number of students expected to pursue this certificate is not known, if 36 seniors took 3 of the above courses in the senior year, and if they were even distributed among all the courses, on average this would be about 11 additional students per course. However, since most students will select at least one of the elective courses from their own department, the additional numbers of students would be about 7 per course on average.

Dr. Ehlig-Economides has contacted professors for all of the above courses to ensure that they will be accessible to a majority of engineering students without their having to take additional prerequisite courses beyond what they would have done anyway for the degree they are pursuing.
September 21, 2005

MEMORANDUM

TO: Dr. Christine Economides  
Chair, Undergraduate Curriculum Committee  
Harold Vance Department of Petroleum Engineering

THROUGH: Dr. Kenneth Hall  
Brown Professor and Head  
Department of Chemical Engineering

FROM: Dr. Stephen A. Holditch  
Department Head and Noble Endowed Chair  
Harold Vance Department of Petroleum Engineering

SUBJECT: Concurrence of Department of Chemical Engineering Regarding Proposed  
Undergraduate Certificate Program in Energy Engineering

Attached is a copy of the proposal for an Undergraduate Certificate Program in Energy Engineering. This proposal lists the following senior level courses as electives from which the certificate candidate must choose any 3:

- Energy Conservation in Residential Architecture (ARCH 421)
- Process Safety Engineering (CHEN 455)
- Power System Fault Analysis and Protection (ELEN 459)
- Power System Operation and Control (ELEN 460)
- Internal Combustion Engines (MEEN 410)
- Principles of Heating, Ventilating, and Air Conditioning (MEEN 436)
- Principles of Building Energy Analysis (MEEN 437)
- Energy and the Environment (NUEN 483)
- Special Topics in Nuclear Engineering (NUEN 489)
- Petroleum Project Evaluation (PETE 403)

Please confirm by Wednesday, September 28, that the courses in the above list that are offered from your department can accommodate students from outside your department who wish to qualify for the certificate. Although the number of students expected to pursue this certificate is not known, if 36 seniors took 3 of the above courses in the senior year, and if they were evenly distributed among all the courses, on average this would be about 11 additional students per course. However, since most students will select at least one of the elective courses from their own department, the additional numbers of students would be about 7 per course on average.

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September 21, 2005

MEMORANDUM

TO: Dr. Christine Economides  
Chair, Undergraduate Curriculum Committee  
Harold Vance Department of Petroleum Engineering

THROUGH: Dr. Costas Georgiades  
Professor and Head  
Department of Electrical and Computer Engineering

FROM: Dr. Stephen A. Holditch  
Department Head and Noble Endowed Chair  
Harold Vance Department of Petroleum Engineering

SUBJECT: Concurrence of Department of Electrical and Computer Engineering Regarding Proposed Undergraduate Certificate Program in Energy Engineering

Attached is a copy of the proposal for an Undergraduate Certificate Program in Energy Engineering. This proposal lists the following senior level courses as electives from which the certificate candidate must choose any 3:

- Energy Conservation in Residential Architecture (ARCH 421)
- Process Safety Engineering (CHEN 455)
- Power System Fault Analysis and Protection (ELEN 459)
- Power System Operation and Control (ELEN 460)
- Internal Combustion Engines (MEEN 410)
- Principles of Heating, Ventilating, and Air Conditioning (MEEN 436)
- Principles of Building Energy Analysis (MEEN 437)
- Energy and the Environment (NUEN 483)
- Special Topics in Nuclear Engineering (NUEN 489)
- Petroleum Project Evaluation (PETE 403)

Please confirm by Wednesday, September 28, that the courses in the above list that are offered from your department can accommodate students from outside your department who wish to qualify for the certificate. Although the number of students expected to pursue this certificate is not known, if 36 seniors took 3 of the above courses in the senior year, and if they were evenly distributed among all the courses, on average this would be about 11 additional students per course. However, since most students will select at least one of the elective courses from their own department, the additional numbers of students would be about 7 per course on average.

Dr. Economides has contacted professors for all of the above courses to ensure that they will be accessible to a majority of engineering students without their having to take additional prerequisite courses beyond what they would have done anyway for the degree they are pursuing.
MEMORANDUM

TO: Dr. Christine Economides
Chair, Undergraduate Curriculum Committee
Harold Vance Department of Petroleum Engineering

THROUGH: Dr. Dennis O'Neal
Holdredge-Paul Professor and Head
Department of Mechanical Engineering

FROM: Dr. Stephen A. Holditch
Department Head and Noble Endowed Chair
Harold Vance Department of Petroleum Engineering

SUBJECT: Concurrence of Department of Mechanical Regarding Proposed Undergraduate Certificate Program in Energy Engineering

Attached is a copy of the proposal for an Undergraduate Certificate Program in Energy Engineering. This proposal lists the following senior level courses as electives from which the certificate candidate must choose any 3:

- Energy Conservation in Residential Architecture (ARCH 421)
- Process Safety Engineering (CHEN 455)
- Power System Fault Analysis and Protection (ELEN 459)
- Power System Operation and Control (ELEN 460)
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- Special Topics in Nuclear Engineering (NUEN 489)
- Petroleum Project Evaluation (PETE 403)

Please confirm by Wednesday, September 28, that the courses in the above list that are offered from your department can accommodate students from outside your department who wish to qualify for the certificate. Although the number of students expected to pursue this certificate is not known, if 36 seniors took 3 of the above courses in the senior year, and if they were even distributed among all the courses, on average this would be about 11 additional students per course. However, since most students will select at least one of the elective courses from their own department, the additional numbers of students would be about 7 per course on average.

Dr. Economides has contacted professors for all of the above courses to ensure that they will be accessible to a majority of engineering students without their having to take additional prerequisite courses beyond what they would have done anyway for the degree they are pursuing.
MEMORANDUM

TO: Dr. Christine Economides  
Chair, Undergraduate Curriculum Committee  
Harold Vance Department of Petroleum Engineering

THROUGH: Dr. William Burchill  
Professor and Head  
Department of Nuclear Engineering

FROM: Dr. Stephen A. Holditch  
Department Head and Noble Endowed Chair  
Harold Vance Department of Petroleum Engineering

SUBJECT: Concurrence of Department of Nuclear Engineering Regarding Proposed Undergraduate Certificate Program in Energy Engineering

Attached is a copy of the proposal for an Undergraduate Certificate Program in Energy Engineering. This proposal lists the following senior level courses as electives from which the certificate candidate must choose any 3:

- Energy Conservation in Residential Architecture (ARCH 421)
- Process Safety Engineering (CHEN 455)
- Power System Fault Analysis and Protection (ELEN 459)
- Power System Operation and Control (ELEN 460)
- Internal Combustion Engines (MEEN 410)
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- Energy and the Environment (NUEN 483)
- Special Topics in Nuclear Engineering (NUEN 489)
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Dr. Ehlig-Economides has contacted professors for all of the above courses to ensure that they will be accessible to a majority of engineering students without their having to take additional prerequisite courses beyond what they would have done anyway for the degree they are pursuing.
ENGR 101 New Course Request
Texas A&M University
Departmental Request for a New Course

Undergraduate  Graduate  Professional
Submit original form and 25 copies. Attach a course syllabus to each.*

1. This course is submitted by the Department of Petroleum Engineering.
2. Course prefix, number and complete title of course: ENGR 101
   Energy: Resources, Utilization, and Importance to Society
3. Course description (not more than 50 words): introductory course about current and potential energy
   sources, the link between energy and wealth, and the consequences of action or inaction concerning
   energy and the environment.
4. Prerequisite(s)  None  Cross-listed with
   Cross-listed courses require the signatures of both department heads.
5. Is this a variable credit course?  __ Yes  __ No  If yes, from _________ to _________
6. Is this a repeatable course  __ Yes  __ No  If yes, this course may be taken _________ times.
   Will the course be repeated within the same semester/term?  __ Yes  __ No
7. Has this course been taught as 489/689?  __ Yes  __ No  If yes, how many times? ______
   Indicate the number of students enrolled for each academic period it was taught.
8. This course will be:
   a. Required for students enrolled in the following degree program(s) (e.g., B.A. in history)
   b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)
9. If other departments are teaching or are responsible for related subject matter, the course must be coordinated with
   these departments. Attach approval letters.

10. | Prefix | Course # | Title (exclude punctuation) |
    |--------|----------|-----------------------------|
    | ENGR   | 101      | ENERGY RSRC USE IMPR TC E   |
    | Lect.  | Lab SCH  | Subject Matter Content Code |
    | 03 01 04 |         | Admin. Unit Academic Year FICE Code |
    |        |          | 01 03 66                     |

   Do not complete shaded areas.

Approval recommended by:

[Signature]  29 Apr 2005
Head of Department  Date

Chair, College Review Committee  Date

[Signature]  10-19-05
Dean of College  Date

Head of Department (if cross-listed course)  Date

Submitted to Coordinating Board by:

Dean of College  Date

Director of Academic Support Services  Date  Effective Date

* Attach a syllabus with a course outline of sufficient detail to permit an accurate evaluation of the course content. Include a list of books (indicate authors), titles of scientific journals or other resource materials. Also include the method by which students will be evaluated.

To have this form reviewed, please send to Linda F. Lacey, Mail Stop 1265 or fax to 847-8737. OAR/AS-11/96
COLLEGE OF ENGINEERING — TEXAS A&M UNIVERSITY
DEPARTMENT OF PETROLEUM ENGINEERING

Proposed Course Syllabus (Use 15 weeks as a standard semester)

Course Number/Name: ENGR 101 — Energy: Resources, Utilization, and Importance to Society
Hours: Theory: 3 Practice: 1 Total: 4 Credits: 4
Prerequisites: Undergraduate Classification

Curricula Requiring this Course: [x] None, it will be elective.
1. B.S. in any major
2. 
3. 
4. 
5. 
6. 

Description of Course: (Concise statement of purpose or design): (50 words or less)

Introductory course about current and potential energy sources, the link between energy and wealth, and the consequences of action or inaction concerning energy and the environment

Course Instructor:
Dr. Christine Economides Dr. Thomas A. Blasingame
Tel. (979) 458-0797 Tel. (979) 845-2292
Office: Rm. 401F RICH Office: Rm. 815 RICH
e-mail: cce@symet.net e-mail: t-blasingame@tamu.edu

Prerequisite(s):
This course is an introduction to current and potential energy issues — and how these might impact the earth's environment. The course has no prerequisites, and is open to any undergraduate or graduate student.

Textbook(s):

Course Outline by Major Topics and Approximate Time for Each:

<table>
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<tr>
<th>Week</th>
<th>Topics</th>
<th>Hours Th</th>
<th>Hours Pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Energy — Link with wealth, size of energy industry, dominance of hydrocarbons</td>
<td>3</td>
<td>-1</td>
</tr>
<tr>
<td>2</td>
<td>Energy Conversions, energy for heating, energy storage</td>
<td>3</td>
<td>-1</td>
</tr>
<tr>
<td>3</td>
<td>Engines and Energy for Transportation—steam, internal combustion, jet engines</td>
<td>3</td>
<td>-1</td>
</tr>
<tr>
<td>4</td>
<td>Electricity—Power generation, transmission, conserving electricity</td>
<td>3</td>
<td>-1</td>
</tr>
<tr>
<td>5</td>
<td>Oil — Resource: History, geology, exploration, production</td>
<td>3</td>
<td>-1</td>
</tr>
<tr>
<td>6</td>
<td>Oil — Conversion: Refining, products, policies/policies of oil</td>
<td>3</td>
<td>-1</td>
</tr>
<tr>
<td>7</td>
<td>Oil — 20th Century Fuel: transportation, environmental, conservation/economics</td>
<td>3</td>
<td>-1</td>
</tr>
<tr>
<td>8</td>
<td>Natural Gas — 21st Century Fuel: Resources, supply, distribution, utilization, products</td>
<td>3</td>
<td>-1</td>
</tr>
<tr>
<td>9</td>
<td>Coal — Resource: History, geology/geography, mining, utilization</td>
<td>3</td>
<td>-1</td>
</tr>
<tr>
<td>10</td>
<td>Coal — Conversion: Liquefaction/gasification, shale oil/gas, tar sands, environment</td>
<td>3</td>
<td>-1</td>
</tr>
<tr>
<td>11</td>
<td>Energy and Environment — hydrocarbon dominance, global warming, scarcity</td>
<td>3</td>
<td>-1</td>
</tr>
<tr>
<td>12</td>
<td>Nuclear — History (present and future roles), utilization, policy/policies</td>
<td>3</td>
<td>-1</td>
</tr>
<tr>
<td>13</td>
<td>Hydroelectric and Geothermal — Water and environment</td>
<td>3</td>
<td>-1</td>
</tr>
<tr>
<td>14</td>
<td>Alt. Energy — Biomass: Agriculture sources, utilization, waste sources</td>
<td>3</td>
<td>-1</td>
</tr>
<tr>
<td>Total</td>
<td>45</td>
<td>-15</td>
<td></td>
</tr>
</tbody>
</table>

Course grading:
Examinations (3) ................................................................. 60 percent
Short Quizzes ................................................................. 15 percent
Homework/Other ............................................................ 15 percent
Participation ................................................................. 10 percent
100 percent

Miscellaneous:
ABET Classification: Science: x Design: Math: Other: 
Laboratory Requirements: Yes: x No: 
Equipment Required: None (recitation/concepts laboratory)
**Additional Information:**

**Instructor Cadre:**

Christine Ehlig-Economides (Lead Instructor) (PETE)
Tom Blasingame (Lead Co-Instructor) (PETE)

**Participating Instructors:**

Robin Auernriedh (CVEN)
Maria Barrufet (PETE)
Bill Burchill (NUEN)
Ken Hall (CHEN)
Bruce Herbert (GEPL)
Rodney Hill (ARCH)
Mark Holtzapple (CHEN)
Mladen Kezunovic (ELEN)
Bruce McCarl (AGEC)
Jim Mjelde (AGEC)
Ramesh Talreja (AERO)
John Thomas (RPTS)

**Learning Objectives:**

- Be able to describe the size and importance of the energy industry.
- Be able to recognize the link between energy and wealth for nations (and states/provinces/territories).
- Be able to compare and contrast energy sources, conversions, and carriers — and to recognize that these issues are neither interchangeable nor reversible.
- Be familiar with the production, consumption, and utilization of various energy resources.
- To recognize the environmental costs of a specific energy resource (or potential resource(s)), and to provide a framework for evaluating a particular energy resource with regard to environmental costs.
- To describe the specific consequences of action or inaction concerning energy and the environment.

**Pedagogy:**

- Imposed reading prior to lecture — lecture will be derived from reading materials, and students are expected to have reviewed such materials thoroughly prior to lecture.
- Lecture materials will be used to stimulate and initiate dialog.

**Lecture Format:**

Lecture each week will focus 1-2 sessions on material based on the textbook, enriched and updated as needed — as well as 1-2 sessions on related topics, most of which are not covered in the textbook. Such topics may include economics, conservation, environmental concerns, sustainability, architecture, etc.

**Recitation Format:**

The weekly recitation will emphasize sustainable development implications of the material each week. Students will be expected to participate in discussions of lecture and reading materials.
ADA Policy Statement: (Texas A&M University Policy Statement)

Americans with Disabilities Act (ADA) Policy Statement

The following ADA Policy Statement (part of the Policy on Individual Disabling Conditions) was submitted to the University Curriculum Committee by the Department of Student Life. The policy statement was forwarded to the Faculty Senate for information.

The Americans with Disabilities Act (ADA) is a federal antidiscrimination 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 believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities in Room 126 of the Koldus Building or call 845-1637.

Academic Integrity Statement: (Texas A&M University Policy Statement)

Academic Integrity Statement

All syllabi shall contain a section that states the Aggie Honor Code and refers the student to the Honor Council Rules and Procedures on the web.

Aggie Honor Code

"An Aggie does not lie, cheat, or steal or tolerate those who do."

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the Texas A&M University community from the requirements or the processes of the Honor System. For additional information please visit: www.tamu.edu/aggiehonor/

On all course work, assignments, and examinations at Texas A&M University, the following Honor Pledge shall be preprinted and signed by the student:

"On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work."

Coursework Copyright Statement: (Texas A&M University Policy Statement)

Suggested for Inclusion in Your First Day Handout or Syllabus

The handouts used in this course are copyrighted. By "handouts," this means all materials generated for this class, which include but are not limited to syllabi, quizzes, exams, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, you do not have the right to copy them, unless you are expressly granted permission.

As commonly defined, plagiarism consists of passing off as one's own the ideas, words, writings, etc., that belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated.

If you have any questions about plagiarism and/or copying, please consult the latest issue of the Texas A&M University Student Rules, under the section "Scholastic Dishonesty."
MEMORANDUM

TO: Dr. Christine Economides  
Chair, Undergraduate Curriculum Committee  
Harold Vance Department of Petroleum Engineering

THROUGH: Dr. David V. Rosowsky  
Professor and Head  
Zachry Department of Civil Engineering

FROM: Dr. Stephen A. Holditch  
Department Head and Noble Endowed Chair  
Harold Vance Department of Petroleum Engineering

SUBJECT: Concurrency of Department of Civil Engineering Regarding Proposed ENGR 101 Course

Attached is a copy of the proposal for a new course ENGR 101 Energy: Resources, Utilization, and Importance to Society. This proposal lists the following faculty as guest lecturers in the course:

- Robin Autenrieth (CVEN)  
- Bill Burchill (NUEN)  
- Ken Hall (CHEN)  
- Bruce Herbert (GEPL)  
- Rodney Hill (ARCH)  
- Mark Hortapple (CHEN)  
- Peter Hugill (GEOG)  
- Mladen Kuzmunic (ELEN)  
- Bruce McCaldy (AGEC)  
- Jim Mjelde (AGEC)  
- Ramesh Talreja (AERO)  
- John Thomas (RPTS)

With the exception of Ramesh Talreja, who will be managing the recitation part of the course, only 1 or 2 lectures have been requested from guest lecturers. Funded by an Honors course development grant, each lecturer will receive a copy of the textbook used in the course. The plan is to invite guest lecturers for the first and second times the course is offered, when it is only to be offered to Honors students. In 2007, the course will be offered to both Honors and regular students, and at that time the need for guest lecturers will be reassessed.

The course has been listed as PETE 289 for spring 2006, and is proposed as ENGR 101 for the fall 2006 Catalog 129.

Please confirm by Wednesday, September 28, that the above professors have your approval to participate in this new and exciting TAMU course offering.

September 21, 2005

3116 TAMU - 507 Richardson Building, College Station, Texas 77843-3116  
(979) 845-2243 / FAX (979) 862-6579 / http://www.pe.tamu.edu
September 27, 2005

MEMORANDUM

TO: Dr. Stephen A. Holditch  
   Department Head and Noble Endowed Chair  
   Harold Vance Department of Petroleum Engineering

FROM: Dr. Christine Economides  
      Chair, Undergraduate Curriculum Committee  
      Harold Vance Department of Petroleum Engineering

SUBJECT: Concurrence of Department of Petroleum Engineering Regarding Proposed ENGR 101 Course

Attached is a copy of the proposal for a new course ENGR 101 Energy: Resources, Utilization, and Importance to Society. This proposal lists the following faculty as guest lecturers in the course:

Robin Autenrieth (CVEN)  
Maria Barrufet (PETE)  
Bill Burchill (NUEEN)  
Ken Hall (CHEN)  
Bruce Herbert (GEPL)  
Rodney Hill (ARCH)  
Mark Holtzapple (CHEN)  
Mladen Kezunovic (ELEN)  
Bruce McCarl (AGEC)  
Jim Mjelde (ADMC)  
Ramesh Talreja (AERO)  
John Thomas (RPTS)

With the exception of Ramesh Talreja, who will be managing the recitation part of the course, only 1 or 2 lectures have been requested from guest lecturers. Funded by an Honors course development grant, each lecturer will receive a copy of the textbook used in the course. The plan is to invite guest lecturers for the first and second times the course is offered, when it is only to be offered to Honors students. In 2007, the course will be offered to both Honors and regular students, and at that time the need for guest lecturers will be reassessed.

The course has been listed as PETE 289 for spring 2006, and is proposed as ENGR 101 for the fall 2006 Catalog 129.

Please confirm by Wednesday, September 28, that Maria Barrufet has your approval to participate in this new and exciting TAMU course offering.

3116 TAMU, 507 Richardson Building, College Station, Texas 77843-3116  
(979) 845-2243 – FAX (979) 862-6579 – http://pumpjack.tamu.edu
MEMORANDUM

TO:        Dr. Christine Economides
            Chair, Undergraduate Curriculum Committee
            Harold Vance Department of Petroleum Engineering

THROUGH:   Dr. Kenneth Hall
            Brown Professor and Head
            Department of Chemical Engineering

FROM:      Dr. Stephen A. Holditch
            Department Head and Noble Endowed Chair
            Harold Vance Department of Petroleum Engineering

SUBJECT:   Concurrence of Department of Chemical Engineering Regarding Proposed ENGR 101 Course

Attached is a copy of the proposal for a new course ENGR 101 Energy: Resources, Utilization, and Importance to Society. This proposal lists the following faculty as guest lecturers in the course:

Robin Autenrieth (CVEN)
Bill Burchill (NUEN)
Ken Hall (CHEN)
Bruce Herbert (GEPL)
Rodney Hill (ARCH)
Mark Holtzapple (CHEN)
Peter Hugill (GEOG)
Mladen Kezmanovic (ELEN)
Bruce McCarl (AGEC)
Jim Mjelde (AGEC)
Ramesh Talreja (AERO)
John Thomas (RPTS)

With the exception of Ramesh Talreja, who will be managing the recitation part of the course, only 1 or 2 lectures have been requested from guest lecturers. Funded by an Honors course development grant, each lecturer will receive a copy of the textbook used in the course. The plan is to invite guest lecturers for the first and second times the course is offered, when it is only to be offered to Honors students. In 2007, the course will be offered to both Honors and regular students, and at that time the need for guest lecturers will be reassessed.

The course has been listed as PETE 289 for spring 2006, and is proposed as ENGR 101 for the fall 2006 Catalog 129.

Please confirm by Wednesday, September 28, that the above professors have your approval to participate in this new and exciting TAMU course offering.
MEMORANDUM

TO: Dr. Christine Economides  
Chair, Undergraduate Curriculum Committee  
Harold Vance Department of Petroleum Engineering

THROUGH: Dr. Richard L. Carlson  
Dudley J. Hughes Professor and Head  
Department of Geology and Geophysics

FROM: Dr. Stephen A. Holditch  
Department Head and Noble Endowed Chair  
Harold Vance Department of Petroleum Engineering

SUBJECT: Concurrence of Department of Geology and Geophysics Regarding Proposed ENGR 101 Course

Attached is a copy of the proposal for a new course ENGR 101 Energy: Resources, Utilization, and Importance to Society. This proposal lists the following faculty as guest lecturers in the course:

Robin Autenrieth (CVEN)  
Bill Burchill (NUEN)  
Ken Hall (CHEN)  
Bruce Herbert (GEPL)  
Rodney Hill (ARCH)  
Mark Holtzapffe (CHEN)  
Peter Hugill (GEOG)  
Mladen Kezunovic (ELEN)  
Bruce McCarch (AGEC)  
Jim Mjelde (AGEC)  
Ramesh Talreja (AERO)  
John Thomas (RPTS)

With the exception of Ramesh Talreja, who will be managing the recitation part of the course, only 1 or 2 lectures have been requested from guest lecturers. Funded by an Honors course development grant, each lecturer will receive a copy of the textbook used in the course. The plan is to invite guest lecturers for the first and second times the course is offered, when it is only to be offered to Honors students. In 2007, the course will be offered to both Honors and regular students, and at that time the need for guest lecturers will be reassessed.

The course has been listed as PETE 289 for spring 2006, and is proposed as ENGR 101 for the fall 2006 Catalog 129.

Please confirm by Wednesday, September 28, that the above professors have your approval to participate in this new and exciting TAMU course offering.

September 21, 2005
MEMORANDUM

TO: Dr. Christine Economides
   Chair, Undergraduate Curriculum Committee
   Harold Vance Department of Petroleum Engineering

THROUGH: Dr. Costas Georgiades
         Professor and Head
         Department of Electrical and Computer Engineering

FROM: Dr. Stephen A. Holditch
       Department Head and Noble Endowed Chair
       Harold Vance Department of Petroleum Engineering

SUBJECT: Concurrence of Department of Electrical and Computer Engineering Regarding Proposed ENGR 101 Course

Attached is a copy of the proposal for a new course ENGR 101 Energy: Resources, Utilization, and Importance to Society. This proposal lists the following faculty as guest lecturers in the course:

- Robin Autenrieth (CVEN)
- Bill Burchill (NUEN)
- Ken Hall (CHEN)
- Bruce Herbert (GEPL)
- Rodney Hill (ARCH)
- Mark Holtzapple (CHEN)
- Peter Hugill (GEOG)
- Mladen Kezunovic (ELEN)
- Bruce McCarl (AGEC)
- Jim Mjelde (AGEC)
- Ramesh Talreja (AERO)
- John Thomas (RPTS)

With the exception of Ramesh Talreja, who will be managing the recitation part of the course, only 1 or 2 lectures have been requested from guest lecturers. Funded by an Honors course development grant, each lecturer will receive a copy of the textbook used in the course. The plan is to invite guest lecturers for the first and second times the course is offered, when it is only to be offered to Honors students. In 2007, the course will be offered to both Honors and regular students, and at that time the need for guest lecturers will be reassessed.

The course has been listed as PETE 289 for spring 2006, and is proposed as ENGR 101 for the fall 2006 Catalog 129.

Please confirm by Wednesday, September 28, that the above professors have your approval to participate in this new and exciting TAMU course offering.
TO: Dr. Christine Economides  
Chair, Undergraduate Curriculum Committee  
Harold Vance Department of Petroleum Engineering

THROUGH: Dr. Mardelle Shepley  
Head, Department of Architecture

FROM: Dr. Julie Rogers  
Associate Head, Department of Architecture

RE: Proposed ENGR 101 Course

Thank you for the information you provided the Department of Architecture regarding the proposed ENGR 101 Course – *Energy: Resources, Utilization and Importance to Society*. I have signed the attached forms giving approval for Rodney Hill to serve as a guest lecturer for the course. Please note Dr. Tabb is no longer Department Head. Thank you and good luck with this new course offering.
MEMORANDUM

TO: Dr. Christine Economides  
Chair, Undergraduate Curriculum Committee  
Harold Vance Department of Petroleum Engineering

THROUGH: Dr. Phillip Tabb  
Professor and Head  
Department of Architecture

FROM: Dr. Stephen A. Holditch  
Department Head and Noble Endowed Chair  
Harold Vance Department of Petroleum Engineering

SUBJECT: Concurrence of Department of Architecture Regarding Proposed ENGR 101 Course

Attached is a copy of the proposal for a new course ENGR 101 Energy: Resources, Utilization, and Importance to Society. This proposal lists the following faculty as guest lecturers in the course:

- Robin Autenrieth (CVEN)
- Bill Burchill (NUEN)
- Ken Hall (CHEN)
- Bruce Herbert (GEPL)
- Rodney Hill (ARCH)
- Mark Holtzapple (CHEN)
- Peter Hugill (GEOG)
- Mladen Kuzunovic (ELEN)
- Bruce McCarl (AGEC)
- Jim Mjelde (AGEC)
- Ramesh Talreja (AERO)
- John Thomas (RPTS)

With the exception of Ramesh Talreja, who will be managing the recitation part of the course, only 1 or 2 lectures have been requested from guest lecturers. Funded by an Honors course development grant, each lecturer will receive a copy of the textbook used in the course. The plan is to invite guest lecturers for the first and second times the course is offered, when it is only to be offered to Honors students. In 2007, the course will be offered to both Honors and regular students, and at that time the need for guest lecturers will be reassessed.

The course has been listed as PETE 289 for spring 2006, and is proposed as ENGR 101 for the fall 2006 Catalog 129.

Please confirm by Wednesday, September 28, that the above professors have your approval to participate in this new and exciting TAMU course offering.
MEMORANDUM

TO: Dr. Christine Economides
   Chair, Undergraduate Curriculum Committee
   Harold Vance Department of Petroleum Engineering

THROUGH: Dr. John P. Nichols
   Professor and Interim Head
   Department of Agricultural Economics

FROM: Dr. Stephen A. Holditch
   Department Head and Noble Endowed Chair
   Harold Vance Department of Petroleum Engineering

SUBJECT: Concurrence of Department of Agricultural Economics Regarding Proposed ENGR 101 Course

Attached is a copy of the proposal for a new course ENGR 101 Energy: Resources, Utilization, and Importance to Society. This proposal lists the following faculty as guest lecturers in the course:

- Robin Autenrieth (CVEN)
- Bill Burchill (NUEN)
- Ken Hall (CHEN)
- Bruce Herbert (GEPL)
- Rodney Hill (ARCH)
- Mark Holtzapple (CHEN)
- Peter Hugill (GEOG)
- Miladin Kuzunovic (ELEN)
- Bruce McCarl (AGEC)
- Jim Mjelde (AGEC)
- Ramesh Talreja (AERO)
- John Thomas (RPTS)

With the exception of Ramesh Talreja, who will be managing the recitation part of the course, only 1 or 2 lectures have been requested from guest lecturers. Funded by an Honors course development grant, each lecturer will receive a copy of the textbook used in the course. The plan is to invite guest lecturers for the first and second times the course is offered, when it is only to be offered to Honors students. In 2007, the course will be offered to both Honors and regular students, and at that time the need for guest lecturers will be reassessed.

The course has been listed as PETE 289 for spring 2006, and is proposed as ENGR 101 for the fall 2006 Catalog 129.

Please confirm by Wednesday, September 28, that the above professors have your approval to participate in this new and exciting TAMU course offering.
MEMORANDUM

TO: Dr. Christine Economides
   Chair, Undergraduate Curriculum Committee
   Harold Vance Department of Petroleum Engineering

THROUGH: Dr. Helen Reed
          Professor and Head
          Department of Aerospace Engineering

FROM: Dr. Stephen A. Holditch
       Department Head and Noble Endowed Chair
       Harold Vance Department of Petroleum Engineering

SUBJECT: Concurrency of Department of Aerospace Engineering Regarding Proposed ENGR 101 Course

Attached is a copy of the proposal for a new course ENGR 101 Energy: Resources, Utilization, and Importance to Society. This proposal lists the following faculty as guest lecturers in the course:

Robin Autenrieth (CVEN)
Bill Burchill (NUEN)
Ken Hall (CHEN)
Bruce Herbert (GEPL)
Rodney Hill (ARCH)
Mark Hootzapple (CHEN)
Peter Hagill (GEOG)
Mladen Kezanovic (ELEN)
Bruce McCarl (AGEC)
Jim Mjelde (AGEC)
Ramesh Talreja (AERO)
John Thomas (RPTS)

With the exception of Ramesh Talreja, who will be managing the recitation part of the course, only 1 or 2 lectures have been requested from guest lecturers. Funded by an Honors course development grant, each lecturer will receive a copy of the textbook used in the course. The plan is to invite guest lecturers for the first and second times the course is offered, when it is only to be offered to Honors students. In 2007, the course will be offered to both Honors and regular students, and at that time the need for guest lecturers will be reassessed.

The course has been listed as PETE 289 for spring 2006, and is proposed as ENGR 101 for the fall 2006 Catalog 129.

Please confirm by Wednesday, September 28, that the above professors have your approval to participate in this new and exciting TAMU course offering.

September 21, 2005
MEMORANDUM

TO: Dr. Christine Economides
Chair, Undergraduate Curriculum Committee
Harold Vance Department of Petroleum Engineering

THROUGH: Dr. Joseph O’Leary
Professor and Head
Department of Recreation, Park and Tourism Sciences

FROM: Dr. Stephen A. Holditch
Department Head and Noble Endowed Chair
Harold Vance Department of Petroleum Engineering

SUBJECT: Concurrence of Department of Recreation, Park and Tourism Sciences Regarding Proposed ENGR 101 Course

Attached is a copy of the proposal for a new course ENGR 101 Energy: Resources, Utilization, and Importance to Society. This proposal lists the following faculty as guest lecturers in the course:

Robin Autenrieth (CVEN)
Bill Burchill (NUEN)
Ken Hall (CHEN)
Bruce Herbert (GEPL)
Rodney Hill (ARCH)
Mark Holtzapple (CHEN)
Peter Hugill (GEOG)
Mladen Kezunovic (ELEN)
Bruce McCaul (AGEC)
Jim Mjelde (AGEC)
Ramesh Talreja (AERO)
John Thomas (RPTS)

With the exception of Ramesh Talreja, who will be managing the recitation part of the course, only 1 or 2 lectures have been requested from guest lecturers. Funded by an Honors course development grant, each lecturer will receive a copy of the textbook used in the course. The plan is to invite guest lecturers for the first and second times the course is offered, when it is only to be offered to Honors students. In 2007, the course will be offered to both Honors and regular students, and at that time the need for guest lecturers will be reassessed.

The course has been listed as PETE 289 for spring 2006, and is proposed as ENGR 101 for the fall 2006 Catalog 129.

Please confirm by Wednesday, September 28, that the above professors have your approval to participate in this new and exciting TAMU course offering.

Christine Ehlig-Economides
Albert B. Stevens Endowed Chair
401F Richardson
979-458-0797
coeconomides@spindletop.tamu.edu
MEMORANDUM

TO:          Dr. Christine Economides  
             Chair, Undergraduate Curriculum Committee
             Harold Vance Department of Petroleum Engineering

THROUGH:     Dr. William Burchill  WEB
             Professor and Head
             Department of Nuclear Engineering

FROM:        Dr. Stephen A. Holditch
             Department Head and Noble Endowed Chair
             Harold Vance Department of Petroleum Engineering

SUBJECT:     Concurrency of Department of Nuclear Engineering Regarding Proposed ENGR 101 Course

Attached is a copy of the proposal for a new course ENGR 101 Energy: Resources, Utilization, and Importance to Society. This proposal lists the following faculty as guest lecturers in the course:

Robin Autenrieth (CVEN)
Bill Burchill (NUEN)
Ken Hall (CHEN)
Bruce Herbert (GEPL)
Rodney Hill (ARCH)
Mark Holtzapple (CHEN)
Peter Hugill (GEOG)
Mladen Kezunovic (ELIP)
Bruce McCarl (AGEC)
Jim Mjelde (AGEC)
Ramesh Talreja (AERO)
John Thomas (RPTS)

With the exception of Ramesh Talreja, who will be managing the recitation part of the course, only 1 or 2 lectures have been requested from guest lecturers. Funded by an Honors course development grant, each lecturer will receive a copy of the textbook used in the course. The plan is to invite guest lecturers for the first and second times the course is offered, when it is only to be offered to Honors students. In 2007, the course will be offered to both Honors and regular students, and at that time the need for guest lecturers will be reassessed.

The course has been listed as PETE 289 for spring 2006, and is proposed as ENGR 101 for the fall 2006 Catalog 129.

Please confirm by Wednesday, September 28, that the above professors have your approval to participate in this new and exciting TAMU course offering.

September 21, 2005

3116 TAMU - 507 Richardson Building, College Station, Texas 77843-3116
(979) 845-2243 / FAX (979) 862-6576 / http://www.pe.tamu.edu
May 16, 2005

Dr. Christine A. Ehlig-Economides
Professor and Albert B. Stevens Endowed Chair
Petroleum Engineering
401F Richardson Building, TAMU 3116
College Station, TX 77843-3116

Dear Dr. Ehlig-Economides:

As Associate Dean of Academic Programs, I wholeheartedly endorse the proposal to develop an Energy Engineering Certificate Program. It is a college level priority to develop interdisciplinary certificate programs, and this one certainly qualifies. I have approved the Honors Course entitled “Energy: Resources, Utilization, and Importance to Society,” and I am pleased with the idea to apply sustainable development in this and in the other courses planned for the certificate program.

As the PI for the NSF STEPS program at Texas A&M University, I have seen the tremendous success of the peer teacher concept and I am glad to see this approach being applied for the freshman energy course. The additional Honor’s offerings for the senior level courses in the EECP, and the longer term goal to bring more sustainable development thinking into our engineering courses represent very real mechanisms to improve the quality of our undergraduate engineering education.

Sincerely,

Jo W. Howze
Associate Dean
Engineering Academic Programs
National Science Foundation  
4201 Wilson Blvd.  
Washington, D.C. 21001

As Executive Director of the Office of Honors Programs and Academic Scholarships at Texas A&M University, I am pleased to comment on efforts to develop the Energy Engineering Certificate Program with its emphasis on Honors sections. We strive to provide enhanced undergraduate experiences for our Honors students. Additional Honors sections in the Lick College of Engineering are certainly a plus, and the strategy to select courses that can be taken by different engineering majors as well as by suitably qualified non-engineering majors is especially attractive. Both the energy and sustainable development themes are very appropriate and a good fit with institutional goals.

I have approved the Honors Course entitled “Energy: Resources, Utilization, and Importance to Society,” and I am looking forward to the trial offering this fall. Dr. Ehlig-Economides has involved me and the Center for Teaching Excellence in developing this course, and we are very supportive of the approach.

Sincerely,

[Signature]
Edward A. Funkhouser, Ph.D.  
Executive Director

EAF/ef
May 10, 2005

National Science Foundation
4201 Wilson Blvd.
Washington, D.C. 21001

This letter is being written in support of the NSF CCLI Proposal being submitted by Dr. Christine Ehlig-Economides. More and more universities are moving to develop curricula surrounding the entire issue of energy. The Energy Engineering Certificate Program will help Texas A&M University put more focus on energy and sustainable development. Eventually, I envision the need for an energy engineering discipline.

Dr. Economides has developed a new energy course entitled “Energy: Resources, Utilization, and Importance to Society” which will be offered to Freshmen students starting this next year. This course is an introduction to current and potential energy issues, and how these might impact the earth’s environment. The objective of this course is for our students to be able to describe the size and importance of the energy industry; recognize the link between energy and wealth for nations; compare and contrast energy sources, conversions, and carriers; to recognize that these issues are not interchangeable (nor reversible); be familiar with the production, consumption, and utilization of various energy resources; recognize the environmental costs of a specific energy resource (or potential resources); to provide a framework for evaluating a particular energy resource with regard to environmental costs; and describe the specific consequences of action or inaction concerning energy and the environment.

Sincerely,

Stephen A. Holditch
Department Head
Noble Endowed Chair

3116 TAMU, 507 Richardson Building, College Station, Texas 77843-3116
(979) 845-2243 – FAX (979) 862-6579 – http://www.pe.tamu.edu
Dr. Christine A. Ehlig-Economides,
Professor and Albert A. Stevens Endowed Chair,
Petroleum Engineering,
401F Richardson Building, TAMU 3116,
College Station, TX 77843-3116.  

May 17, 2005

Dear Dr. Ehlig-Economides,

I would like to express my strong endorsement of the Energy Engineering Certificate Program being developed at Texas A&M University. Saudi Aramco, Petroleum Engineering hires graduates from Texas A&M. Furthermore, we rely on Texas A&M as a University of distinction, as part of both undergraduate and advanced degree programs for its employees.

I hold the position of Manager, Reservoir Management Department, Petroleum Engineering. I oversee the Company’s production commitments and reservoir management activities (10.5 million barrels of daily crude output) and strategic planning activities for its oil and gas assets, which constitute roughly one quarter of the global conventional oil reserves. I am acutely aware of the growing global demand for energy. We in Reservoir Management/Petroleum Engineering in Saudi Aramco, are very supportive of the idea to educate energy engineers that understand the broad scope of the entire energy business and will consider the certificate experience a plus in our hiring practice. We are particularly attracted to the emphasis on sustainable development, because we see this as a necessary component to maintenance of a long-term energy supply.

In addition to the courses on campus, we hope that this program will produce continuing education short courses that could be available to our employees.

Yours sincerely,

Nansen G. Saleri, Ph.D.,
Manager,
Reservoir Management Department.

Copy to: Chief Petroleum Engineer, PE
          Executive Director, PED

Petroleum Engineering, Saudi Aramco,
Reservoir Management Department,
Expec Building 729, Room 7260A,
Dhahran, 31311,
Saudi Arabia.

Telephone (W): (011-966)3-874 7441
Fax: (011-966)3-873 8963
E-mail: nansen.saleri@aramco.com
Dr. Christine A. Ehlig-Economides  
Professor and Albert B. Stevens Endowed Chair  
Petroleum Engineering  
401F Richardson Building, TAMU 3116  
College Station, TX 77843-3116  

May 18, 2005  

Dear Dr. Ehlig-Economides:

I would like to express my enthusiastic endorsement of the Energy Engineering Certificate Program being developed at Texas A&M University. The melding of a focus on energy (used in the holistic sense) and sustainable development will, in my opinion, go far to better prepare graduating engineers in the real world needs rapidly coming into focus.

ConocoPhillips has been working hard to bring sustainable development concepts to its global energy projects for some years now. The Energy Engineering Certificate Program will help ensure that the technical resources coming out of Texas A&M will bring an additional, value adding dimension with their already high caliber, highly respected capabilities.

I look forward to seeing this project come to fruition.

With best wishes for success:

[Signature]
September 12, 2005

Dr. Christine A. Ehlig-Economides
Professor and Albert B. Stevens Endowed Chair
Petroleum Engineering
401F Richardson Building, TAMU 3116
College Station, TX 77843-3116

Re: Energy Engineering Certificate Program

Dear Dr. Ehlig-Economides:

I would like to offer my support to the Texas A&M Energy Engineering Certificate Program.

As a global consultancy in the energy business, we are aware of the growing global demand for energy and its impact on national cultures. As a member of several engineering college advisory committees, I have been aware of Dr. Ehlig-Economides and Dr. Marman’s interests in energy engineering for some time, and I am convinced that the idea to educate energy engineers that understand the broad scope of the entire energy business has merit. I am particularly attracted to the emphasis on sustainable development because this approach has proven effective in the energy business where ever it has been applied.

Shawnee Engineers has a collaborative arrangement with Texas A&M and other universities for continuing education and will be interested to see courses in the future incorporating sustainable development in energy engineering. The energy engineering certificate program is a positive step in this direction.

Yours truly,

Dr. Harry H. West, P.E.
Principal Chemical Engineer

cc: HHW/glb

---
tel: 713-972-1372  shawnee.engineers@aol.com  fax: 208-728-1056
Dr. Christine A. Ehlig-Economides  
Professor and Albert B. Stevens Endowed Chair  
Petroleum Engineering  
401F Richardson Building, TAMU 3116  
College Station, TX 77843-3116  

Dear Dr. Ehlig-Economides:

Schlumberger would like to endorse the Energy Engineering Certificate Program being developed at Texas A&M University. Schlumberger recruits many graduates from Texas A&M and also sends employees there to study at the graduate level. We work closely with the Departments of Electrical, Mechanical and Petroleum Engineering. The technologies we develop and deploy reflect the interdisciplinary nature of our industry.

As the most diverse international service company, Schlumberger is acutely aware of the growing global demand for energy and its impact on different countries around the world. We are also aware of the increasing need for skilled engineers to join the larger energy industry workforce. As the manager of our worldwide University Relations Program, I have been aware of Dr. Ehlig-Economides interest in energy engineering for some time. I am convinced that the education of engineers that understand the broad scope of the entire energy industry has great importance. Our industry will not succeed in meeting the world's need for reliable energy unless we can recruit top engineering students.

Schlumberger looks forward to recruiting energy engineers in the future. We are particularly attracted to the TAMU emphasis on sustainable development. This approach has proven effective in the energy business where ever it has been applied. Schlumberger has a working arrangement with Texas A&M and other universities for continuing education and will be interested to see new courses in the future incorporating sustainable development in energy engineering.

Sincerely,

Lawrence N. Schwartz
MEMORANDUM

TO: Dr. Jane Close Conoley, Dean
    College of Education and Human Development

FROM: Christine D. Townsend, Professor and Interim Head

SUBJECT: Department of Agricultural Education Name Change
         Undergraduate Majors Name Changes

The Department of Agricultural Education formally requests your endorsement to proceed with the process to change its departmental name and the name of 2 of its undergraduate degrees. The changes are:

1. Change the name of the Department of Agricultural Education to Department of Agricultural Leadership, Education, and Communications.

2. Change the name of the major Agricultural Development to Agricultural Leadership and Development.

3. Change the name of the major Agricultural Journalism to Agricultural Communications and Journalism.

The intent of this request is to title the department and 2 of its majors to more accurately reflect the mission and activities of the department. These changes are consistent with the national trend and are supported by the missions of peer departments throughout the nation.

The departmental faculty members have discussed this change and are supportive of the change and recommend moving forward with the process.

Attached is the document outlining rationale for the name changes. Please consider this request and your endorsement for the changes. If you have any questions, please feel free to contact me at 458-3705 or leader@tamu.edu. A positive endorsement may be indicated by signing below and returning this page to me. Thanks very much for your time and consideration.

Endorsement:

Dr. Jane Close Conoley, Dean
College of Education and Human Development