



THE FACULTY SENATE

April 19, 2010

MEMORANDUM

TO: Dr. R. Bowen Loftin, President

FROM: R.S. Bednarz, Speaker *R.S. Bednarz*

SUBJECT: Approval of Graduate Council Item (FS.27.117)

At its regular meeting on April 12, 2010, the Faculty Senate approved the following curriculum item from the Graduate Council. The Faculty Senate submits it for your approval. Attached is a copy of the material sent to our Senators.

Special Consideration - March 4, 2010
College of Engineering
 Department of Petroleum Engineering
 Request for a new certificate entitled Energy Sustainability Engineering

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

Attachment

- cc: Karan Watson
- Martyn Gunn
- Antonio Cepeda-Benito
- Sandra Williams
- Robert Webb
- David Reed
- Kemble Bennett

Approved:

R. Bowen Loftin, President

4/28/10

Date



UCC/GC MAR 04 2010
 FS APR 12 2010
 Pres. App. APR 28 2010
 SIMS _____
 Catalog 2010 - 2011

Texas A&M University
 Department Request for a New Certificate Program
 Graduate **** Professional

AS CORRECTED
11 May 2010
 (Date)

1. This certificate request is submitted by the Department of Petroleum Engineering

2. Complete Title of Certificate Energy Sustainability Engineering

3. Paragraph for catalog:

The graduate level Energy Sustainability Engineering Certificate is offered through the Department of Petroleum Engineering. It is designed to provide an education for college graduates in how to apply three essential criteria – environmentally benign, economically competitive, and socially acceptable - to engineer the sustainability of energy resources and their use. The certificate requires taking 3 courses to be selected from the prescribed electives list, plus one other course addressing a specific energy topic to be approved on a case-by-case basis. The 5 prescribed elective courses provide an overview of energy and sustainability, sustainability metrics, sustainability engineering design, energy economics and policy, and innovation. The certificate is intended for graduate students and working professionals with a wide range of career interests and is not limited to engineering graduates. Courses emphasize team project experiences and are available to distance learning students.

4. Is the certificate in a disciplinary area where Texas A&M University already offers degrees? Yes X No _____

5. How many hours are in the certificate ? 12 hours

6. Is the certificate potentially going to be offered as a stand-alone certificate program to students at other locations than the Texas A&M University Campus? Yes X No _____

7. Is the certificate program going to be available through Distance Education?
 Yes X No _____

Approval recommended by:

 Head of Department Date

 Chair, College Review Committee Date

 Head of Department (if cross-listed course) Date

 Dean of College Date

 Submitted to Coordinating Board by:

 Dean, Office of Graduate Studies Date

 Date Effective Date

Texas A&M University
Department Request for a New Certificate Program
Graduate **** Professional

ORIGINAL

1. This certificate request is submitted by the Department of Petroleum Engineering.

2. Complete Title of Certificate Energy Sustainability Engineering.

3. Paragraph for catalog:

The graduate level Energy Sustainability Engineering Certificate is offered through the Department of Petroleum Engineering. It is designed to provide an education for college graduates in how to apply three essential criteria – environmentally benign, economically competitive, and socially acceptable - to engineer the sustainability of energy resources and their use. The certificate requires taking 3 courses to be selected from a list of 5 specified courses, plus one other course addressing a specific energy topic to be approved on a case-by-case basis. The 5 specified courses provide an overview of energy and sustainability, sustainability metrics, sustainability engineering design, energy economics and policy, and innovation. The certificate is intended for graduate students and working professionals with a wide range of career interests and is not limited to engineering graduates. Courses emphasize team project experiences and are available to distance learning students.

4. Is the certificate in a disciplinary area where Texas A&M University already offers degrees? Yes X No

5. How many hours are in the certificate ? 12

6. Is the certificate potentially going to be offered as a stand-alone certificate program to students at other locations than the Texas A&M University Campus? Yes X No

7. Is the certificate program going to be available through Distance Education?
Yes X No

Approval recommended by:

Stephen A. Holstitch 25 Feb 10
Head of Department Date

Head of Department (if cross-listed course) Date

Submitted to Coordinating Board by:

R. J. J. J. J. 2-25-10
Chair, College Review Committee Date

R. J. J. J. J. 2-25-10
Dean of College Date

[Signature] [Signature]
Dean, Office of Graduate Studies Date

Date Effective Date

Daniel W. Reed
Chair, Graduate Council

Texas A&M University
New Certificate, Bachelors, Masters, or Doctoral Program
♦ Proposal Checklist ♦

Program Funding

Has program funding been finalized at the department or college level? Yes No
 If no, explain or attach budget: _____

Will new costs for the first five years of the program be under \$2 million? Yes No
 If new costs exceed \$2 million, coordinating board approval is required.

Submitted by (Contact Person):

Christine Ehlig-Economides	caee@tamu.edu
Name	Email
Full Professor	979 458-0797
Title	Phone

Certification Statement

By signing below, the Dean of the College certifies the proposed program complies with coordinating board standards. If the program is delivered through Distance Education, the Dean of the College certifies that they are following the *Principles of Good Practice for Academic Degree and Certificate Programs and Credit Courses Offered Electronically*.

Use additional signature lines if program is between three or more departments or colleges.

 Signature, Department Head or Interdisciplinary Program Chair Date

 Typed or Printed Name

 Chair, College Review Committee Date

 Dean of College Date

 Chair, University Curriculum Committee or Graduate Council Date

Stephen A. Holditch 25 Feb 10

 Signature, Department Head or Interdisciplinary Program Chair (if joint program) Date
 Stephen A. Holditch

 Typed or Printed Name

Raufman 2-25-10

 Chair, College Review Committee Date

Raufman 2-25-10

 Dean of College Date

DandW.Rae March 12, 2010

 Chair, University Curriculum Committee or Graduate Council Date

Additional Approvals Required: Faculty Senate and President.

Texas A&M University

New Certificate, Bachelors, Masters, or Doctoral Program

♦ Proposal Checklist ♦

Requested by the Department or Unit of : Petroleum Engineering

Program Type, Level, Designation, Title, Description, Hours

Program Type Certificate Program Degree Program
 Program Level Undergrad Certificate Grad Certificate Bachelor Master Doctoral
 Degree Designation (i.e., BS, BA, MA, MS, MAg, Med, PhD, EdD, etc.) None

Title of proposed program: Energy Sustainability Engineering Certificate Program

Proposed CIP Code (if known): _____

Brief program description (provide a catalog description for undergraduate and graduate certificates):

The graduate level Energy Sustainability Engineering Certificate is offered through the Department of Petroleum Engineering. It is designed to provide an education for college graduates in how to apply three essential criteria – environmentally benign, economically competitive, and socially acceptable - to engineer the sustainability of energy resources and their use. The certificate requires taking 3 courses to be selected from the prescribed electives list, plus one other course addressing a specific energy topic to be approved on a case-by-case basis. The 5 prescribed elective courses provide an overview of energy and sustainability, sustainability metrics, sustainability engineering design, energy economics and policy, and innovation. The certificate is intended for graduate students and working professionals with a wide range of career interests and is not limited to engineering graduates. Courses emphasize team project experiences and are available to distance learning students.

Minimum program semester credit hours (SCH) Certificates - 12 hours* Bachelors - 120 hours Masters - 30 hours

Proposed program hours: 12 hours _____ _____

*12 hours minimum to appear on transcript

Off-Campus or Distance Delivery

% of Program a student can take off-campus or through Distance Education		Program Start Date	SACS Approval**	When Provost needs to inform SACS
<input checked="" type="checkbox"/>	25%	Fall 2010	Notification Only	-----
<input type="checkbox"/>	50%	_____	Approval Required	6 months before first day of program
<input type="checkbox"/>	80%	_____	Approval Required	6 months before first day of program
<input checked="" type="checkbox"/>	100%	January 2011	Approval Required	6 months before first day of program

**Notification letter arranged through the Assistant Provost and sent by TAMU President.

Program Delivery Mode

<input checked="" type="checkbox"/>	On-campus	Location	_____
<input type="checkbox"/>	Broadcast / TTVN		_____
<input type="checkbox"/>	Specific off-campus location***		_____
<input checked="" type="checkbox"/>	Distance Education / Internet	In-State	<input checked="" type="checkbox"/> Out-of-State <input checked="" type="checkbox"/>
		Start Date	<u>January 2011</u>
<input type="checkbox"/>	Out-of-Country	Will this program be offered with another institution?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

If yes, contact Assistant Provost for additional reporting requirements.

***Is this an approved SACS location? Yes No If no, a program prospectus must be sent to SACS.

Approved locations as of September 2009: TAMU-Galveston, TAMU-Qatar, University Center-The Woodlands, Dubai (EMBA)

Texas A&M University
New Certificate, Bachelors, Masters, or Doctoral Program
♦ Proposal Checklist ♦

Program Funding

Has program funding been finalized at the department or college level? Yes No
 If no, explain or attach budget: _____

Will new costs for the first five years of the program be under \$2 million? Yes No
 If new costs exceed \$2 million, coordinating board approval is required.

Submitted by (Contact Person):

Christine Ehlig-Economides	caee@tamu.edu
Name	Email
Full Professor	979 458-0797
Title	Phone

Certification Statement

By signing below, the Dean of the College certifies the proposed program complies with coordinating board standards. If the program is delivered through Distance Education, the Dean of the College certifies that they are following the *Principles of Good Practice for Academic Degree and Certificate Programs and Credit Courses Offered Electronically*.

Use additional signature lines if program is between three or more departments or colleges.

Signature, Department Head or Interdisciplinary Program Chair	Date	Signature, Department Head or Interdisciplinary Program Chair <i>(if joint program)</i> Stephen A. Holditch	Date
<i>Typed or Printed Name</i>		<i>Typed or Printed Name</i>	
Chair, College Review Committee	Date	Chair, College Review Committee	Date
Dean of College	Date	Dean of College	Date
Chair, University Curriculum Committee or Graduate Council	Date	Chair, University Curriculum Committee or Graduate Council	Date

Additional Approvals Required: Faculty Senate and President.

New Program Request Form for Certificate Programs, Bachelor's and Master's Degrees

Directions: An institution shall use this form to propose a new bachelor's or master's degree program. In completing the form, the institution should refer to the document *Standards for Bachelor's and Master's Programs*, which prescribes specific requirements for new degree programs. Note: This form requires signatures of (1) the Chief Executive Officer, certifying adequacy of funding for the new program; (2) a member of the Board of Regents (or designee), certifying Board approval, and (3) if applicable, a member of the Board of Regents or (designee), certifying that criteria have been met for staff-level approval. NOTE: Preliminary authority is required for all engineering programs. An institution that does not have preliminary authority for a proposed engineering program shall submit a separate request for preliminary authority prior to submitting the degree program request form. That request shall address criteria set in Coordinating Board rules Section 5.24 (a).

Administrative Information

1. **Institution:** **Texas A&M University, Department of Petroleum Engineering**

2. **Program Name** – Show how the program would appear on the Coordinating Board's program inventory (e.g., *Bachelor of Business Administration degree with a major in Accounting*):
Energy Sustainability Engineering Certificate

4. **Brief Program Description** – Describe the program and the educational objectives:

The graduate level Energy Sustainability Engineering Certificate is offered through the Department of Petroleum Engineering. It is designed to provide an education for college graduates in how to apply three essential criteria – environmentally benign, economically competitive, and socially acceptable - to engineer the sustainability of energy resources and their use. The certificate requires taking 3 courses to be selected from the prescribed electives list, plus one other course addressing a specific energy topic to be approved on a case-by-case basis. The 5 prescribed elective courses provide an overview of energy and sustainability, sustainability metrics, sustainability engineering design, energy economics and policy, and innovation. The certificate is intended for graduate students and working professionals with a wide range of career interests and is not limited to engineering graduates. Courses emphasize team project experiences and are available to distance learning students.

(See attached)

Number of Semester Credit Hours Required - **12 hours**

5. **Administrative Unit** – Identify where the program would fit within the organizational structure of the university (e.g., *The Department of Electrical Engineering within the College of Engineering*):
Department of Petroleum Engineering

6. **Proposed Implementation Date** – Report the first semester and year that students would enter the program:

Fall 2010 Semester

7. **Contact Person** – Provide contact information for the person who can answer specific questions

about the program:

Name: **Dr. Christine Economides**

Title: **Professor, and A. B. Stevens Endowed Chair, Petroleum Engineering**

E-mail: **c.economides@pe.tamu.edu**

Phone: **979-458-0797**

Program Information

I. Need

Note: Complete I.A and I.B only if preliminary authority for the program was granted more than four years ago. This includes programs for which the institution was granted broad preliminary authority for the discipline.

- A. Job Market Need – Provide short- and long-term evidence of the need for graduates in the job market.

Located only 90 miles from Houston, the international energy capital, Texas A&M is well-positioned to support the energy industry need for a continuous supply of well-trained engineers. Efficient energy use is important in architectural design, urban planning and industrial processes. Energy engineers will lead local, state, national and international efforts to address simultaneously the need for abundant energy and the need to sustain a healthy environment. A recent survey of 35 energy-related companies indicated support for the offering of an energy sustainability program at Texas A&M.

- B. Student Demand – Provide short- and long-term evidence of demand for the program.

This program would be offered for graduate students and working professionals who have indicated in the classroom, conferences, during research meetings, etc. that the offering of an energy sustainability program would enhance their effectiveness as energy professionals.

- C. Enrollment Projections – Use this table to show the estimated cumulative headcount and full-time student equivalent (FTSE) enrollment for the first five years of the program. *(Include majors only and consider attrition and graduation.)*

YEAR	1	2	3	4	5
Headcount	23	29	36	36	39
FTSE					

II. Quality

- A. Certificate and Degree Requirements – Use this table to show the certificate and degree requirements of the program. (*Modify the table as needed; if necessary, replicate the table for more than one option.*)

Category	Semester Credit Hours
General Education Core Curriculum <i>(bachelor's degree only)</i>	
Required Courses	
Prescribed Electives	9
Free Electives	3
Other (<i>Specify, e.g., internships, clinical work</i>)	(if not included above)
TOTAL	12

- B. Curriculum – Use these tables to identify the required courses and prescribed electives of the program, and curriculum as it will appear in the undergraduate and graduate catalog. Note with an asterisk (*) courses that would be added if the program is approved. (*Add and delete rows as needed. If applicable, replicate the tables for different tracks/options as shown in the undergraduate catalog.*)

Prefix and Number	Required Courses	SCH

Prefix and Number	Prescribed Elective Courses	SCH
PETE 689/489	Energy and Sustainability---approved for Fall 2010	3
AERO 609	Sustainability Metrics and Life Cycle Assessment in Engineering	3
ARCH 689	Interdisciplinary Critical and Creative Thinking Skills---Fall 2010	3
ECON 689/489	Energy Economics and Policy---Spring 2010	3
PSAA 640	Energy Policy and Security	3

	TOTAL SCH	
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C. Faculty – Use these tables to provide information about Core and Support faculty. Add an asterisk (*) before the name of the individual who will have direct administrative responsibilities for the program. (Add and delete rows as needed.)

Name of <u>Core</u> Faculty and Faculty Rank	Highest Degree and Awarding Institution	Courses Assigned in Program	% Time Assigned To Program
Christine Ehlig-Economides, Professor, Petroleum Engineering	Ph.D., Petroleum Engineering, Stanford University, 1979	PETE 689/489- Energy Sustainability	25%
Ramesh Talreja, Professor, Aerospace Engineering	PhD., Solid Mechanics, Technical University of Denmark, 1974	AERO 609- Sustainability Metrics & Life Cycle Assessment in Engineering	
Rodney Hill, Professor, Architectural Engineering	M. Arch., University of California, Berkeley, 1969	ARCH 689- Interdisciplinary Critical & Creative Thinking Skills	
Steve Puller, Associate Professor, Economics	Ph.D., Microeconomics, University of California, Berkeley, 2001	ECON 689/489- Energy Economics and Policy	
James Griffin, Professor, Bush School of Government &	Ph.D.-Economics, University of Pennsylvania, 1970	PSAA 640-Energy Policy & Security	

Public Service			
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Name of <u>Support Faculty</u> and Faculty Rank	Highest Degree and Awarding Institution	Courses Assigned in Program	% Time Assigned To Program

D. Students – Describe general recruitment efforts and admission requirements. In accordance with the institution’s Uniform Recruitment and Retention Strategy, describe plans to recruit, retain, and graduate students from underrepresented groups for the program.

The minimum prerequisite for the Energy Sustainability Engineering Certificate is a BS or BA degree. The program will be actively promoted via all academic promotional catalogs and brochures, and on the TAMU website for Petroleum Engineering and Distance Learning. Collaborative research proposals with Prairie View A&M University and Texas A&M Kingsville exist that include mention of the planned ESE certificate. Both campuses look forward to the availability of this certificate.

E. Library – Provide the library director’s assessment of library resources necessary for the program. Describe plans to build the library holdings to support the program.

A letter from the Texas A&M University Library is attached.

F. Facilities and Equipment – Describe the availability and adequacy of facilities and equipment to support the program. Describe plans for facility and equipment improvements/additions.

N/A

G. Accreditation – If the discipline has a national accrediting body, describe plans to obtain accreditation or provide a rationale for not pursuing accreditation.

N/A

H. Evaluation – Describe the evaluation process that will be used to assess the quality and effectiveness of the new degree program.

The PICA Evaluation System will be used.

III. Costs and Funding

Five-Year Costs and Funding Sources - Use this table to show five-year costs and sources of funding for the program.

All courses are currently-offered courses; resources are in place and no additional budget is required.

Five-Year Costs		Five-Year Funding	
Personnel ¹	\$0	Reallocated Funds	\$0
Facilities and Equipment	\$0	Anticipated New Formula Funding ³	\$0
Library, Supplies, and Materials	\$0	Special Item Funding	\$0
Other ²	\$0	Other ⁴	\$0
Total Costs	\$0	Total Funding	\$0

1. Report costs for new faculty hires, graduate assistants, and technical support personnel. For new faculty, prorate individual salaries as a percentage of the time assigned to the program. If existing faculty will contribute to program, include costs necessary to maintain existing programs (e.g., cost of adjunct to cover courses previously taught by faculty who would teach in new program).
2. Specify other costs here (e.g., administrative costs, travel).
3. Indicate formula funding for students new to the institution because of the program; formula funding should be included only for years three through five of the program and should reflect enrollment projections for years three through five.
4. Report other sources of funding here. In-hand grants, "likely" future grants, and designated tuition and fees can be included.

**PROPOSED GRADUATE
ENERGY SUSTAINABILITY ENGINEERING CERTIFICATE PROGRAM**

**TEXAS A&M UNIVERSITY
DWIGHT LOOK COLLEGE OF ENGINEERING**

February 2010

Purpose of Proposal

The objective of the Energy Sustainability Engineering (ESE) Certificate is to provide a framework for both engineers and nonengineers for addressing at the graduate level all three aspects of sustainability: environmental, economical, and social. Interestingly, while technological aspects are not specifically shown in the figure, clearly the role of the engineers is to find sustainable technologies that are affordable, socially acceptable, and environmentally sound. Such solutions cannot be found in a vacuum. The ESE certificate will bring engineers together with social scientists to explore how engineers can design the sustainable energy technologies for the future.

Industry representatives have shown interest in hiring students with this certificate. The courses in this program are being designed for both on campus and distance learning access in order to enable actively working participants.

Rationale

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 (power systems/electrical engineers), engine design and efficiency (mechanical and aerospace engineers), energy efficient building design (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 layoffs 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.

Who and What the Program is Designed For

The ESE certificate is intended to cater to participants with a broad spectrum of interests including energy industry employees, city planners, small businessmen, academic researchers, energy policy makers, energy economists, etc. Courses will favor group project activities designed to bring together graduate students with diverse backgrounds and experience in disciplines such as engineering, business, sociology, and economics.

Benefits

The ESE certificate will signify professional exposure to sustainability science, energy engineering design, energy economics, and/or energy policy. Graduates of the program will have an appreciation for how innovation and collaboration can achieve energy solutions that are profitable, attractive, and environmentally acceptable. Future movers and shakers will have this certificate on their resume.

Industry will value graduates with the Energy Engineering Certificate because they will approach engineering solutions with a modern mindset, whether they are the engineers or nonengineers with the experience of having worked with engineers on energy sustainability engineering applications. Further, the graduates will have a focus that would foster entrepreneurial thinking and expand their employment horizons beyond the traditional industry jobs.

Prerequisite

The minimum prerequisite for the Energy Sustainability Engineering Certificate is a BS or BA degree.

Program Description

The proposed graduate Energy Sustainability Engineering Certificate will consist of four 3 hour courses. Three of the courses must be selected from the following list of courses:

- **Energy and Sustainability (PETE 689/489).** This course provides an overview of energy resources and use with special attention to the impacts on environment, economics, and society.

- **Sustainability Metrics and Life Cycle Assessment in Engineering (AERO 609).** This course starts by addressing sustainability metrics, what makes one process or product more sustainable than another. The metrics will then be applied as systems engineering tools to facilitate evaluation of the environmental impact of every aspect of a process or product from its initial construction to its final abandonment.
- **Interdisciplinary Critical and Creative Thinking Skills (ARCH 689).** Fundamental critical and creative thinking skills needed to participate in and create a sustainable future. How innovative design processes can impact the physical environment and society.
- **Energy Economics and Policy (ECON 689/489).** This course will offer an overview of energy supply and demand including real options impacts on major energy investments and energy trading, and the impacts of policies such as carbon tax or emissions trading.
- **Energy Policy and Security (PSAA 640).** Policy and economic issues related to increasing global reliance on fossil fuels, including the resulting impact on security concerns and global warming; utilizes competitive and non-competitive market theories, non-renewable resource analysis, and cost-benefit analysis.

The fourth course should be from the student's discipline or from the elective direction being pursued for thesis or doctoral research. Students not pursuing any graduate degree may choose to do all 4 courses from the above course list.

Faculty

- **Petroleum Engineering-** Christine Ehlig-Economides, Certificate Program Director, and PETE 689/489 Energy and Sustainability course
- **Aerospace Engineering,** Ramesh Talreja, AERO 609, Sustainability Metrics and Life Cycle Assessment in Engineering course
- **Architectural Engineering,** Rodney Hill, ARCH 689, Interdisciplinary Critical and Creative Skills course
- **Economics,** Steve Puller, ECON 689/489, Energy Economics and Policy course
- **Policy,** James Griffin, PSAA 640, Energy Policy and Security course currently offered from Bush School of Government and Public Service

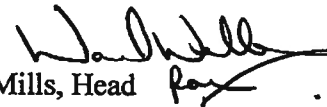
Statement Whether the Certificate is Dependent on Conferral of Degree

Conferral of the proposed certificate is independent of any degree program other than the BA or BS degree required for admission to the certificate program.

MEMORANDUM

Date: March 3, 2010

To: Dr. David Reed
Graduate Council Chair

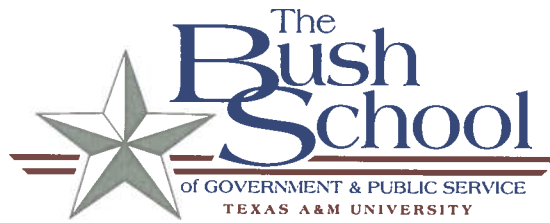
FROM: 
Dr. Glen Mills, Head
Department of Architecture

cc: Dr. Christine Economides

SUBJECT: Energy Sustainability Engineering (ESE) Certificate Program

The proposed Energy Sustainability Engineering Certificate Program will be available for graduate students and working professionals with a wide range of career interests, and will require that the participant have a BS or BA degree. The program is designed to provide a framework for addressing all three aspects of sustainability, environmental, economical and social, and will be valuable in bringing engineers together with social scientists to explore how engineers can design the sustainability energy technologies for the future.


The special topics course ARCH 689 "Interdisciplinary Critical & Creative Thinking Skills" course will be one of the ESE Certificate Program course offerings. This course will be offered by the Department of Architecture in the 2010-2011 academic year, and will be available to students in the ESE Certificate Program.



March 3, 2010

MEMORANDUM

TO: Dr. David Reed
Chair, Graduate Council

FROM: Dr. Sam Kirkpatrick 
Executive Associate Dean for Academic Affairs and Management

SUBJECT: Energy Sustainability Engineering (ESE) Certificate Program

The proposed Energy Sustainability Engineering Certificate Program will be available for graduate students and working professionals with a wide range of career interests, and will require that the participant have a BS or BA degree. The program is designed to provide a framework for addressing all three aspects of sustainability, environmental, economical and social, and will be valuable in bringing engineers together with social scientists to explore how engineers can design the sustainability energy technologies for the future.

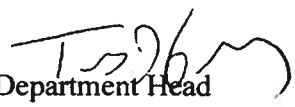
Our PSAA 640 "Energy Policy and Security" course will be one of the ESE Certificate Program course offerings. This course will be offered by The Bush School in the 2010-2011 academic year, and will be available to students in the ESE Certificate Program.

xc: Dr. Christine Economides, Director, CEETI, 3116 TAMU
Dr. Jeryl Mumpower, Director, MPSA Program
Dr. James Griffin, Director, Mosbacher Institute

MEMORANDUM

Date: March 3, 2010

To: Dr. David Reed
Graduate Council Chair

FROM: Dr. Timothy Gronberg 
Professor and Interim Department Head
Department of Economics

cc: Dr. Christine Economides

SUBJECT: Energy Sustainability Engineering (ESE) Certificate Program

The proposed Energy Sustainability Engineering Certificate Program will be available for graduate students and working professionals with a wide range of career interests, and will require that the participant have a BS or BA degree. The program is designed to provide a framework for addressing all three aspects of sustainability, environmental, economical and social, and will be valuable in bringing engineers together with social scientists to explore how engineers can design the sustainability energy technologies for the future.

The special topics course ECON 689 "Energy Economics and Policy" course will be one of the ESE Certificate Program course offerings. This course will be offered by the Department of Economics in Fall 2010, and will be available to students in the ESE Certificate Program.




Stephen A. Holditch
Noble Endowed Chair
Professor and Department Head
(979) 845-2255
holditch@tamu.edu

MEMORANDUM

Date: March 3, 2010

To: Dr. David Reed
Graduate Council Chair

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

cc: Dr. Christine Economides

SUBJECT: Energy Sustainability Engineering (ESE) Certificate Program


The proposed Energy Sustainability Engineering Certificate Program will be available for graduate students and working professionals with a wide range of career interests, and will require that the participant have a BS or BA degree. The program is designed to provide a framework for addressing all three aspects of sustainability, environmental, economical and social, and will be valuable in bringing engineers together with social scientists to explore how engineers can design the sustainability energy technologies for the future.

The special topics course PETE 689 Energy and Sustainability will be one of the ESE Certificate Program course offerings. This course will be offered by the Petroleum Engineering Department in Fall 2010, and will be available to students in the ESE Certificate Program.

MEMORANDUM

Date: March 12, 2010

To: Dr. David Reed
Graduate Council Chair

FROM: Dr. Dimitris Lagoudas
Professor and Department Head
Department of Aerospace Engineering 

cc: Dr. Christine Economides

SUBJECT: Energy Sustainability Engineering (ESE) Certificate Program

The Department of Aerospace Engineering has proposed the course AERO 609 Sustainability Metrics and Life Cycle Assessment in Engineering, to be taught by Professor Ramesh Talreja. This course is expected to be of broad interest to graduate students across campus and is also suited for the proposed Energy Sustainability Engineering Certificate Program.

The AERO 609 course will be offered during the 2010-2011 academic year, and will be available to students in the ESE Certificate Program.

Dr. Christine Ehlig-Economides
Albert B. Stevens Endowed Chair
Petroleum Engineering Department,
710 Richardson, TAMU 3116
College Station, TX 77843

Dear Dr. Ehlig-Economides,

The Texas A&M University Libraries can support the proposed Energy Sustainability Engineering Certificate program. This degree will not require additional library resources, since the library has steadily acquired materials in Engineering, Economics, and Policy Sciences.

The library maintains subscriptions to the top tier journals along with access to key indices like *Web of Science*, *Science Direct*, *OnePetro*, *Inspec*, *Econlit*, and *PAIS International*. The library has a collaborative approach to purchasing key resources in a field of study by encouraging and supporting faculty and student recommendations for new resources. Recommendations for databases, scholarly journals, and monographs can be made through the assigned library subject specialist or the library's online "Suggest a Purchase" form. The University Libraries' collection includes over 51,000 serials and 4 million volumes which will support an Energy Sustainability Engineering Certificate program.

Texas A&M University Libraries is also a member of the Association of Research Libraries (ARL). This distinct membership is based on TAMU Libraries distinct collections, commitment to servicing the scholarly community, and leadership. In addition, TAMU Libraries currently holds membership in the Greater Western Library Alliance (GWLA) which allows our campus users access to the holdings of 31 other research libraries from 16 Midwestern states. This membership allows the University Libraries to negotiate consortium agreements that benefit research in energy. Another important consortium membership includes the Center for Research Libraries (CRL) whose mission is to foster and advance scholarly inquiry by granting members access to its journals, newspapers, dissertations and electronic resources.

To summarize, the Texas A&M University Libraries is committed to supporting the degree programs in Engineering.

Sincerely yours,

A handwritten signature in cursive script that reads 'Colleen Cook'.

Dr. Colleen Cook
Dean and Director