

# UNIVERSITY FACULTY SENATE FORMS

## Academic Program Approval

This form is a routing document for the approval of new and revised academic programs. Proposing department should complete this form. Detailed instructions for the proposal should be followed. A [checklist](#) is available to assist in the preparation of a proposal. For more information, call the Faculty Senate Office at 831-2921.

Submitted by: **Keith Goossen** phone number: **x0590**

Department: **Electrical & Computer Engineering** email: **goossen@udel.edu**

Date: **April 1, 2015**

Action: **REVISE MINOR**

(Example: add major/minor/concentration, delete major/minor/concentration, revise major/minor/concentration, academic unit name change, request for permanent status, policy change, etc.)

Effective term: **15F**

(use format 04F, 05W)

Current degree \_\_\_\_\_  
(Example: BA, BACH, BACJ, HBA, EDD, MA, MBA, etc.)

Proposed change leads to the degree of: \_\_\_\_\_  
(Example: BA, BACH, BACJ, HBA, EDD, MA, MBA, etc.)

Proposed name: \_\_\_\_\_  
Proposed new name for revised or new major / minor / concentration / academic unit  
(if applicable)

### Revising or Deleting:

Undergraduate major / Concentration: \_\_\_\_\_  
(Example: Applied Music – Instrumental degree BMAS)

Undergraduate minor: **SUSTAINABLE ENERGY TECHNOLOGY**  
(Example: African Studies, Business Administration, English, Leadership, etc.)

Graduate Program Policy statement change: \_\_\_\_\_  
(Must attach your Graduate Program Policy Statement)

Graduate Program of Study: \_\_\_\_\_  
(Example: Animal Science: MS Animal Science: PHD Economics: MA Economics: PHD)

Graduate minor / concentration: \_\_\_\_\_

**Note: all graduate studies proposals must include an electronic copy of the Graduate Program Policy Document, either describing the new program or highlighting the changes made to the original policy document.**

**List new courses required for the new or revised curriculum. How do they support the overall program objectives of the major/minor/concentrations)?**

(Be aware that approval of the curriculum is dependent upon these courses successfully passing through the Course Challenge list. If there are no new courses enter "None")

CHEG 613-Topics in Energy and the Environment  
CIEG 465-Engineers without Borders (3 credit version only)  
PHYS 143-Energy Technology and Society  
POSC 220-Introduction to Public Policy

**Supply support letter from the Library, Dean, and/or Department Chair if needed**  
(all new majors/minors will need a support letter from the appropriate administrator.)

NA

**Supply a resolution for all new majors/programs; name changes of colleges, departments, degrees; transfer of departments from one college to another; creation of new departments; requests for permanent status. See example of resolutions.**

NA

**Explain, when appropriate, how this new/revised curriculum supports the 10 goals of undergraduate education: <http://www.ugs.udel.edu/gened/>**

Increasing knowledge and gaining an understanding of the scientific and technical constraints and opportunities that are pertinent to sustainable energy development is critical to Goal #1 to "attain effective skills in...the use of information technology." The courses bridge scientific and technological knowledge with an understanding of energy and environmental policies that influence energy technology design and choice which furthers Goal #2 to "learn to think critically to solve problems." The minor's desire to combine subject theory with hands-on exercises, provides students a deep understanding of fundamentals as well as practical, state-of-the-art tools and techniques of practice. This directly addresses Goal #7 to "develop the ability to integrate academic knowledge with experiences that extend the boundaries of the classroom."

**Identify other units affected by the proposed changes:**

(This would include other departments/units whose courses are a required part of the proposed curriculum. Attach permission from the affected units. If no other unit is affected, enter "None")

See attached emails for Chemical Engineering; Civil and Environmental Engineering; Physics and Political Science.

**Describe the rationale for the proposed program change(s):**

(Explain your reasons for creating, revising, or deleting the curriculum or program.)

Adding elective courses to our established high quality Sustainable Energy Technology education program. These additional electives recognize deeper study in the field.

**Program Requirements:**

(Show the new or revised curriculum as it should appear in the Course Catalog. If this is a revision, be sure to indicate the changes being made to the current curriculum and **include a side-by-side comparison** of the credit distribution before and after the proposed change.) See example of side by side.

See Attachment

**ROUTING AND AUTHORIZATION:** (Please do not remove supporting documentation.)

Department Chairperson  Date 4/6/15

Dean of College \_\_\_\_\_ Date \_\_\_\_\_

(By signing above, the Dean confirms that their college policies and bylaws have been followed correctly during consideration of the request described in this form.)

The approval actions that were taken at the college level were (check all that apply) :  
\_\_\_\_\_ college faculty vote; \_\_\_\_\_ college curriculum approval \_\_\_\_\_ college senate approval

Chairperson, College Curriculum Committee \_\_\_\_\_ Date \_\_\_\_\_

Chairperson, Senate Com. on UG or GR Studies \_\_\_\_\_ Date \_\_\_\_\_

Chairperson, Senate Coordinating Com. \_\_\_\_\_ Date \_\_\_\_\_

Secretary, Faculty Senate \_\_\_\_\_ Date \_\_\_\_\_

Date of Senate Resolution \_\_\_\_\_ Date to be Effective \_\_\_\_\_

Registrar \_\_\_\_\_ Program Code \_\_\_\_\_ Date \_\_\_\_\_

Vice Provost for Academic Affairs & International Programs \_\_\_\_\_ Date \_\_\_\_\_

Board of Trustee Notification \_\_\_\_\_ Date \_\_\_\_\_

## Nelson, Deborah L.

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**From:** Shenton, Tripp  
**Sent:** Wednesday, April 01, 2015 3:23 PM  
**To:** Nelson, Deborah L.  
**Cc:** Goossen, Keith W; Shermeyer, Frederick C.  
**Subject:** RE: IMPORTANT: Faculty Senate Academic Program Approval

**Importance:** High

Approved

Harry W. "Tripp" Shenton III, Ph.D.  
Professor and Chair  
Department of Civil and Env. Engineering  
301-B Dupont Hall  
University of Delaware  
Newark, Delaware 19716  
(302)831-2447  
(302)831-3640 Fax  
Email: [shenton@udel.edu](mailto:shenton@udel.edu)

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**From:** Nelson, Deborah L.  
**Sent:** Wednesday, April 01, 2015 1:50 PM  
**To:** Shenton, Tripp  
**Cc:** Goossen, Keith W; Shermeyer, Frederick C.  
**Subject:** IMPORTANT: Faculty Senate Academic Program Approval  
**Importance:** High

Hi Dr. Shenton,

I'm submitting the academic program approval form for the Sustainable Energy Technology (SET) minor (Dr. Keith Goossen, advisor) to the Faculty Senate's April meeting.

We have added CIEG 465, Engineers without Borders (3 credit version only) as a choice under course requirements.

According to the approval form, I must identify other units affected by the proposed change of adding CIEG 465, which of course, is Civil and Environmental Engineering.

Dr. Goossen has approved this course to count for the minor; however, I need your approval as well, via this email, so I can attach it to the approval form in order to gain proper signatures.

Would you be so kind and respond by Friday, April 3<sup>rd</sup>? I've attached a copy of the Academic Program Approval Form.

If you have any questions, please contact me and thank you for your time.

*Debbie Nelson*  
Academic Advisor I  
Electrical & Computer Engineering  
Undergraduate Program  
140 Evans Hall

## **Nelson, Deborah L.**

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**From:** A. M. Lenhoff <lenhoff@udel.edu>  
**Sent:** Monday, April 06, 2015 12:12 AM  
**To:** Nelson, Deborah L.  
**Cc:** Goossen, Keith W  
**Subject:** Re: IMPORTANT: Faculty Senate Academic Program Approval

Hi Debbie and Keith,

It's fine for the course to be listed as a valid elective for the SET minor; since this is a popular minor in our dept, the course will work well for our students, but of course also for other students in the minor. One caveat that I should mention is that the course isn't taught by one of our regular faculty, so we can't guarantee that it will be taught every year, but of course that shouldn't be a major issue since it is just an elective part of the minor.

Thanks.  
Bramie

On 4/1/15 1:45 PM, Nelson, Deborah L. wrote:

Hi Dr. Lenhoff,

I'm submitting the academic program approval form for the Sustainable Energy Technology (SET) minor (Dr. Keith Goossen, advisor) to the Faculty Senate's April meeting.

We have added CHEG 613, Topics in Energy and the Environment as a choice under course requirements.

According to the approval form, I must identify other units affected by the proposed change of adding CHEG 613, which of course, is Chemical & Biomolecular Engineering.

Dr. Goossen has approved this course to count for the minor; however, I need your approval as well, via this email, so I can attach it to the approval form in order to gain proper signatures.

Would you be so kind and respond by Friday, April 3<sup>rd</sup>? I've attached a copy of the Academic Program Approval Form.

If you have any questions, please contact me and thank you for your time.

**Debbie Nelson**  
Academic Advisor I  
Electrical & Computer Engineering  
Undergraduate Program  
140 Evans Hall  
Newark DE 19716  
P: 302-831-3275  
F: 302-831-4375

## **Nelson, Deborah L.**

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**From:** Nowak, Edmund R  
**Sent:** Monday, April 06, 2015 9:14 AM  
**To:** Nelson, Deborah L.  
**Subject:** RE: IMPORTANT: Faculty Senate Academic Program Approval

Hi Debbie,

Yes, I support the proposal and approve adding PHYS143 as a choice under the minor's course requirements.

Best,

Ed Nowak

Professor and Chair

Department of Physics and Astronomy

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**From:** Nelson, Deborah L.  
**Sent:** Wednesday, April 01, 2015 1:57 PM  
**To:** Nowak, Edmund R  
**Cc:** Goossen, Keith W; Shermeyer, Frederick C.  
**Subject:** IMPORTANT: Faculty Senate Academic Program Approval  
**Importance:** High

Hi Dr. Nowak,

I'm submitting the academic program approval form for the Sustainable Energy Technology (SET) minor (Dr. Keith Goossen, advisor) to the Faculty Senate's April meeting.

We have added PHYS 143, Energy Technology and Society, as a choice under course requirements.

According to the approval form, I must identify other units affected by the proposed change of adding PHYS 143, which of course, is Department of Physics and Astronomy.

Dr. Goossen has approved this course to count for the minor; however, I need your approval as well, via this email, so I can attach it to the approval form in order to gain proper signatures.

Would you be so kind and respond by Friday, April 3<sup>rd</sup>? I've attached a copy of the Academic Program Approval Form.

If you have any questions, please contact me and thank you for your time.

*Debbie Nelson*

Academic Advisor I  
Electrical & Computer Engineering  
Undergraduate Program  
140 Evans Hall  
Newark DE 19716  
P: 302-831-3275  
F: 302-831-4375

## Nelson, Deborah L.

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**From:** Bauer, Gretchen M  
**Sent:** Thursday, April 02, 2015 5:12 AM  
**To:** Nelson, Deborah L.  
**Cc:** Goossen, Keith W; Shermeyer, Frederick C.; Mycoff, Jason D; Ford, Barbara  
**Subject:** RE: IMPORTANT: Faculty Senate Academic Program Approval

Hi, we will be happy for you to include POSC 220 as a possible elective class for the Sustainable Energy Technology minor. We would also be pleased to discuss whether any other of our classes might be included in this or a future major or minor you create. Kind regards,

Gretchen Bauer  
Professor and Chair  
Department of Political Science and IR  
University of Delaware  
302 831 2357  
[www.poscir.udel.edu/](http://www.poscir.udel.edu/)

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**From:** Nelson, Deborah L.  
**Sent:** Wednesday, April 01, 2015 1:59 PM  
**To:** Bauer, Gretchen M  
**Cc:** Goossen, Keith W; Shermeyer, Frederick C.  
**Subject:** IMPORTANT: Faculty Senate Academic Program Approval

Hi Dr. Bauer,

I'm submitting the academic program approval form for the Sustainable Energy Technology (SET) minor (Dr. Keith Goossen, advisor) to the Faculty Senate's April meeting.

We have added POSC 220, Introduction to Public Policy, as a choice under course requirements.

According to the approval form, I must identify other units affected by the proposed change of adding POSC 220, which of course, is Department of Political Science and International Relations.

Dr. Goossen has approved this course to count for the minor; however, I need your approval as well, via this email, so I can attach it to the approval form in order to gain proper signatures.

Would you be so kind and respond by Friday, April 3<sup>rd</sup>? I've attached a copy of the Academic Program Approval Form.

If you have any questions, please contact me and thank you for your time.

*Debbie Nelson*

Academic Advisor I  
Electrical & Computer Engineering  
Undergraduate Program  
140 Evans Hall  
Newark DE 19716  
P: 302-831-3275  
F: 302-831-4375

**Current**

**MINOR IN SUSTAINABLE ENERGY TECHNOLOGY**

A minor in Sustainable Energy Technology may be earned by a student in any University bachelor's degree program through successful completion of a minimum of 15 credits as described below. Before beginning these courses, the student must meet the required course prerequisites. A minimum grade of C- is required in all courses completed for the minor.

**CURRICULUM CREDITS**

**Course Requirements**

To receive a Minor in Sustainable Energy Technology the student must take three (9 credits or more) out of the following set of courses:

CHEG 612 Applied Process Heat Transfer	3
CHEG 614 Special Topics in Energy	3
CHEG 616 Chemistry and Physics of Surfaces and Interfaces	3
CHEG 624 Bio-Based Materials	3
CHEG 625 Green Engineering	3
CIEG 351 Transportation Engineering	3
	3
BREG 456 Fundamentals of Heating, Ventilation and Air Conditioning	3
ELEG 415/615 Electric Power and Renewable Energy Systems	3
ELEG 417/617 The Smart Grid	3
ELEG 437/637 Energy Systems	3
ELEG 456/656 Electric Power II	3
ELEG 493/693 Electric Motors and Generators	3
ELEG 620 Potovoltaic Materials and Devices	3
ELEG 628 Solar Electric Technology & Applications	3
MEEG 425 Automotive Powertrain Theory	3
MEEG 442 Introduction to Fuel Cells	3
MEEG 435 Wind Power Engineering	3
MSEG 470/670 Solar Energy	3
Undergraduate Research in Energy	3

Students must also take one of the following required courses (3 credits):

ENEP 250 Introduction to Energy Policy	3
ENEP 425/625 Energy Policy and Administration	3

AND take one course from the following list (3 or more credits):

CIEG 650 Urban Transportation Systems	3
ECON 320 Energy Economics	3
ENEP 402 Electricity Policy and Planning	3
ENEP 426 Climate Change Policy	3
ENEP 427 Sustainable Energy: Economics and Policy Analysis	3
GEOG 235 Conservation of Natural Resources	3
GEOG 236 Conservation: Global Issues	3
GEOG 417/617 Seminar in Climate Change	3
GEOG 422/622 Resources, Development and the Environment	3
MAST 628 Offshore Wind Power: Science, Engineering, and Policy	1 to 4
MAST 662 Conservation and Renewable Energy Policy	3
MAST 675 Economics of Natural Resources	3
MAST 676 Environmental Economics (prereq: ECON 300)	3

**Revised**

**MINOR IN SUSTAINABLE ENERGY TECHNOLOGY**

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**CURRICULUM CREDITS**

**Course Requirements**

To receive a Minor in Sustainable Energy Technology the student must take three (9 credits or more) out of the following set of courses:

CHEG 612 Applied Process Heat Transfer	3
<b>CHEG 613 Topics in Energy and the Environment</b>	<b>3</b>
CHEG 614 Special Topics in Energy	3
CHEG 616 Chemistry and Physics of Surfaces and Interfaces	3
CHEG 624 Bio-Based Materials	3
CHEG 625 Green Engineering	3
CIEG 351 Transportation Engineering	3
<b>CIEG 465 Engineers without Borders (3 credit version only)</b>	<b>1 to 3</b>
BREG 456 Fundamentals of Heating, Ventilation and Air Conditioning	3
ELEG 415/615 Electric Power and Renewable Energy Systems	3
ELEG 417/617 The Smart Grid	3
ELEG 437/637 Energy Systems	3
ELEG 456/656 Electric Power II	3
ELEG 493/693 Electric Motors and Generators	3
ELEG 620 Potovoltaic Materials and Devices	3
ELEG 628 Solar Electric Technology & Applications	3
MEEG 425 Automotive Powertrain Theory	3
MEEG 442 Introduction to Fuel Cells	3
MEEG 435 Wind Power Engineering	3
MSEG 470/670 Solar Energy	3
Undergraduate Research in Energy	3

Students must also take one of the following required courses (3 credits):

ENEP 250 Introduction to Energy Policy	3
ENEP 425/625 Energy Policy and Administration	3

AND take one course from the following list (3 or more credits):

CIEG 650 Urban Transportation Systems	3
ECON 320 Energy Economics	3
ENEP 402 Electricity Policy and Planning	3
ENEP 426 Climate Change Policy	3
ENEP 427 Sustainable Energy: Economics and Policy Analysis	3
GEOG 235 Conservation of Natural Resources	3
GEOG 236 Conservation: Global Issues	3
GEOG 417/617 Seminar in Climate Change	3
GEOG 422/622 Resources, Development and the Environment	3
MAST 628 Offshore Wind Power: Science, Engineering, and Policy	1 to 4
MAST 662 Conservation and Renewable Energy Policy	3
MAST 675 Economics of Natural Resources	3
MAST 676 Environmental Economics (prereq: ECON 300)	3



POSC 350 Politics and the Environment (permission required by POSC dept.) 3

**TOTAL CREDITS** 15

Other courses may be included upon approval of the minor administration committee. For inquiries about the Sustainable Energy Technology Minor, contact Professor Keith Goossen at (302) 831-0590 (goossen@ece.udel.edu).

PHYS 143 Energy Technology and Society 3  
POSC 220 Introduction to Public Policy 3

POSC 350 Politics and the Environment (permission required by POSC dept.) 3

**TOTAL CREDITS** 15

Other courses may be included upon approval of the minor administration committee. For inquiries about the Sustainable Energy Technology Minor, contact Professor Keith Goossen at (302) 831-0590 (goossen@ece.udel.edu).