

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. For more information, call the Faculty Senate Office at 831-2921.

Submitted by: Kathleen C. Werrell/Robert L. Opila phone number 4863/3128

Department: Engineering Outreach/Materials Science & Eng'g
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Date: March 27, 2014 submission to the EAC, Engineering

Action: Request approval of a new interdisciplinary Graduate Certificate Program: *Renewable Energy Engineering and Policy Certificate (REEP-CERT)*
(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 a.s.a.p. – ideally 14F
(use format 04F, 05W)

Current degree This certificate does not exist, but the courses could be applied, with degree advisor approval, to one of several existing graduate degree programs, including those in electrical engineering, energy & environmental policy, materials science & engineering, or mechanical engineering

(Example: BA, BACH, BACJ, HBA, EDD, MA, MBA, etc.)

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

Proposed name: Renewable Energy Engineering and Policy Certificate (REEP-CERT)
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: _____
(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, 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”)

The courses listed in the program description (below) already exist. However, as research in the REEP fields progresses and new courses are developed (and approved through the Course Challenge process) that are relevant to the REEP-CERT, the graduate committee of the home department of the respective proposed elective may add the new course to the list of elective options in the REEP-CERT.

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

n/a, as this is a *graduate* certificate program

Identify other units affected by the proposed changes:

(Attach permission from the affected units. If no other unit is affected, enter “None”)

None

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

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

This interdisciplinary Graduate Certificate in Renewable Energy Engineering and Policy (REEP-CERT) is offered by UD’s College of Engineering and administered through the Engineering Outreach Program. Professor Robert L. Opila (or another designated faculty member in the College of Engineering) will serve as co-Director along with the Assistant Dean/Director of Engineering Outreach. The participation at any given point is expected to be approximately 20 students, limited only by the availability of “seats” in the core courses (which can be extended through distance formatting of the courses). The certificate will serve both as a means of recognizing a level of expertise in renewable energy engineering and as a graduate recruitment tool and, accordingly is designed to serve two audiences:

Matriculated Graduate Engineering Students:

A notation on the graduate transcript of having completed course requires for the REEP-CERT will recognize the graduate student’s interest and academic accomplishments in the field of renewable energy.

Engineering & Science Professionals (non-matriculated in a degree program):

Professionals with the prerequisite educational background (obtained through an undergraduate degree in a Science-Technology-Engineering-Math (STEM) field) who are seeking to strengthen their knowledge of renewable energy technologies and policy can earn the REEP-CERT as a graduate/non-degree student. Admission to the graduate certificate program through Engineering Outreach as a graduate/non-degree student (EGOR-ND) will result in the certificate courses being applied to a graduate transcript, where completion of the certificate requirements will be noted on that transcript. In addition, the Engineering Outreach Program will provide these EGOR-ND students who complete the certificate requirements with a framed certificate – to be hung with pride and to spread the name recognition of the University of Delaware.

Because the University policy is that (at most) nine (9) credits can be moved from non-degree to degree status, a certificate program is designed so that the student who is not matriculated in a degree program can complete the certificate program and then apply the certificate program courses as electives in one of several graduate programs (listed above) if/when accepted into the degree program. Meanwhile, the student’s pursuit of the graduate certificate courses on a non-degree basis allows him/her to “test the waters” of taking graduate engineering and/or policy courses while working full-time, but allows the

faculty to more accurately assess the student's potential for success in the graduate degree program if/when the student decides to apply. Thus, the certificate becomes an excellent recruiting tool.

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.)

Admission Requirements:

- Students matriculated in any STEM graduate program at the University of Delaware are eligible to pursue the REEP-CERT. The STEM graduate student's record will be reviewed by the certificate co-directors to ensure satisfactory completion of courses that will be prerequisite to success in the core courses and targeted electives in the certificate program.
- Non-matriculated students will apply for graduate/non-degree status (EGOR-ND) following the admission policy of the Engineering Outreach Program. This requires the student to submit an unofficial copy of his/her undergraduate transcript, along with a statement of specific interests and targeted elective courses within the REEP/CERT. The Assistant Dean/Director of Engineering Outreach will review the transcript, which must indicate completion of an undergraduate degree in one of the STEM fields, and satisfactory completion of courses that provide the prerequisite knowledge needed for success in the targeted REEP-CERT courses. If approved, the Assistant Dean/Director of Engineering Outreach will then guide the student through the admission process for EGOR-ND matriculation status and thereafter will advise and register the student for the three chosen REEP-CERT courses.

Program Description:

The REEP-CERT requires satisfactory completion of three (3) graduate level courses (9 credits) as detailed below. No REEP-CERT courses can be counted toward both this certificate and any other graduate certificate program. Each certificate program course must be completed with a grade no lower than B-; the overall GPA of the REEP-CERT courses must be no lower than 3.0.

Course Requirements:

Required Core Courses (minimum of six credit hours):

ELEG637, Energy Systems

ENEP625, Energy Policy and Administration

Note that any of the courses currently listed, or later added to the list of core course options, that are not used to fulfill the required core may be used as an elective course.

Elective Course Options (each 3-credit courses):

One course from the following list. (Also see the note above.)

CHEG614, Special Topics in Energy (needs clearance by semester, as topics vary)

ELEG615, Electric Power & Renewable Energy Systems

ELEG620, Solar Energy Systems

ELEG628, Solar Energy Technology and Applications

ELEG637, Energy Systems

ENEP660, Engineering Economic Analysis for Sustainable Energy

MAST622/UAPP626, Conservation and Renewable Energy Policy

MAST628, Offshore Wind Power: Science, Engineering and Policy

MEEG635, Wind Power Engineering

MEEG642, Introduction to Fuel Cells

(Elective Options continued)

MSEG650, Topics in Renewable Energy

MSEG670, Solar Energy

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

Department Chairperson _____ Date _____

Dean of College _____ Date _____

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 _____

Provost _____ Date _____

Board of Trustee Notification _____ Date _____

Revised 02/09/2009 /khs