Program Change Request

New Program Proposal

Date Submitted: 10/02/19 3:01 pm
Viewing: | Energy Analysis and Policy
Last edit: 10/15/19 2:49 pm
Changes proposed by: sowilliams

Name of the school or college academic planner who you consulted with on this proposal:

<table>
<thead>
<tr>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tara Mohan</td>
</tr>
<tr>
<td>IES</td>
</tr>
<tr>
<td>Paul Zedler</td>
</tr>
<tr>
<td>IES</td>
</tr>
</tbody>
</table>

Proposal Abstract/Summary:
This is a proposal to create a doctoral minor in Energy Analysis and Policy. This minor would nearly mimic the graduate certificate in Energy Analysis and Policy, but would serve as an option for PhD students whose degree program’s breadth requirements would be better fulfilled with a PhD minor as opposed to a certificate. Students would have the option to pursue either the minor or the certificate (but not both) depending on their situation. This is similar to other programs that have both a PhD minor and a certificate option, such as “Culture, History, and Environment.”

Basic Information

Type of Program: Minor (PhD and BSE only)
Who is the audience?
Home Department: Inst for Environmental Studies (ENVIR ST)
School/College: Gaylord Nelson Institute for Environmental Studies

The program will be governed by the home department/academic unit as specified. Will an additional coordinating or oversight committee be established for the program?
Yes
Is this in the Graduate School?
SIS Code:
SIS Description:
Transcript Title: Energy Analysis and Policy

Roles by Responsibility: List one person for each role in the drop down list. Use the green + to create additional boxes.

<table>
<thead>
<tr>
<th>Role Type</th>
<th>Name (Last, First)</th>
<th>Email</th>
<th>Phone</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department Chair</td>
<td>Robbins, Paul F</td>
<td><a href="mailto:pfrob@wisc.edu">pfrob@wisc.edu</a></td>
<td>608/265-5296</td>
<td></td>
</tr>
<tr>
<td>Faculty Director</td>
<td>Wilson, Paul P</td>
<td><a href="mailto:powilson@wisc.edu">powilson@wisc.edu</a></td>
<td>608/263-0807</td>
<td></td>
</tr>
<tr>
<td>Primary Contact</td>
<td>Williams, Scott Patrick</td>
<td><a href="mailto:sowilliams@wisc.edu">sowilliams@wisc.edu</a></td>
<td>608/890-2199</td>
<td></td>
</tr>
<tr>
<td>Primary Dean’s Office Contact</td>
<td>Zedler, Paul H</td>
<td><a href="mailto:jzledler@wisc.edu">jzledler@wisc.edu</a></td>
<td>608/265-8018</td>
<td></td>
</tr>
</tbody>
</table>

List the departments that have a vested interest in this proposal:

- College of Engineering (ENGINEERG)
- Agricultural and Applied Econ (A A E)
- Planning & Landscape Architect (PLAN&LA)
- LaFollette Schi Public Affairs (PUB AFFR)

Are all program reviews in the home academic unit up to date? Yes

In Workflow

1. ENVIR ST Dept. Approver
2. IES Institute Admin Reviewer
3. IES Institute Approver
4. APRI Admin
5. GPEC Approver
6. UACAP Approver
7. Registrar

Approval Path

1. 10/05/19 9:06 am
   Paul F Robbins
   (pfrob@wisc.edu)
   Approved for ENVIR ST Dept. Approver
2. 10/15/19 2:47 am
   Tara E Mohan
   (tarma@wisc.edu)
   Approved for IES Institute Admin Reviewer
3. 10/15/19 2:49 am
   Tara E Mohan
   (tarma@wisc.edu)
   Approved for IES Institute Approver
4. 10/20/19 7:47 am
   Michelle Young
   (meyoung@wisc.edu)
   Approved for APRI Admin
Are all assessment plans in the home academic unit up to date? Yes
Are all assessment reports in the home academic unit up to date? Yes
Will this program be part of a consensual or collaborative arrangement with another college or university? No
Will instruction take place at a location geographically separate from UW Madison? No
First term of student enrollment: Fall 2020 (1213)
Year of three year check in to EREC (3 years after first student enrollment): 2024
Year of first program review (5 years after first student enrollment): 2026
If this proposal is approved, describe the implementation plan and timeline.

Because the curriculum of the PhD minor is nearly identical to the certificate, there is very little that needs to be implemented once approved. Changes would immediately be made to the EAP website, handbook, and application form to reflect the option of choosing either the certificate or the PhD minor and the differences between the two. Advising appointments would help PhD students understand the two options and decide which is better for their situation.

Rationale and Justifications

Why is the program being proposed? What is its purpose?

This doctoral minor is being proposed to give PhD students another option to fulfill their breadth requirements with a focus in Energy Analysis and Policy. It is intended for PhD students whose degree program’s breadth requirements would be better fulfilled with a doctoral minor as opposed to a certificate. This additional option would also make the EAP program more visible and more accessible to a greater number of graduate students across campus.

More generally about Energy Analysis and Policy (language taken from the existing certificate program):

Energy plays a crucial role in modern civilization, yet energy production and consumption pose serious risks to the environment and international security. Decision makers in industry, government, and environmental organizations are increasingly challenged with balancing tradeoffs among these multifaceted energy issues.

For the most part, professionals working in energy – from engineers to lawyers, researchers to business leaders – have been trained in a single specialization, whether technical, scientific, or social science. The Energy Analysis and Policy program offers a powerful option to add value to disciplinary graduate degrees.

The EAP program gives students the knowledge and skills needed to become leaders in industry, government, consulting, non-profits, and other roles in the energy field. EAP’s interdisciplinary curriculum considers scientific, technical, economic, political, and social factors that shape energy policy formulation and decision making.

Faculty and Staff Resources

List the core program faculty and staff with title and departmental affiliation(s) who are primarily involved and will participate in the delivery and oversight.

<table>
<thead>
<tr>
<th>Name (Last, First)</th>
<th>Department</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Williams, Scott Patrick</td>
<td>Graduate School (GRAD SCH)</td>
<td>Research and Education Coordinator</td>
</tr>
<tr>
<td>Wilson, Paul P</td>
<td>Engineering Physics (EGR PHYS)</td>
<td>Grainger Professor of Nuclear Engineering</td>
</tr>
<tr>
<td>Holloway, Teresa A</td>
<td>Inst for Environmental Studies (ENVR ST)</td>
<td>Gaylord Nelson Distinguished Professor</td>
</tr>
<tr>
<td>Nemet, Gregory F</td>
<td>La Follette Sch Public Affairs (PUB AFFR)</td>
<td>Professor</td>
</tr>
<tr>
<td>Lesieutre, Bernard C</td>
<td>Electrical and Computer Engr (ELEC C EGR)</td>
<td>Professor</td>
</tr>
</tbody>
</table>

What resources are available to support faculty, staff, labs, equipment, etc.?

The Wisconsin Institute for Environmental Studies and the Wisconsin Energy Institute already provide support for the Energy Analysis and Policy certificate program, and the resources that currently support the certificate would be available for the PhD minor. For example, the salary of Scott Williams is supported by the Wisconsin Energy Institute to serve as academic coordinator for the certificate, and the PhD minor would be incorporated into his existing duties. Likewise, the EAP program chair (Paul Wilson) receives salary support from the Wisconsin Institute for Environmental Studies. The Wisconsin Energy Institute also provides space (when available) for EAP students and faculty to hold meetings and events.

Resources, Budget, and Finance

What is the tuition structure for this program?

Standard resident/MN/nonresident graduate tuition

Does the program or change require substantial new resources other than those just described? Describe the needs. Confirm that the dean is committed to providing the resources.

The program does not require substantial new resources. The PhD minor would be incorporated into the activities and duties already being carried out for the EAP certificate.
Are new Library resources needed to support this program?

No

Describe plans for funding students including but not limited to funding sources and how funding decisions are made. Most decisions for funding students will be under the purview of their degree program and not the certificate or PhD minor. However, the EAP certificate program has given out fellowships and scholarships in the past at the request of donors, including the Bunn Distinguished Graduate Fellowship and the Wes and Anke Foell International Student Scholarship. Students who formally apply and are accepted into the EAP program are considered eligible for these funding opportunities, depending on the criteria set by each fund. A subset of faculty members from the EAP program committee will select recipients for each fellowship or scholarship based on a review of student applications.

Curriculum and Requirements

Guide Admissions/How to Get In tab

EAP welcomes applications from students in any doctoral degree program at UW Madison. Students may apply to the EAP program concurrently with their graduate school application or once they have matriculated at UW-Madison.

While there are no prerequisites to the program, it is recommended that EAP applicants have completed at least one college-level course in each of the following five subject areas: physical science (physics or chemistry); natural science (biology, environmental, geology or atmospheric and oceanic); economics; social sciences or humanities (besides economics); and calculus or statistics.

HOW TO APPLY

To apply for the EAP doctoral minor, students must complete the online Energy Analysis and Policy (EAP) application form, which includes the following elements:

Information on prior educational attainment
Information on degree program being pursued
A brief statement of interest in the EAP program

DEADLINES

Applications to EAP may be submitted at any time, but applicants are encouraged to apply early in their graduate career to ensure timely completion of doctoral minor requirements and to access additional benefits (e.g. funding, networking events) available exclusively to students in the EAP program. Students may take courses that meet the minor requirements prior to completing their application.

Describe plans for recruiting students to this program.

Recruitment toward the doctoral minor will be incorporated into existing recruitment activities for the EAP certificate. Because EAP is not a standalone degree, recruitment primarily involves collaborating with faculty and program coordinators in several degree programs whose students are most likely to pursue the EAP Certificate or minor. This includes advising these faculty and coordinators with appropriate handouts, flyers, and email messages that they can share with prospective, admitted, and enrolled students at various points in their own recruitment processes. Additionally, the EAP program has maintained a social media presence to highlight the accomplishments of EAP students, faculty, and alumni, and has engaged in some web advertising as well.

Projected Annual Enrollment:

<table>
<thead>
<tr>
<th>Year</th>
<th>Projected Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>3</td>
</tr>
<tr>
<td>Year 2</td>
<td>7</td>
</tr>
<tr>
<td>Year 3</td>
<td>10</td>
</tr>
<tr>
<td>Year 4</td>
<td>12</td>
</tr>
<tr>
<td>Year 5</td>
<td>14</td>
</tr>
</tbody>
</table>

Maximum enrollment that can be supported with existing instructional and student services resources: 25

Those who are not familiar with using the html editor fields may upload a document with information about the curriculum for use by those who will format and edit the content that will appear in the Guide.

Guide Requirements tab

Each EAP student must complete four courses (12 credits), including an introductory course, a capstone course, and one course from each of two categories: Energy Analysis and Energy Policy. Courses in the Energy Analysis category involve quantitative analysis of the technical and economic factors that shape society’s use of energy resources. Courses in the Energy Policy category involve the social, political, and environmental factors that underly decision making around energy choices.

Some courses listed in the Energy Analysis category may have some overlap with the Energy Policy category, and vice versa. Students who wish to use a course for the opposite category that it is listed in should submit a written request to the EAP Academic Coordinator or Faculty Chair. Students should provide a course syllabus and a written justification for why the course should qualify for the other category in the context of their overall course of study, with the EAP Chair making the final decision on whether to accept the request.

The following courses are offered regularly, though other courses (with approval by the EAP faculty program committee) may fulfill one of the requirements below (see note under Other Qualifying Courses).

Course List

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVR 17/ PUB AFF/UBB R PL 809</td>
<td>Introduction to Energy Analysis and Policy</td>
<td>6</td>
</tr>
<tr>
<td>ENVR 17/ PUB AFF/UBB R PL 810</td>
<td>Energy Analysis and Policy Capstone</td>
<td>3</td>
</tr>
</tbody>
</table>

Choose one of the following:

**ECON 371**

Energy, Resources and Economics

https://next-guide.wisc.edu/courseleaf/approve/?role=GRAD SCH Dept Approver
Energy Policy

Choose one of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVR 340</td>
<td>Climate Change Governance</td>
</tr>
<tr>
<td>ENVR 340/ATM 355</td>
<td>Introduction to Air Quality</td>
</tr>
<tr>
<td>ENVR 17/ECON 101/URB R PL 449</td>
<td>Government and Natural Resources</td>
</tr>
<tr>
<td>ENVR 17/POP HTH 473</td>
<td>Introduction to Environmental Health</td>
</tr>
<tr>
<td>ENVR 17/POP HTH 502</td>
<td>Air Pollution and Human Health</td>
</tr>
<tr>
<td>ENVR 17/POP HTH 560</td>
<td>Health Impact Assessment of Global Environmental Change</td>
</tr>
<tr>
<td>ENVR 17/PH/SOC/URB AFFR 866</td>
<td>Global Environmental Governance</td>
</tr>
<tr>
<td>GEOS/ENVR ST 411</td>
<td>Energy Resources</td>
</tr>
<tr>
<td>LAW 486</td>
<td>Introduction to Environmental Law</td>
</tr>
<tr>
<td>POP HTH/MS/ENVTOX 789</td>
<td>Principles of Environmental Health: A Systems Thinking Approach</td>
</tr>
</tbody>
</table>

Total Credits: 12

Guide Graduate Policies tab

Program Learning Outcomes and Assessment

List the program learning outcomes.

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Learning Outcome per Box. Use the green + to create additional boxes.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Demonstrate an awareness of the variety of energy sources and energy conversion technologies and master the language required to engage in the analysis of energy topics.</td>
</tr>
<tr>
<td>2</td>
<td>Analyze and compare the sustainability of different energy sources/technologies from the perspective of economics, environmental impacts and security of supply.</td>
</tr>
<tr>
<td>3</td>
<td>Demonstrate an awareness of the socio-political institutions that govern the energy industry.</td>
</tr>
<tr>
<td>4</td>
<td>Prepare for energy-related career pathways in industry, government, academia, NGOs, regulatory agencies, and energy consulting. Gain experience by participating in &quot;real-life&quot; projects for actual clients in multidisciplinary student groups.</td>
</tr>
</tbody>
</table>

Summarize the assessment plan.

Assessment for the minor will be conducted in conjunction with the existing certificate assessment plan (uploaded below).

A. The EAP program will conduct an annual focus group each May, composed of students recruited from the current enrollment in the Envr St 810 Capstone seminar. These students are at the end of their EAP curriculum. The focus group will be facilitated by a faculty or staff member who is not the program chair, academic coordinator or the instructor of the seminar.

B. The EAP program faculty will develop a simple online assessment that evaluates a student’s progress in achieving the learning objectives. Students will complete the survey upon entrance to the minor and at their completion of the minor. Results will be compared to assess the impact of their experience in the EAP minor.

Courses in the curriculum are numbered 300 or higher.
Yes

The program faculty/staff will ensure the program website, Advance Your Career materials if applicable, and other presentations are consistent with the Guide information for this program.
Yes

Credential will not be awarded retroactively to students who completed all of the requirements before the credential was approved.
Yes

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### Approvals

**Department Approval** - This proposal has been approved by the faculty at the department/academic unit level. The program faculty confirm that the unit has the capacity and resources (financial, physical, instructional, and administrative) to meet the responsibilities associated with offering the program, including offering the necessary courses, advising students, maintaining accurate information about the program in the Guide and elsewhere, conducting student learning assessment and program review, and otherwise attend to all responsibilities related to offering this program.

Enter any notes about approval here:

- **Entered by:** Tara Mohan
- **Date entered:** October 15, 2019

**School/College Approval** - This proposal has been approved at the school/college level and it is submitted with the Dean's support. The Dean and program faculty confirm that the unit has the capacity and resources (financial, physical, instructional, and administrative) to meet the responsibilities associated with offering the program, including offering the necessary courses, advising students, maintaining accurate information about the program in the Guide and elsewhere, conducting student learning assessment and program review, and otherwise attend to all responsibilities related to offering this program.

Enter any notes about approval here:

- **Entered by and date:** Tara Mohan
- **Date entered:** October 15, 2019

**GFEC Approval** - This proposal has been approved by the Graduate Faculty Executive Committee and the Dean of the Graduate School.

Enter any notes about the approval here:

- **Entered by:**
- **Date entered:**

**GAPC Approval** - This proposal has been approved by the University Academic Planning Council and the Provost.

Enter any notes about approval here:

- **Entered by:**
- **Date entered:**

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### For Administrative Use

Admin Notes:

Guide URL:

Effective date:

Career:

SIS Program Code:

SIS Short Description:

Other plan codes associated with this program:

Field of Study:

Plan Group:

CIP Code:

Reviewer:

Comments:
Student Learning Outcomes

1. Students demonstrate an awareness of the variety of energy sources and energy conversion technologies and master the language required to engage in the analysis of energy topics.

2. Students analyze and compare the sustainability of different energy sources/technologies from the perspective of economics, environmental impacts and security of supply.

3. Students demonstrate an awareness of the socio-political institutions that govern the energy industry.

4. Students prepare for energy-related career pathways in industry, government, academia, NGOs, regulatory agencies and energy consulting. They gain experience by participating in “real-life” projects for actual clients in multidisciplinary student groups.

Curriculum Map

<table>
<thead>
<tr>
<th>Courses</th>
<th>Outcome #1</th>
<th>Outcome #2</th>
<th>Outcome #3</th>
<th>Outcome #4</th>
</tr>
</thead>
<tbody>
<tr>
<td>EnvSt/PubAff/URPL 809</td>
<td>Introductory Class</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Policy (choice)</td>
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<td>Policy Analysis</td>
<td></td>
</tr>
<tr>
<td>PubAff 881, Pub Aff 866, Law 940, EnvSt 449</td>
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<tr>
<td>Economics/Business (choice)</td>
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<td>Economic Analysis</td>
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</tr>
<tr>
<td>EnvSt 561, AAE 671, PubAff 881</td>
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<tr>
<td>Environmental (choice)</td>
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<td>Environmental Analysis</td>
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<tr>
<td>EnvSt 502, CEE 423, EnvSt 471, EnvSt 740</td>
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<tr>
<td>Technical (choice)</td>
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<td>Technical Analysis</td>
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</tr>
<tr>
<td>Geology 411, BSE 367, NE 571, ME 567, ECE 427</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capstone 810</td>
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<td>Capstone Project</td>
</tr>
<tr>
<td>Elective Seminar</td>
<td>Professional Guidance</td>
<td></td>
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<td>Career seminar</td>
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</table>
Assessment Planning

<table>
<thead>
<tr>
<th>Assessment Plan</th>
<th>Learning Outcome #1</th>
<th>Learning Outcome #2</th>
<th>Learning Outcome #3</th>
<th>Learning Outcome #4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method for assessing learning</td>
<td>Course syllabi state outcomes and align assessments</td>
<td>Course syllabi state outcomes and align assessments</td>
<td>Course syllabi state outcomes and align assessments</td>
<td>Review of Capstone Reports and survey of Capstone clients</td>
</tr>
<tr>
<td>Timetable for Assessment Activity</td>
<td>Every semester</td>
<td>Every semester</td>
<td>Every semester</td>
<td>Every year in May</td>
</tr>
</tbody>
</table>

Assessment Review and Reporting

1. Who is responsible (ID a 3-member team)

   A team of faculty representing the “Energy Cluster Hire” and other core program faculty.

2. What is the plan for review of assessment information?

   A. The EAP program will conduct an annual focus group each May, composed of students recruited from the current enrollment in the 810 Capstone seminar. These students are at the end of their EAP curriculum. The focus group will be facilitated by a faculty or staff member who is not the program chair, academic coordinator or the instructor of the seminar.

   B. The EAP program faculty will develop a simple online assessment that evaluates a student’s progress in achieving the learning objectives. Students will complete the survey upon entrance to the certificate and at their completion of the certificate. Results will be compared to assess the impact of their experience earning the EAP certificate.

3. What is the plan for production of annual summary report?

   Every year the EAP program coordinator will report the following data:

   - Number of applicants
   - Number of new enrollments
   - Total number of students enrolled
     - Breakdown by graduate major
     - Breakdown by standard demographic categories
   - Number of students earning the certificate