

# 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:** \_\_\_\_\_ **Nancy Targett** \_\_\_\_\_ phone number **831-2841** \_\_\_\_\_

**Department:** \_\_\_\_\_ email address **ntargett@udel.edu**

**Action:** \_\_\_\_\_ **Add Major in Environmental Studies (and concentrations)** \_\_\_\_\_  
(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** \_\_\_\_\_ **09F** \_\_\_\_\_  
(use format 04F, 05W)

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

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

**Proposed name:** \_\_\_\_\_ **Environmental Studies** \_\_\_\_\_  
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")

**ENSC 101 Introduction to the Environment** - This course provides students with a broad overview of the fields of environmental science and environmental studies. Students will be introduced to the spectrum of science and policy that is associated with environmental work and explore specific issues, perspectives, and approaches from these varied areas.

**ENSC 450: ProSeminar: The Environment**- Designed as a capstone, this course will engage students in an exploration and discussion of the history and state of environmental science and environmental studies and the connection to local, regional, national and global scale environmental issues. Students will develop and refine critical thinking skills and interdisciplinary problem-solving strategies. The course serves as a culminating experience for students on the "science-side" and the "studies-side", providing them with the opportunity to collaboratively solve problems and discuss current issues in the environmental literature.

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

The Environmental Studies Curriculum supports the 10 goals of undergraduate education in the following ways:

1. Courses in the major require that students communicate effectively in verbal and written ways.
2. Students will need to use information technologies, use quantitative reasoning and critical thinking skills.
3. Students will be asked to integrate in-class learning in solving real life problems.
4. Students will understand the impact of humans on the environment and *vice versa* locally and globally.
5. Students will work and learn independently and collaboratively, integrating various concentrations, perspectives and diverse ways of thinking that underlie the search for knowledge in the arts, humanities, sciences and social sciences.
6. Students will explore environmentally related ethical questions and implications of individual and societal choices on individuals, communities, and the planet.
7. Students will develop intellectual curiosity, confidence, and understand the need for lifelong engagement in learning.
8. Students will develop an integrated, international perspective regarding countries, populations and the environment.
9. Students will integrate and demonstrate classroom skills and knowledge in at least one field related experience.

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

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

College of Agriculture and Natural Resources  
College of Arts and Sciences  
Department of Biological Sciences  
Department of Chemistry/Biochemistry  
Department of Food and Resource Economics  
Department of Geological Sciences  
Department of Geography  
Department of Economics  
Department of Entomology and Wildlife Conservation

Environmental Studies Program  
Department of History  
College of Marine and Earth Studies  
Department of Philosophy  
Department of Plant and Soil Sciences  
Department of Political Science & International Relations  
Department of Sociology and Criminal Justice  
School of Urban Affairs and Public Policy



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

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

As a part of its Path to Prominence™, the University of Delaware is focused on becoming a greener, more environmentally aware campus and on highlighting and enhancing opportunities for undergraduates to engage in environmental degree programs. Specifically the goals outlined in the P2P stated that UD would:

- Strive to make environmental awareness and stewardship an integral part of every student's educational experience.
- Develop environmental degree programs that promote cross-fertilization of science and policy.
- Define additional degree tracks and concentrations as well as opportunities for self-designed programs.
- Develop environmentally focused study abroad programs.
- Enhance UD's emphasis on interdisciplinary graduate programs.
- Cultivate opportunities for science and engineering to interact with emerging business, social, and cultural issues of an environmentally aware world.

A broad-based faculty committee was convened by the Provost and charged with developing recommendations for 1. how to better highlight breadth of current environmental offerings at UD and the faculty assets that support them and 2. enhancing environmental offerings at UD. This proposal addresses the second of the committee's charges.

Committee members include:

- Tracy Deliberty (Geography)
- Steve Dentel (Civil and Environmental Engineering)
- Jan Johnson (Political Science and International Relations)
- Murray Johnston (Chemistry and Biochemistry)
- John Madsen (Geological Sciences)
- Tom Sims (Plant and Soil Science)
- Nancy Targett (Chair of Committee, CMES)

Frank Newton, CMES Assistant Dean for Student Services staffed the committee.

The University of Delaware currently offers many environmentally-related degrees in a number of colleges including Agriculture and Natural Resources, Arts and Sciences, Engineering, and Marine and Earth Studies. In addition to these numerous degree offerings in environmentally-related areas, UD also offers an interdisciplinary Bachelor of Science degree in Environmental Sciences. This program is a collaborative effort involving the Department of Geography, the Department of Geological Sciences, the College of Marine and Earth Studies, and the Department of Biological Sciences. It is a BS degree program that is rigorous in both math and science. Majors choose one of four specialized foci: the atmospheric environment, the biological environment, the geological environment, or the marine environment. The *ad hoc* University environmental curriculum committee recognized the strengths of this interdisciplinary model and recommended that it be expanded with additional concentrations and also that the model be applied to a new BA degree program in Environmental Studies. An overview of the committee process and recommendations is attached (Attachment 1).

Nationally there are 652 institutions that award 804 undergraduate interdisciplinary environmental degrees (Vincent, personal communication). Of these, 373 (46%) are Environmental Science(s) programs, 255 (32%) are Environmental Studies, and 176 (22%) had other names such as environmental policy and management and water resources. Environmental Science programs on average graduate 26 students. Environmental Studies programs graduate, on average, more than twice that number (54).

In seeking to broaden the environmental degree options for undergraduate students at UD we propose, in addition to a modified BS in Environmental Science, a BA in Environmental Studies. This degree extends UD's environmental options and reflects the fact that the Earth and its resources connect to all facets of human existence. The proposed major and its concentrations would fill the current void that exists for those students



interested in studying the environment through the perspectives of policy, economics, and social science. It aligns with the goals of the UD strategic plan in 3 ways:

1. The degree connects science and society in the context of the environment. It is broadly interdisciplinary and integrated across academic units. It includes concentrations that would be housed in Agriculture and Natural Resources, Arts and Sciences, and Marine and Earth Studies.
2. It integrates natural science with social science and policy. This foundation helps students appreciate the interconnectedness between understanding natural science processes and their applications and the social, political, and institutional frameworks in which environmental issues are considered.
3. It connects students majoring in Environmental Science and Environmental Studies (see separate proposal for the modified/expanded BS in Environmental Science).

The goal is to give students in the program a broad-based, interdisciplinary introduction to environmental policies and issues; the common analytical tools needed to explore them in depth through their specific concentration areas; and the ability to integrate and synthesize information from a multidisciplinary perspective in oral and written format through a capstone course.

The introductory course (ENSC101 Introduction to the Environment Studies) and a capstone course (ENSC 450 Proseminar: The Environment) would be required for both the BS in Environmental Science and the proposed BA in Environmental Studies programs. One of the outcomes from such a requirement would be the exposure of students to a more integrated perspective toward the development of strategies, policies and approaches aimed at addressing complex environmental issues.

In this “distributed” degree program model, students can either:

1. Enter the program as an Environmental Studies major with a concentration already declared, OR
2. Enter the program as a general Environmental Studies major and select a specific concentration after taking some of the initial courses required for the major. Students **MUST** ultimately select a concentration.

Students’ “home” college will be located where their concentration originates. There are 4 studies concentrations situated as follows:

<b><u>Concentration</u></b>	<b><u>Home College</u></b>
International Environmental Politics and Policy	Arts & Sciences
Environmental Law, Policy and Politics	Arts & Sciences
Environmental Economics and Resource Policy	Agriculture and Natural Resources
Environment, Society and Sustainability	Marine & Earth Studies

Students will be assigned an advisor from their area of concentration. In those cases where the student has not yet selected a concentration, students will be assigned an academic advisor from one of the concentrations and that college will be afforded appropriate allocation of needed resources to manage that load. Until the student declares a major, the student's home will be in the Environmental Studies Program that resides in the Department of Geography.



Recognizing that this is a degree program that is distributed across the University, we recommend that a board, appointed by the Provost and composed of faculty from participating programs, provide oversight for curricular matters and student advisement within the program. The chair of the board should be designated by the Provost. Day-to-day operations will be administered by the faculty director of the Environmental Science/Studies Program who resides in the Department of Geography.

Upon completion of degree requirements, students will receive a Bachelor of Arts in Environmental Studies with a specific concentration. The degree will be from the college that is home to the student's concentration. A separate, multidisciplinary convocation will recognize Environmental Science and Environmental Studies degree recipients.

Once approved, the major can be publicized to incoming and returning students and implemented beginning in F'09. The program's success will be evaluated after 6 consecutive (regular academic) semesters.

This program can be implemented with current resources and the support assured by the President, Provost and Deans of the participating Colleges. As the program grows we anticipate that resources will be needed strengthen key areas, for example:

- Ensuring that SOCI 330 Population, Law and Society and SOCI 331 World Population: Profiles and Trends are offered on a regular basis.
- Additional faculty in the area of international environmental policy, particularly in relation to interaction between developed and developing nations, environmental policy issues in developing nations and international environmental law and organization.
- Faculty to assist in teaching GEOG 240 Environment and Behavior (since this course overlaps between geography, political science and psychology and could be cross listed as such, faculty could have backgrounds in any of these disciplines).
- Additional offerings in environmental philosophy and environmental ethics.

### **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.)

**Bachelor of Arts in Environmental Studies (BA ENSC):** The BA in Environmental Studies and concentrations assist students in gaining a deeper understanding of and appreciation for the environment and environmental systems, the impact of humans on the environment and environmental impacts on humans, the importance of environmental understanding when making economic, political and other policy choices.

The BA in Environmental Studies program's foundation courses are in the social sciences, humanities, and natural sciences with a focus in understanding the environmental field. This, along with their specific concentration area, allows students in connecting science and society and balancing the needs of humans and other inhabitants with the needs to conserve the earth's precious resources while developing strategies, policies and approaches to solve environmental issues and reduce environmental impact.

### **General and University Requirements:**

ENGL 110 Critical Reading & Writing (min grade C-)	3
First Year Experience (fulfilled by ENSC 101+ FYE seminar)	4
Discovery Learning Experience (fulfilled by field course)	3
Multicultural requirement	3
Second Writing Course (fulfilled by ENSC 450)	3
Foreign Language	0-8
Math requirement	0-4

### **Program Breadth Requirements:**

*At least 2 different areas must be represented in each group.*

<b>Group A</b> Understanding and appreciation of the creative arts and humanities	9
<b>Group B</b> The study of culture and institutions over time	9



<b>Group C</b> Empirically based study of human beings and their environment.	9
<b>Group D</b> The study of natural phenomena through experiment or analysis	10

### Core Requirements:

ENSC 101 Introduction to the Environment	4
BISC 107 Elementary Evolutionary Ecology	3
CHEM 100 Chemistry and Human Environment	3
GEOL 105 Geological Hazards	3
GEOL 115 Geological Hazards Laboratory	1
FREC 100 Sustainable Development	3
ECON151 Introduction to Microeconomics <b>OR</b> FREC 150 Economics of Agriculture & Natural Resources	3
ECON/FREC 343 Environmental Economics	3
GEOG 235 Conservation of Natural Resources	3
GEOG 236 Conservation: Global Issues	3
MAST 200 The Oceans	3
POSC 240 Introduction to International Relations	3
POSC 350 Politics and the Environment	3
PHIL 448 Environmental Ethics	3
STAT 200 Basic Statistical Practice	3

### Field Experience: (3-6 cr)

An approved studies experience in which the student integrates the components of his or her concentration in an experiential learning environment. This requirement could be fulfilled by an internship, study abroad experience and/or a research experience.

### Studies Concentrations: (15-18 cr)

5-6 courses clustered in concentrations that are distributed throughout the colleges and across disciplines (see listings below).

### Capstone Course:

ENSC 450: Proseminar: The Environment	3
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This capstone course serves to be a culminating experience and is to be completed during the last semester of the senior year. This course will engage students in an exploration and discussion of the history and state of environmental studies and its connection to local, regional, national and global scale environmental issues. Students will develop and refine critical thinking skills and interdisciplinary problem-solving strategies. It serves to be a culminating experience for students on the "science-side" and the "studies-side" to collaboratively solve problems and discuss issues in the current environmental literature.

**Electives:** After required courses are completed, sufficient credits must be taken to meet the total minimum credits required for the degree.

**Total Credits for Degree: 124**

**Concentration in International Environmental Politics and Policy** studies theories of international relations, international environmental treaties and agreements, and the international dimension of environmental policy issues.

- GEOG 422/622 Resources, Development, And The Environment  
OR
- POSC 408 International Organization
- *Four of the following:*
  - GEOG/POSC 329 International Migration
  - MAST 673 International Law (LEST 673, POSC 604)
  - POSC 362 Diplomacy
  - POSC 363 International Law And Organization
  - POSC 409 Contemporary Problems In World Politics (when topic is appropriate)
  - POSC 451 Problems In Policy & Administration (when topic is appropriate, e.g., Comparative Environmental Policy & Politics)
  - POSC 640 International Development Policy and Administration
  - SOCI 331 World Population: Profiles And Trends



**Concentration in Environmental Law, Policy and Politics** studies environmental movements and the development of institutional processes, policies and laws that impact environmental quality. It studies specific policy areas and the connection between environmental progress and economic development.

Student must select 5 courses from the following 2 groups:

- Two or three of the following:
  - FREC 450 Topics In Environmental Law
  - GEOG 240 Environment and Behavior
  - GEOG 449 Environment and Society
  - HIST 367 American Environmental History
  - MAST 692 Environmental Values, Movements And Policy
  - POSC 380 Introduction To Law
  - POSC 363 International Law And Organization
  - SOCI 330 Population, Law And Society
  - SOCI 470 Environmental Sociology

AND

- Two or three of the following:
  - ENWC 413 Wildlife Policy and Administration (requires ENWC 201)
  - FREC 406 Agriculture and Natural Resource Policy
  - FREC/UAPP 611 Regional Watershed Management
  - GEOG 320 Water and Society
  - GEOG/UAPP 428/628 Issues In Land Use And Environmental Planning
  - MAST 620/POSC/UAPP 424/624 Energy Policy And Administration
  - MAST 622/POSC/UAPP 626 Conservation And Renewable Energy Policy
  - MAST 670 United States Ocean And Coastal Policy
  - MAST 671 Coastal Processes And Management
  - POSC 451 Topics In Policy And Administration: Climate Change Policy
  - POSC 456/656 Disaster And Politics

**Concentration in Environmental Economics and Resource Policy** studies the theories and the economic effects of national or local environmental policies and management of natural resources (like land, water, soil, plants, and animals) to preserve them for future generations.

- Three of the following:
  - ECON 350 Energy Economics
  - FREC 406 Agriculture and Natural Resource Policy
  - FREC 424 Resource Economics
  - FREC 420 Agriculture in Economic Development
  - FREC 429 Community Economic Development
  - FREC 480 Geographic Information Systems

AND

- Two of the following:
  - ENWC 413 Wildlife Policy and Administration (requires ENWC 201)
  - FREC/UAPP 611 Regional Watershed Management
  - FREC/LEST 450 Topic in Environmental Law
  - GEOG 320 Water and Society
  - GEOG 422/622 Resources, Development, and The Environment
  - MAST 622/POSC/UAPP 626 Conservation and Renewable Energy Policy
  - POSC 424 Energy Policy and Administration
  - POSC 456/656 Disaster and Politics

**Concentration in Environment, Society and Sustainability** studies the integration of economic, social and environmental policy and decision making relating to the ability for society to live and function without depleting the Earth's resources and compromising the ability of future societies to meet their needs.

- GEOG 422/622 Resources, Development, and The Environment



• *Four of the following:*

- FREC 450 Topics In Environmental Law
- FREC 424 Resource Economics
- FREC 429 Community Economic Development
- GEOG 449 Environment and Society
- GEOG 320 Water and Society
- GEOG 345 Cultural Geography
- GEOG 372 Geographic Information Systems OR  
FREC 480 Geographic Information Systems
- HIST 367 American Environmental History
- MAST 622/POSC/UAPP 626 Conservation and Renewable Energy Policy
- MAST 692 Environmental Values, Movements and Policy
- PLSC 140 People and Plants: Feast or Famine
- POSC 456/656 Disaster and Politics
- POSC 640 International Development Policy and Administration
- SOCI 330 Population, Law and Society
- SOCI 331 World Population: Profiles and Trends
- SOCI 470 Environmental Sociology

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

Department Chairperson Nancy m. Garguilo Date 2-24-09

Dean of College Nancy m. Garguilo Date 2-24-09

Chairperson, College Curriculum Committee C. E. Garguilo Date 2-24-09

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 10/23/2007 /khs



# ATTACHMENT 1

## Report of the *ad hoc* Committee on UD Academic Environmental Programs



# UD's Strategic Plan: Integrate Environmental Programs within the Curriculum (*May 08, p. 16*)

- Strive to make environmental awareness and stewardship an integral part of every student's educational experience.
- Develop environmental degree programs that promote cross-fertilization of science and policy.
- Define additional degree tracks and concentrations as well as opportunities for self-designed programs.
- Develop environmentally focused study abroad programs.
- Enhance UD's emphasis on interdisciplinary graduate programs
- Cultivate opportunities for science and engineering to interact with emerging business, social, and cultural issues of an environmentally aware world.
  
- **Action Step**: A university-wide faculty committee is now developing proposals to strengthen environmental studies programs and curricula and to evaluate new environmental studies and environmental science degree options that can both build upon and extend beyond the University's current offerings.



# Committee

- **Tracy Deliberty (Geography)**
- **Steve Dentel (Civil and Environmental Engineering)**
- **Jan Johnson (Political Science)**
- **Murray Johnston (Chemistry and Biochemistry)**
- **John Madsen (Geological Sciences)**
- **Tom Sims (Plant and Soil Science)**
- **Nancy Targett (Chair of Committee, CMES)**
  
- **Frank Newton (CMES Assistant Dean for Students staffed the committee)**



# The Process

- **Provost convenes committee of Deans, Vice Provosts, and senior Professors to consider graduate and undergraduate programs related to the environment at UD. (Summer 07)**
  - o Review of about 25 extramural programs to identify key components
  - o Review CEDD study of environmental programs
- **Faculty Committee formed by Provost to consider undergraduate environmental programs at UD. (Spring 08)**
  - o How to better highlight breadth of current environmental offerings at UD and the faculty assets that support them
  - o Make recommendations for enhancing environmental offerings at UD



# Current UD Program Portfolio

- **FINDING:** UD has significant strengths in the environmental domain, including: B.S. degree, courses, research, outreach, and student activities. However, these strengths are not always easily identified by students or by others who are external to UD.

- **RECOMMENDATION:** Cluster current majors, minors, and concentrations that are related to environment under headers that are more easily recognized by students.
  - **ACTION:** Committee developed a template that represents current major/minor and concentration options at UD. *(Handout)*
- 
- **RECOMMENDATION:** Develop a display to promote UD's environmental options venues such as Discovery Days, Blue and Gold Days, and Parents' Weekend.
  - **ACTION:** In consultation with UD PR, the committee develops a display that represents the diversity of environmentally related academic options at UD and a one page accompanying information sheet that identifies majors/minors/concentrations. *(Handout)*
- 
- **RECOMMENDATION:** Develop a web portal that highlights the breadth of UD's environmental offerings and allows students to readily access info about environmentally related courses, research, outreach and student activities.
  - **ACTION:** The committee is gathering information for a web portal that is underdevelopment by UD PR. The portal will link environmentally related academics, research, activities and practices at UD. *(Handout)*



## ARE YOU INTERESTED IN STUDYING THE ENVIRONMENT?

Well, you're in luck! In addition to the degree in **Environmental Science**, the University of Delaware offers the following environmentally focused majors (M), minors (m) and concentrations (conc) that undergraduate students can choose. There are also many environmentally focused courses across many interest areas. You can start right away to explore and better understand the environment and our connection to it!

<b><u>Environment and Earth</u></b> <ul style="list-style-type: none"> <li>• Coastal &amp; Marine Geoscience (conc/m)</li> <li>• Environmental Chemistry (conc)</li> <li>• Environmental Science (M)</li> <li>• Environmental Soil Science (M/m)</li> <li>• Geology (M/m)</li> <li>• Landscape Horticulture &amp; Design (M)</li> <li>• Marine Studies (m)</li> <li>• Paleobiology (Geological) (conc)</li> </ul>	<b><u>Environment and Policy</u></b> <ul style="list-style-type: none"> <li>• Natural Resource Management (M)</li> <li>• Wildlife Conservation (M/m)</li> <li>• Emergency &amp; Environmental Management (Sociology) (conc)</li> </ul>	<b><u>Environment and Education</u></b> <ul style="list-style-type: none"> <li>• Agricultural Education (M)</li> <li>• Biology Education (M)</li> <li>• Chemistry Education (M)</li> <li>• Earth Science Education (M)</li> <li>• Geography Education (M)</li> </ul>
<b><u>Environment and Society</u></b> <ul style="list-style-type: none"> <li>• Geography (M/m)</li> <li>• Emergency and Environmental Management (Sociology) (conc)</li> </ul>	<b><u>Environment and Living Things</u></b> <ul style="list-style-type: none"> <li>• Animal and Food Science (M/m)</li> <li>• Pre-Vet Medicine/Animal Biosci (M)</li> <li>• Environmental Chemistry (conc)</li> <li>• Entomology (M/m)</li> <li>• Landscape Horticulture &amp; Design (M)</li> <li>• Marine Studies (m)</li> <li>• Paleobiology (Geological) (conc)</li> <li>• Plant Protection (M)</li> <li>• Plant Science (M)</li> <li>• Wildlife Conservation (M/m)</li> </ul>	<b><u>Environment and Economics</u></b> <ul style="list-style-type: none"> <li>• Resource Economics (M/m)</li> <li>• (conc: Sustainable development; Environmental Econ)</li> <li>• Natural Resource Mgmnt (M)</li> </ul>
<b><u>Environment and Energy</u></b> <ul style="list-style-type: none"> <li>• Sustainable Energy Technology (m)</li> </ul>		
<b><u>Environment and Technology</u></b> <ul style="list-style-type: none"> <li>• Engineering Technology (M/m)</li> <li>• Environmental Engineering (M/m)</li> <li>• Sustainable Energy Technology (m)</li> </ul>		

## YOU CAN BE GREEN WHEN YOU'RE OUT OF THE CLASSROOM TOO!

Being green at UD is not just an academic or intellectual activity...it's a way of life! Students from all majors, colleges and programs can get involved in clubs, organizations and activities that help the planet by informing the campus community and beyond about the ways individuals can be good stewards of the planet and its resources!

Some of the Student Environmental Clubs at UD include:

- *Students for the Environment (S4E)*
- *Ducks Unlimited (UDDU)*
- *Environmental Engineering Student Association*
- *The Outing Club*
- *Wildlife Conservation Club (WCC)*
- *Engineers Without Borders*
- *ECO-House Special Interest Housing group*
- *Geology Club*



# Current UD Program Portfolio

- **FINDING:** UD has significant strengths in the environmental domain, including: B.S. degree, courses, research, outreach, and student activities. However, these strengths are not always easily identified by students or by others who are external to UD.
    - **RECOMMENDATION:** Cluster current majors, minors, and concentrations that are related to environment under headers that are more easily recognized by students.
    - **ACTION:** Committee developed a template that represents current major/minor and concentration options at UD. *(Handout)*
- **RECOMMENDATION:** Develop a display to promote UD's environmental options venues such as Discovery Days, Blue and Gold Days, and Parents' Weekend.
  - **ACTION:** In consultation with UD OCM, the committee develops a display that represents the diversity of environmentally related academic options at UD and a one page accompanying information sheet that identifies majors/minors/concentrations. *(Handout)*
- **RECOMMENDATION:** Develop a web portal that highlights the breadth of UD's environmental offerings and allows students to readily access info about environmentally related courses, research, outreach and student activities.
  - **ACTION:** The committee is gathering information for a web portal that is underdevelopment by UD OCM. The portal will link environmentally related academics, research, activities and practices at UD.





# Go "green"!

## Study the environment at UD

Interested in an environmental career? You've come to the right place. The University of Delaware is a leader in environmental research, education, and policy.

Depending on your career interests, your path to discovery may take you to a nearby farm or the frozen ends of the Earth, a high-tech lab or a corporate boardroom, the coastal ocean or the halls of Congress.

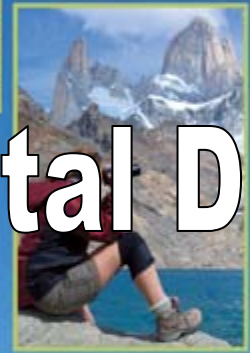
- UD students can pursue eco-focused studies in a wide array of areas:
- ◆ Biological Sciences
  - ◆ Chemistry & Biochemistry
  - ◆ Coastal & Marine Science
  - ◆ Energy Technology & Policy
  - ◆ Entomology
  - ◆ Environmental Engineering
  - ◆ Environmental Policy
  - ◆ Environmental Science
  - ◆ Geography
  - ◆ Geology
  - ◆ Natural Resource Management
  - ◆ Plant & Soil Science
  - ◆ Resource Economics
  - ◆ Sustainable Apparel Business
  - ◆ Sustainable Development
  - ◆ Wildlife Conservation

Through the "Initiative for the Planet," UD is promoting resource stewardship and developing solutions to problems facing our world. Join us!

This zero-emission, fuel-cell bus operates on campus as part of a major UD energy research initiative.



Student members of the Wildlife Conservation Club plant trees on the UD farm.



The world is our environmental classroom! Through UD's award-winning study abroad program, students can visit sites like Mt. Fitz Roy in Argentina.

UD's top-notch facilities such as our 146-foot research vessel *Hugh R. Sharp* provide the latest technology for exploring the sea.



UD students involved in Engineers Without Borders are helping to bring clean drinking water to Bakang, a village in Cameroon.

Let the sun shine! A leader in solar energy research, UD is advancing the development of high-efficiency solar cells.



John Line (left) and Frederick "Fritz" Nelson are members of the Intergovernmental Panel on Climate Change, which won the 2007 Nobel Prize for Peace.





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# DRAFT Splash Page for UD Environmental Web Portal



# The Academic Curriculum

- **FINDING:** B.S. in Environmental Science is strong but could be enhanced by including more options that facilitate broader participation from across the University.
- **FINDING:** Lack of Environmental Studies option is a weakness.
  - o **RECOMMENDATION:** Develop Environmental Studies option to complement Environmental Science option.
  - o **ACTION:** Committee develops a proposal for a B.A. in Environmental Studies.
  - o **RECOMMENDATION:** Broaden and integrate curriculum for both Environmental Science and Studies Options.
  - o **ACTION:** The committee develops a proposal to modify and broaden the B.S. in Environmental Science curriculum and integrates it with the proposed Environmental Studies curriculum.



# *Highlights*

- **B.S. Environmental Science** (124 credits)
  - GOAL: No compromise in quantitative aspects of the curriculum
- **B.A. Environmental Studies** (124 credits)
  - GOAL: Not just a science-lite curriculum but one focused on environmental policy and economics
- **Some Common Elements:** Introductory course, Capstone course
- **Additional Areas of Concentration**
- **Field Requirement for Both Degrees**
- **Clearer Path** for students who desire a **Double Major**



# Complementary External Activities

- **Finding:** UD has recently established its presence in national and international University-based environmental initiatives (AUPCC, AULSF, CEDD).
- **Recommendation:** Further enhance our status by taking a leadership role in the Salzburg Academy on Sustainable Futures, a project currently under development by the Salzburg Global Seminar Series.
  - Annual 2-3 week international program
  - Involves students, faculty, and administrators from universities across the world
  - Join effort to
    - Develop new interdisciplinary curricula and new energy conservation projects
    - Explore and improve the role of universities as sites for the advancement of comprehensive sustainability education and practice






OFFICE OF THE DEAN

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February 17, 2009

**MEMORANDUM**

To: Nancy Targett  
Dean, College of Marine and Earth Studies  
Chair, UD Undergraduate Environmental Studies Program and Curriculum Committee

From: Robin Morgan   
Dean, College of Agriculture and Natural Resources

Re: Letter of Support for Proposed Environmental Science and Environmental Studies Degrees

On behalf of the College of Agriculture and Natural Resources, I write to express our college's support for your proposed new BA in Environmental Studies and recommended revisions to the existing BS in Environmental Science degree. The University of Delaware's continued focus on environmental issues and the distributed nature of these degrees are of benefit to the University and our students, and I believe these proposed changes will be of long-term value to our college.

I understand that primary support for these proposed changes will come from four departments in our college (Bioresources Engineering, Entomology and Wildlife Ecology, Food and Resource Economics, and Plant and Soil Sciences) and that you will be requesting letters of support from each department. To the extent possible, I will work with these departments to ensure that they have the resources needed to make these proposed changes succeed in the future.

Therefore, we offer our college's support of these proposed programs and are willing to have our courses included as outlined in the main core and concentrations, within the limits of the resources we have available to support new initiatives in undergraduate education at the University.

We wish you the best of luck with these new and newly enhanced programs.



## Letters/Messages of Support

### Department of Chemistry

From: Klaus Theopold [mailto:theopold@UDel.Edu]  
Sent: Friday, February 13, 2009 5:30 PM  
To: fanewt@UDel.Edu  
Cc: Murray Johnston; ntargett; John Burmeister  
Subject: Re: Environmental Science and Studies Proposals

Dear Frank,

I am responding to Dean Targett's message quoted below. The Department of Chemistry and Biochemistry is of course very much supportive of any efforts to address environmental concerns and curricula addressing these issues.

We take note of the proposed degree programs (BS in Environmental Science and BA in Environmental Studies), and we strongly feel that the only way we might have been less than enthusiastic would be if they did not require some exposure to chemistry. I believe that the inclusion of CHEM 100 for the BA and CHEM 103/104 for the BS is very much appropriate. Thus we wholeheartedly support the establishment of these degree programs.

While it may not be entirely germane to your purpose, I must add the caution that the addition of large numbers of students to either CHEM 100 or CHEM 103/104 may cause capacity problems on our end. Thus I wish to state that we may have to request additional resources from the University to accommodate the new customers. However, that does not detract from the obvious merit of your proposal.

Klaus Theopold

Regards,

~~~~~  
Klaus H. Theopold, Professor and Chair  
Department of Chemistry and Biochemistry,  
University of Delaware, Newark, DE 19716, USA.  
Phone: (302)831-1546 (or 1247); Fax: (302)831-6335  
<http://www.udel.edu/theopold/index.html>



## College of Marine and Earth Studies

From: Charles E. Epifanio  
Sent: Saturday, February 14, 2009 10:30 AM  
To: Nancy Targett  
Subject: Environmental Curricula

Dear Nancy,

Thank you for sending detailed information concerning the proposed BS in Environmental Science and the proposed BA in Environmental Studies.

Core requirements for the BS ENSC include MAST 482 Introduction to Ocean Science. The subject matter and depth-of-presentation of this course are appropriate for students matriculated in the BS program. MAST 482 is offered once a year and has a typical class size ~15. The CMES has sufficient resources to accommodate increased enrollment in this course.

Core requirements for the BA ENSC include MAST 200 The Oceans. The subject matter and depth-of-presentation of this course are appropriate for students matriculated in the BA program. MAST 200 is offered once a year and has a typical class size ~100. The CMES has sufficient resources to handle increased enrollment in this course.

By my count, an additional 11 MAST courses are part of the curricula in the various concentrations in the BS program, and another five MAST courses are part of the curricula in the different concentrations in the BA program. The CMES has sufficient resources to accommodate increased enrollment in these courses.

On behalf of the non-departmental academic programs in the CMES, I am happy to support the proposed BS ENSC and BA ENSC.

Best regards,

Chuck

Charles E. Epifanio  
Associate Dean  
Harrington Professor of Marine Studies  
College of Marine and Earth Studies  
University of Delaware  
Lewes, DE 19958  
302-645-4263 (Office)  
302-645-4213 (FAX)  
<http://www.ocean.udel.edu/cms/cepifanio/index.html>



## Department of Economics

**From:** Hoffman, Saul [mailto:hoffmans@lerner.udel.edu]

**Sent:** Tuesday, February 17, 2009 3:25 PM

**To:** Nancy Targett

**Subject:** RE: Environmental Studies Proposal

Nancy:

On behalf of the Economics Department, I support the inclusion of ECON151 in the Environmental Studies major.

ECON/FREC343 is owned by FREC; we are the cross-list. I want to point out that ECON151 is a pre-requisite for that course.

Saul D. Hoffman

Professor and Chair, Department of Economics

University of Delaware

Newark, DE 19716

302-831-1907

302-831-6968 (Fax)

## College of Arts and Sciences

**From:** Apple, Tom [mailto:tapple@art-sci.udel.edu]

**Sent:** Tuesday, February 17, 2009 6:40 PM

**To:** Targett

**Cc:** Watson, George H.

**Subject:**

Nancy,

I support both the modified BS in Environmental Sciences and the proposed BA in Environmental Studies. The College will do all it can to make sure that the necessary courses to support these programs are offered in a timely manner.

Best regards,

Tom

Tom Apple, PhD

Dean of Arts & Sciences

Professor of Chemistry

University of Delaware

4 Kent Way

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## Legal Studies Program

**From:** Pollack, Sheldon [mailto:pollacks@lerner.udel.edu]  
**Sent:** Wednesday, February 18, 2009 11:31 AM  
**To:** Nancy Targett  
**Subject:** RE: Environmental Studies curriculum

Nancy:

I give my support to have the course LEST673 included in the proposed curriculum. The course really belongs to MAST and POSC -- we only cross-list it. But regardless, I support the inclusion of the course in the BA in Environmental Studies degree program.

Regards,  
Sheldon Pollack

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Sheldon D. Pollack  
Professor of Law & Legal Studies  
Director, Legal Studies Program  
Lerner College of Business & Economics  
University of Delaware  
Newark, DE 19716

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## Department of History

**From:** John Hurt [mailto:hurt@UDel.Edu]  
**Sent:** Wednesday, February 18, 2009 11:34 AM  
**To:** Nancy Targett  
**Subject:** Re: proposed BA in Environmental Studies

Dear Nancy,

The short answer is yes, of course. But I'll get back to you with something of a more substantive response. We are adding some environmental history to our curriculum, so we may have another course to put on your table.

Best wishes, John Hurt.

## Department of Sociology and Criminal Justice

**From:** Ronet Bachman [mailto:ronet@UDel.Edu]  
**Sent:** Wednesday, February 18, 2009 1:41 PM  
**To:** Nancy Targett  
**Subject:** Re: Proposed Environemntal Studies Curriculum

Nancy: I support your proposal. This looks like an exciting and timely endeavor and the Department of Sociology and Criminal Justice welcomes the opportunity to be a part of it. Ronet



## Department of Philosophy

From: schueler@UDe1.Edu [mailto:schueler@UDe1.Edu]  
Sent: Thursday, February 19, 2009 11:40 AM  
To: Nancy Targett  
Cc: schueler@UDe1.Edu  
Subject: Re: Proposed Environmental Studies Curriculum

Dear Dean Targett,

Thanks for your email on the proposed Environmental Studies Curriculum. On the two courses you list:

Phil 340 (Cross Cultural Environmental Ethics) - This course was evidently established several years ago by a philosophy professor who has now retired. It has not been offered since his retirement and since it is not an essential part of our major and no current member of the Philosophy Department is interested in offering it, it is not likely to be offered in the future.

Phil 448 (Environmental Ethics) - This course is currently being offered by Professor Tom Powers and should be offered fairly regularly in the future if possible. The only caveat is that the Philosophy Department is currently so understaffed that we are fairly hard pressed simply to offer the courses required for our major. Phil 448 could therefore very well end up getting 'bumped' from our offerings in some semesters.

So, to reply to your request: The Philosophy Department has no objection to the inclusion of Phil 448 in the proposed Environmental Studies Curriculum but we do not support the inclusion of Phil 340 in this Curriculum.

Best wishes,

Fred Schueler  
Chair, Philosophy Department

G. F. Schueler  
schueler@udel.edu  
<http://udel.edu/~schueler/>



## Department of Geological Sciences



COLLEGE OF MARINE AND EARTH STUDIES

DEPARTMENT OF  
GEOLOGICAL SCIENCES

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University of Delaware  
Newark, Delaware 19716-2544  
Ph: 302/831-2569  
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Dear Dean Targett,

With an appreciation for the hard work and creative effort of the committee, the faculty of the Department of Geological Sciences support the proposed revision and expansion of the Environmental Science degree program and the formation of a new Environmental Studies degree program. The Earth's environmental systems are complex, and an understanding of these systems and the feedback between human activity and the environment requires a broad-based multidisciplinary approach. These new programs will better highlight the considerable existing environmental offerings at the university and expand the options available to students, while providing a clear curricular path for students interested in environmental problems. We look forward to working with our colleagues across campus to effectively educate students about the Earth's natural environment and how it changes over time.

Our support for this new initiative assumes that adequate resources and personnel will be made available to support the anticipated interest in these degrees and the growth in the courses and departments associated with them. Since much of the curriculum will be based on people-intensive discovery learning in the form of labs, field work, group projects, and problem-solving, there will need to be sufficient professors, teaching assistants, and staff to make it work.

The Geological Sciences faculty are particularly interested in making sure that all ENSC students develop an understanding of not just Earth's existing natural environments but also the processes that have created Earth's surface environments over time. Environmental processes and rates of change vary with time and space, and the records of these processes provide an important perspective on current natural and anthropogenic changes. We expect multiple opportunities to provide this geologic perspective within the proposed curriculum, at the introductory level of the core requirements, as well as within the field experience and capstone proseminar courses. We also anticipate designing a new upper-level course with a focus on these topics that we will propose be added to the ENSC core curriculum.

We are excited about the opportunity to participate in these new degree programs and to actively contribute to their evolution over the next few years.

Sincerely,

Sue McGeary (on behalf of the Geological Sciences faculty)  
Chair and Associate Professor  
19 February 2009



## Department of Political Science and International Relations

**From:** Julio F. Carrion [mailto:jcarrion@UDel.Edu]  
**Sent:** Tuesday, February 24, 2009 12:46 PM  
**To:** Nancy Targett  
**Subject:** RE: Environmental Studies/Science Curricular Proposals

Dear Nancy,

I wanted to let you know that we'll be happy to support the proposal. Please let me know what I can do to move this forward

Julio

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Julio F. Carrión  
Associate Professor and Acting Chair  
Political Science and International Relations,  
Director, Latin American Studies  
Phone: (302)831-2355  
Fax: (302)831-4452

## Department of Plant and Soil Sciences

**From:** Blake Meyers [meyers@dbi.udel.edu]  
**Sent:** Tuesday, February 24, 2009 4:20 PM  
**To:** Nancy Targett  
**Cc:** Nancy Targett; 'Sims, Tom'; 'fanewt@udel.edu'; Charlotte McDermitt  
**Subject:** Re: Request for Support for Environmental Curricula at UD

Nancy,  
I discussed this with Tom last week and I think it sounds like a good program. I do support it, and I hope that it will attract more students to our courses and draw more students into our regular majors as well.

best,  
Blake

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Blake C. Meyers, Ph.D.  
Associate Professor  
and Interim Department Chair  
Dept. of Plant & Soil Sciences  
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DEPARTMENT OF FOOD  
AND RESOURCE ECONOMICS

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February 24, 2009

MEMORANDUM

To: Nancy Targett  
Dean, College of Marine and Earth Studies  
Chair, UD Undergraduate Environmental Studies Program and Curriculum Committee

From: Thomas W. Ilvento  
Chair, Department of Food and Resource Economics

A handwritten signature in blue ink that reads "Thomas W. Ilvento".

Re: Letter of Support for Proposed Environmental Science and Environmental Studies Degrees

On behalf of the Department of Food and Resource Economics Department, I am writing to express our department's support for your proposed new BA in Environmental Studies and recommended revisions to the existing BS in Environmental Science degree. While we are concerned about the impact the new Environmental Studies major will have on our two existing environmental majors, Resource Economics and Natural Resource Management, in the end we welcome the shared goals of expanding awareness and opportunities for the environment at the University of Delaware. We look forward to working with you on promoting all the environmental majors on campus. We believe the University of Delaware's continued focus on environmental issues and the distributed nature of these degrees are of benefit to the University and our students, and we believe these proposed changes will be of long-term value to our majors, college and university.

Our department will support the demand of Environmental Science and Environmental Studies students for our courses (primarily FREC 100, FREC 150, FREC/ECON 343, and STAT 200) and we will make sure these students have access to these courses. We already offer, or will offer by Fall 2009, all these courses in both semesters and are prepared to provide extra offerings or increase the size of these classes as demand warrant. We also are prepared to advise our share of incoming students into these majors and in particular support the Environmental Economics and Policy concentration in the Environmental Studies major.

We wish you the best of luck with these new and newly enhanced programs.