

# Cover Sheet for Proposal to the Undergraduate Curriculum and Catalog Review Committee

Note: For new courses, use the New Course Proposal Form

Proposal Number (Assigned by the Registrar):

Date: February 11, 2011

Department: School of Environmental and Physical Sciences

Contact Person: Dr. Richard A. Roth

Course or Program ID:

Proposal Category (check all that apply):

Course Prerequisite Change

Course Title Change (23 characters):

Course Deletion

Course Number Change

Program Revision (Attach Revision of Existing Program Form)

Course Credit Hour Change

New Course (attach New Course Proposal Form)

Course Syllabi Change

Change to Catalog Description

Minor Change to Course

New Program (Major, Minor, Certificate)

Proposal Description with Rationale (State current status, proposed change, and why the change is desired. Attach additional sheets if necessary. If the proposal in any way alters the requirements for the program, complete the Revision of Existing Program section of this form):

This proposal will create an undergraduate certificate in Sustainability and Environmental Studies.

Approved proposals traditionally go into effect the next academic year. However, if seeking an alternative effective date, please indicate the requested date in the space provided below, along with reason:

N/A

Reason for requesting an alternative effective date (please type or write in your reason for the change here):

N/A

\_\_\_ Include a copy of the old and new syllabi to this proposal for comparison.

\_\_\_ For Program Revisions, attach the Revision of Existing Program Form and include both the current and proposed program.

\_\_\_ For New Course Proposals, attach the New Course Proposal and Assessment of Library Resources Forms with appropriate signatures.

**Special Note:** Changes to course syllabi must be submitted to the Registrar's Office after final approval by the Vice President for Academic Affairs.

Signature	Title	Date
	Department Curriculum Committee Chair	
	Department Chair	
	College Curriculum Committee Chair	
	College Dean	
If this proposal in any way affects a professional education program, it must be submitted to and approved by the Professional Education Committee and the Faculty Senate:		
	Professional Education Committee Chair	
	General Education Curriculum Advisory Committee Chair	
	Faculty Senate President	
	UG Curriculum & Catalog Review Committee	
	VP for Academic Affairs	

## NEW BACCALAUREATE CERTIFICATE PROPOSAL

# CERTIFICATE NARRATIVE

Use the following outline to provide a narrative description of the Certificate. The *Narrative* and *Budget* are complementary documents that provide a comprehensive overview of the plan. I also encourage you to review and use the *Policies and Procedures for the Development and Delivery of Certificates* (December 2004). This document provides a level of detail that can be valuable as you think through the fine points of certificate development.

### **CERTIFICATE ADMINISTRATION:**

Provide information related to the department(s), college(s), and/or other interdisciplinary units, external partners or advisory boards that are involved in the certificate. Identify the primary administrative unit and contact person.

The certificate will be offered by the School of Environmental and Physical Sciences (SEPS) in the College of Science and Technology. The primary contact will be a designated faculty member in SEPS that will serve as the Sustainability and Environmental Studies Coordinator. He or she shall serve as the faculty advisor for all students seeking this certificate. This will ensure advising continuity and appropriate course work choices.

### **CERTIFICATE DESCRIPTION & STATEMENT OF NEED:**

Provide a description of the proposed certificate including a statement of need—target markets served, projected headcount and recruitment strategies and plans. (Provide copies of any surveys or other sources that document student demand.)

The certificate in **Sustainability and Environmental Studies** teaches students both the details and contexts of environmental problems so they may make sound and informed decisions at personal and societal levels. Students completing the certificate will have the knowledge and skills to address environmental problems in their professional capacity, and to routinely include the environment as a consideration in their work and daily living. According to the Association for the Advancement of Sustainability in Higher Education (AASHE), sustainability programs at the undergraduate and graduate levels are one of the fastest growing curricular areas across the nation. In September 2010, AASHE published its *Sustainability in Higher Education: A Call to Action* and reported, “The fundamental problem faced in meeting the goal of education for a healthy and sustainable society for all students is that the existing curriculum in higher education has not been developed to examine how we shape a sustainable world.” An important step in meeting this challenge is to begin with offering a certificate in environmental sustainability. A person carrying that certificate will be advantaged in terms of his/her preparation for the growing number of sustainability programs at the graduate level, as well as for the “green” economy.

According to the Bureau of Labor Statistics, employment for those working in environmental fields will continue to grow by approximately 25% in the next decade. Interdisciplinary professionals will be needed across all sectors to provide environmental strategies for consumer products, construction buildings, water resources, and transportation and land restoration as businesses, institutions and government agencies are becoming eco-friendly and attempt to reduce their carbon footprint. Students completing the certificate will be better prepared for careers in environmental protection, education, recreation, communication, and research.

Concern about the environment continues to be strong among our students, yet no current major or minor exists to bring together Radford University’s existing strengths in the area of environmental

sustainability. This area has been identified by a committee--the Sustainability Steering Committee--under the chairmanship of Dr. Dennis Grady, Dean of the College of Graduate and Professional Studies, as a potential recruitment tool. The certificate should attract students in education, science, design, and humanities who are interested in “green” careers and is offered as part of President Kyle’s invitation to promote sustainability and “make RU one the greenest campuses in the Commonwealth” (October 21, 2008 memo, available on RU Sustainability website).

The program is designed to meet four specific learning outcomes:

**Learning Outcome 1:**

Explain the complexity of earth’s biosphere and analyze the relationship between human societies and natural communities and processes;

**Learning Outcome 2:**

Evaluate the impact of current behaviors on the environment and of changes resulting from particular public policies;

**Learning Outcome 3:**

Identify and describe cultural, sociological and/or literary attempts to define, shape, and/or interact with the natural world; and

**Learning Outcome 4:**

Students will be able to explain environmental studies and sustainability.

Students’ success in meeting these outcomes will be assessed through the use of a capstone project consisting of an electronic portfolio to be submitted during their field application coursework. A preliminary overview of how this capstone project will be assessed is appended.

## CERTIFICATE SCOPE AND SEQUENCE:

Provide the following Information:

- List of courses and a semester-by-semester curriculum sequence, including a proposed begin and end date.

- 1) **Introductory Class (3 credits)** This course provides a synoptic view of the field of environmental studies and of the range and complexity of causes of environmental change, challenges arising as a result of environmental change, and potential responses to these challenges.

GEOG 140: Introduction to Environmental Studies (3)

Students take four courses (12-15 credit hours) in Areas 2 through 4. At least one course must be taken in each of the three areas, and a second course must be taken in one of the three areas, in consultation with the advisor.

- 2) **Physical Systems and the Environment (choose one: 3 – 4 credits)** This area will introduce students to how the natural world works from the perspective of the natural sciences. Courses focus on earth systems and processes, ecology, biological diversity, and energy.

ANSC 361: Human Impacts on the Prehistoric Environment. (3) Preq: ANSC 101 and sophomore standing or by permission

BIOL 103: Environmental Biology. (4) No preq

BIOL 131: Ecology and Adaptation. (4) No preq but intended for science majors; *will not count toward the university or college core requirement.*

BIOL 390: Conservation Biology (3) Preq: BIOL 231; or BIOL 103 and either BIOL 104 or 105

CHEM 215: Environmental Chemistry (3) Preq: CHEM 102 or 103

GEOL 100: Earth Resources and Natural Hazards (4) No Preq:

GEOS 130: Physical Geography (4) No preq

GEOS 335: Biogeography (3) Preq GEOS 130 or BIOL 105, 215, 216 or by permission

PHSC 431: Energy and the Environment (3) Preq: PHYS 112 or 222, PHSC 122 or CHEM102

or

Appropriate Special Topics Class Approved by Advisor (3-4)

- 3) **Policy and Economics (choose one: 3 – 4 credits)** Courses in this area help students develop their ability to analyze public policies for influencing human impact on the environment.

ECON 272: Natural Resource Economics (3) Preq: ECON 106

ECON 375: Environmental Economics (3) Preq: ECON 106 and junior or senior standing

GEOS 241: Environmental Regulation (3) Preq: GEOG 140 or by permission

GEOS 362: Water Resources (4) Preq: GEOS130 or by permission

GEOS 492: Land Use (3) Preq: Junior or senior standing

or

Appropriate Special Topics Class Approved by Advisor (3-4)

- 4) **Human Dimensions (choose one: 3 credits)** Courses in this area focus on how humans have interacted with their environmental and how different cultural attitudes have brought about and responded to environmental change. Using the methods of the humanities, design, and social

sciences, these courses focus on a range of environmental problems and the ethical, aesthetic, practical, and sociological issues associated with them.

- ANSC 361: Human Impacts on the Prehistoric Environment. (3) Preq: ANSC 101 and sophomore standing or by permission  
APST 200: Introducing Appalachia (3) No Preq  
BIOL 215: Plants and Society (4) Preq: 4 credit hours of Biology  
DSN 110: Introduction to Design (3) No Preq  
DSN 402: Global Design (3) No Preq  
ENGL 454: Literature and the Environment (3) Preq: CORE 101, 102  
GEOS 340: International Environmental Problems (3)  
PSYC 347: Environmental Psychology (3) Preq: PSYC 121  
RCPT 230: Introduction to Outdoor Recreation (3) By permission  
SOCY 370: Environmental Sociology (3) Preq: SOCY 110, SOCY/ANTH 121  
or  
Appropriate Special Topics Class Approved by Advisor (3)

- 5) Field Applications and Capstone Experience (choose one with approval of advisor: 3-4 credits)** These courses provides experiential learning opportunities combined with a culminating capstone experience through which students can synthesize and apply the understandings and tools gained in fulfilling the other area requirements. Emphasis is placed on active learning through a field-based experience. The student's advisor and Area 5 instructor approve and co-facilitate the capstone project. Only students who have completed the requirements in the other four areas are eligible to take the capstone course as the culminating course for this certificate program. The student will be responsible for securing the cooperation of the capstone course instructor through a written agreement to be signed by the student, the instructor, and the advisor. Students will 1) apply their body of knowledge in environmental studies and sustainability in a field-based context; 2) synthesize their knowledge and skills through a meaningful capstone project; and 3) demonstrate a broad understanding of environmental studies and sustainability by presenting their capstone project in a public forum.

- BIOL 217: Flora of Virginia (4) Preq: 4 hours of Bio  
BIOL 476: Forest and Wetland Ecology: By permission  
COMS 407: Science and Environment Writing (3) By permission  
RCPT 331: Outdoor Living Skills (3) By permission  
RCPT 431: Sustainable Tourism (3) By permission  
or  
Appropriate Special Topics Class Approved by Advisor (3-4)

- Number of semester hours included in the certificate.

The certificate requires a total of eighteen to twenty-two (18-22) credit hours.

- Statement of how the certificate curriculum fits within existing programs and is related to current course offerings.

The certificate is interdisciplinary, integrating courses in the sciences, social sciences, education, and humanities. No current major or minor exists to bring together Radford University's offerings in this area.

The certificate program is designed to culminate as a field application course. Faculty teaching these courses will work with the student to design a meaningful capstone experience in addition to the required course work. Students synthesize their new body of knowledge through the capstone experience. Culminating experiences can be expressed through avenues such as service projects, research initiatives, presentations, or other meaningful academic endeavors. Students will be required to present their work in an appropriate campus or professional forum. The Sustainability and Environmental Studies Coordinator will be available to faculty and students to help facilitate meaningful experiences.

- List of proposed new courses. (New course proposals should follow the regular approval procedures. Resources required for new courses must be approved through the college resource allocation process.)

The certificate makes use of existing courses. However, no more than two classes for this certificate may be double-counted toward fulfillment of any other degree requirement.

### **CERTIFICATE DELIVERY STRATEGIES**

Describe how the certificate courses will be delivered, including:

- Plans to use distance and instructional technologies

N/A

- Scheduling considerations, including alternative scheduling plans

No special considerations because required courses are currently offered regularly.

- Staffing considerations, including faculty and support staff plans

Current faculty and staff are sufficient.

- Support service considerations, including library, advising, etc.

N/A

### **ADMISSIONS CRITERIA**

Describe the extent, if any, to which the proposed certificate's admission criteria, continuation, and exit requirements differ from the requirements of graduate non-degree seeking students and related graduate degree programs. Indicate prerequisites or competencies for entry into the Certificate. Note: Admissions criteria can be more stringent but not less stringent than the university minimum requirements for non-degree applicants.

Applicants must be degree seeking students at Radford University in good standing and must successfully complete Introduction to Environmental Studies (GEOG 140) with a "C" or higher.

### **CERTIFICATE DURATION AND REVIEW PROCESS**

Describe the intended duration of the certificate, and the process for certificate review.

The certificate will be reviewed bi-annually (once every two years) and will continue as long as the review committee feels the certificate is successful, relevant, and valuable.

# **APPENDIX: CAPSTONE PROJECT**

## **CERTIFICATE IN ENVIRONMENTAL STUDIES AND SUSTAINABILITY**

### **STUDENT PORTFOLIO: ASSESSMENT FOR LEARNING OUTCOMES**

**OVERVIEW:** Students enrolled in the Environmental Studies and Sustainability Certificate program are required to develop an electronic portfolio during their field application course work, Area 5. The purpose of the portfolio is to demonstrate the student's knowledge, skills, and dispositions as a result of completing the required coursework in all areas. The portfolio serves as the overall assessment tool to determine the student's growth. The portfolio should consist of items such as, but not limited to: research papers; lab projects; tests; homework assignments; book and article reviews; and presentations. These items should be carefully selected and organized to represent the four global learning outcomes listed below:

#### **Learning Outcome 1:**

Explain the complexity of earth's biosphere and analyze the relationship between human societies and natural communities and processes;

#### **Learning Outcome 2:**

Evaluate the impact of current behaviors on the environment and of changes resulting from particular public policies;

#### **Learning Outcome 3:**

Identify and describe cultural, sociological and/or literary attempts to define, shape, and/or interact with the natural world; and

#### **Learning Outcome 4:**

Students will be able to explain environmental studies and sustainability.

### **OVERALL STRUCTURE AND EVALUATION CRITERIA**

The portfolio should be developed into four sections representing each of the primary learning outcomes. The following outlines formatting guidelines, organizational requirements, and point values for evaluation:

- **Layout and Explanatory Material (Point value = 10)**  
This would include material that you have developed to make the portfolio easier to access and understand (e.g., title pages, tables of content, dividers, narratives, and photographs). The layout is aesthetically pleasing with consistent fonts, colors, and graphics. There is a logical flow of material that is clearly identified. The portfolio has a professional appearance (e.g., neat, free of errors, and high quality).
- **Section 1 (Point value = 20)**

This section of the portfolio should consist of at least four or more items that clearly address learning outcome 1. The student should develop narratives summarizing how the outcome was met in context with each item submitted. Items that demonstrate the student's knowledge, skills, and dispositions are acceptable, e.g. a paper written by the student that demonstrates appreciation of the complexity and interrelatedness of earth's biosphere and its physical, biological, and cultural elements.

- **Section 2 (Point value = 20)**

This section should consist of at least four or more items that clearly address learning outcome 2. The student should develop narratives summarizing how the learning outcome was met in context with each item submitted. Items that reflect development in the student's knowledge skills, and dispositions are appropriate. The emphasis is on assessing the student's ability to evaluate. One example would be a homework assignment that evaluates a policy decision.

- **Section 3 (Point value = 20)**

This section should consist of at least six or more items that clearly address learning outcome 3. The student should develop narratives summarizing how each objective was met in context with each item submitted. Items that reflect the ability to communicate an understanding outlined in the outcomes must be addressed. One example would be a presentation that demonstrates the relationship between environmental ethics and human behavior.

- **Section 4 (Point value = 20)**

This section should consist of at least three or more items that clearly address learning outcome 4. Students must include items that synthesize their knowledge of environmental studies and sustainability. One example might be to provide photographs and explanations of a project completed during field work.

**Total Points = 100**

Student must score an 80% or above on the portfolio project to be awarded a certificate in Environmental Studies and Sustainability. The portfolio will be assessed by the Sustainability and Environmental Studies Coordinator, the faculty member teaching in Area 5, and a third committee member of the student's choosing, subject only to the qualification that the third committee member must be a faculty member that teaches in one of the program's five areas.