

## **Request for Authorization to Establish a Bachelor of Science in Geo-Environmental Studies at UNC Pembroke**

The University of North Carolina at Pembroke requests authorization to establish a B.S. in Geo-Environmental Studies degree program (CIP 03.0103).

### **Program Description**

The proposed degree program is designed to provide a sound education in the geosciences and geological processes as they relate to the environment, an understanding of environment evolution, and an understanding of the impact of human activity on the environment. The degree is intended for those interested in learning more about the physical Earth and is designed to meet societal needs for workers broadly prepared to deal with scientific and technological policy issues in this field. The program promotes links between the scholarly areas of the geosciences and the policy implications of these issues that are addressed in the Political Science and Economics departments. In addition, the Geo-Environmental Studies degree builds on the existing strengths of the Department of Geology & Geography, which include externally funded projects such as the existing Southeastern NC Regional Microanalytical and Imaging Center (operated in partnership with Fayetteville State University) and two NSF Geo-science Education grants to improve K-12 earth science education and environmental understanding in the region. This proposed 120 semester credit hour Bachelor of Science in Geo-Environmental Studies degree program will be the first major program offered by the Department of Geology & Geography.

### **UNC Tomorrow Relevance**

This proposed program would address several Recommendations within the UNC Tomorrow Report including the components to enhance our Global Readiness (Recommendation 4.1), Our Citizens and Their Future: Access to Higher Education (Recommendation 4.2), and Our Environment (Recommendation 4.6).

### **Highlights from UNC-GA Data Template**

Four UNC campuses currently offer a baccalaureate degree in Environmental Studies; the total enrollment in these four programs has approximately doubled in the past four years, Fall 2006 – Fall 2010. The enrollment in UNCP's B.S. in Environmental Science program has increased by 62% in that same period. (The proposed program addresses the geosciences component of Environmental Studies, whereas the existing UNCP Environmental Science program, which is housed in the Biology Department, concentrates on natural resources considerations.) The proposed program will be the only baccalaureate program in Geo-Environmental Studies in the state. In the past three years, UNC Pembroke has established no new programs, and has discontinued three baccalaureate programs.

### **Outcome of Consultation with Disciplinary Panel**

The panel included faculty members from ECU and NCCU in addition to the UNCP faculty presenters. Questions were asked concerning the overall curriculum of the program and how geographic information systems (GIS) material would be included in coursework. There was consensus on the desirability of offering this program at UNC Pembroke.

### **Student Demand**

The geosciences are one of the least diverse areas of STEM expertise in the United States and UNCP serves a large population of underrepresented groups. In addition, the application states that most of UNCP's graduates return to their home communities to live and work in southeastern North Carolina. Thus, students will find it useful that many of the program's courses emphasize geoscience topics relevant to North Carolina and UNCP's service region (such as eastern North Carolina wetlands, Coastal Plain groundwater, Carolina Bays and their effect on land use, and the geologic history of the state). These facts, plus the program's flexible use of a large number of advisor-guided and free electives that allow students to tailor the program curriculum to their interests and needs, should make the program attractive to students who want to seek employment in an environmental field in southeastern North Carolina. UNC Pembroke projects full enrollment of the program in its fourth year will be twenty full-time students.

### **Opportunities for Graduates of the Program**

The U.S. Department of Labor reports that employment of environmental scientists is expected to increase by 25 percent between 2006 and 2016, much faster than the average for all occupations. Further, the application reports that a sub-headline in a New York Times article (24 June 2009) stated, "Employers are begging for specially skilled applicants in fields like critical care nursing and geology." Consequently, UNCP has designed this program in Geo-Environmental Studies for flexibility (including 50 hours of advisor-guided and free electives) so that graduates will be prepared for employment in environmental fields of their choice or may continue to post-baccalaureate study in a variety of disciplines including law, public administration, earth science, geology, geography, science education, or environmental engineering.

### **Resource Implications**

**Resource needs:** Because the proposed program is based on existing curricula in Geology, Geography, and Earth Science education, no additional faculty positions, courses, library resources, equipment, or physical facilities are needed to implement this new program.

**Resources allocated:** Because the proposed program will utilize existing courses, the faculty at UNCP will be teaching the same courses they are currently teaching, but with somewhat larger class sizes. The Department of Geology & Geography will absorb administrative responsibilities for the program.

**Estimated cost to the State:** Based on the University funding formula, in the fourth year, UNC Pembroke would generate additional state appropriations of approximately \$81,000 if fully funded by the General Assembly.

### **Recommendation**

It is recommended that the Board of Governors approve UNC Pembroke's request to establish a B.S. in Geo-Environmental Studies degree program (CIP 03.0103).

## General Information Template for Academic Program Review

### *Degree Area and Level:*

B.S. in Geo-Environmental Studies (CIP 03.0103) at UNC Pembroke

### *Addressing UNC Tomorrow:*

This proposed program would address several Recommendations within the UNC Tomorrow Report including the components to enhance our Global Readiness (Recommendation 4.1), Our Citizens and Their Future: Access to Higher Education (Recommendation 4.2), and Our Environment (Recommendation 4.6).

### *Role of Program in Relation to State and Regional Needs:*

According to the proposal, “The regional nature of our university has a high impact on the region. Students learn here and live here. Most return to their communities to work. Therefore, the communities of south-central NC will be enriched by those who sharpen their understanding of the physical Earth through our program. Society in general and North Carolina in particular face a wide scope of technical and policy issues related to geoscience problems including energy resource, water availability, climate change, land use, and pollution. Students in the GES program will be well prepared to understand and act on these issues.”

### *US Labor Department Analysis:*

- *Summary* – Employment of environmental scientists is expected to increase by 25 percent between 2006 and 2016, much faster than the average for all occupations. Job growth for environmental scientists and hydrologists should be strongest in private-sector consulting firms. Growth in employment of environmental scientists and hydrologists will be spurred largely by the increasing demands placed on the environment and water resources by population growth. Further demand should result from the need to comply with complex environmental laws and regulations, particularly those regarding ground-water decontamination, clean air, and flood control. Source: U.S. Department of Labor and America's Career InfoNet

### *Availability of Program Statewide (Enrollment and Degrees Awarded in Last 3 Years):*

- *Public universities*

Enrollment			Academic Year						
			Fall 07	Spr 08	Fall 08	Spr 09	Fall 09	Spr 10	Fall 10
ASU	Environmental Studies	BA and BS	N/A	N/A	4	37	73	98	117
UNCA	Environmental Studies	BS	103	105	81	80	91	106	97
UNC-CH	Environmental Studies	BA	50	53	67	64	73	73	73
UNCW	Environmental Studies	BA	56	58	61	74	75	70	82

Number of Degrees Awarded			Academic Year		
			2007-2008	2008-2009	2009-2010
ASU	Environmental Studies	BA & BS	N/A	14	16
UNCA	Environmental Studies	BS	54	41	36
UNC-CH	Environmental Studies	BA	19	30	29
UNCW	Environmental Studies	BA	17	29	24

APPENDIX E

- Private universities

Number of Degrees Awarded		Academic Year		
		2007-2008	2008-2009	2009-2010
Brevard College	BA Environmental Studies	6	3	1
Catawba College	BA Environmental Studies	2	5	0
Elon University	BS & BA Environmental Studies	10	15	14
Guilford College	BA Environmental Studies	4	4	2
Montreat College	BS Environmental Studies	1	6	10
Warren Wilson College	BS & BA Environmental Studies	40	32	44

Source: National Center for Education Statistics - <http://nces.ed.gov/collegenavigator/>

**Available in Online or Distance Format from UNC institutions:** Not available.

**Available from Academic Common Market:** Not available.

**UNC Pembroke Campus enrollment and degrees awarded in similar programs at the Bachelors level:**  
(Based on two CIP digits – 03 CIP is the summary group for Natural Resources and Conservation under which Geo-Environmental Studies is listed as a program.)

Enrollment			Academic Year						
			Fall 07	Spr 08	Fall 08	Spr 09	Fall 09	Spr 10	Fall 10
UNCP	Environmental Science	BS	17	13	11	12	17	20	21

Number of Degrees Awarded			Academic Year		
			2007-2008	2008-2009	2009-2010
UNCP	Environmental Science	BS	6	6	4

**Campus Average of enrollment and degrees awarded per degree program in this area at the Bachelors level over the last 3 Academic Years, Fall 2007-Fall 2010:**  
(Based on two CIP digits – 03 CIP is the summary group for Natural Resources and Conservation under which Geo-Environmental Studies is listed as a program.)

Campus Average			
	Number of Active Programs	Enrollment per Semester	Degrees Awarded per Year
ASU	2	38	15
NCCU	1	11	6
NCSU	5	58	17
UNCA	1	95	44
UNC-CH	2	66	25
UNCP	1	16	5
UNCW	2	70	25
WCU	2	25	8
Campus Average		47	18

## APPENDIX E

### ***UNC Pembroke Degree Programs added in the past three years:***

- *Bachelor*
  - N/A
- *Master*
  - N/A
- *Doctoral*
  - N/A

### ***UNC Pembroke Degree Programs discontinued in past three years:***

- *Bachelor*
  - BS Biology, Secondary Education (03/20/2009)
  - BS Recreation Management/Administration (03/20/2009)
  - BS Health Promotion (03/20/2009)
- *Master*
  - N/A
- *Doctoral*
  - N/A