

## **Request for Authorization to Establish a Bachelor of Science in Geographic Information Science and Technology at East Carolina University**

East Carolina University requests authorization to establish a B.S. in Geographic Information Science and Technology degree program (CIP 11.0401).

### **Program Description**

The B.S. in Geographic Information Science and Technology (GIST) is a multidisciplinary, 126 semester credit hour program that addresses the application of geospatial technologies in private, public, and educational settings. The GIST degree provides education and training in several contemporary spatial technologies. The mission is to prepare students to integrate and apply spatial technologies in a variety of fields within a learning environment that fosters undergraduate research on real world issues and motivates individuals to develop highly demanded skill sets. The proposed baccalaureate program will build upon the existing GIST certificate program in the Department of Geography at ECU. It is significant that many non-geography majors (such as criminal justice, biology, computer science, geology, anthropology, and other majors) elect to complete the 15 semester credit hour GIST certificate program.

### **UNC Tomorrow Relevance**

Students will learn to employ sophisticated GIST technologies for integrated analyses of economic issues, the environment, and public health, among other topics. This program will thus address several Recommendations within the UNC Tomorrow Report including the components to enhance our Global Readiness (Recommendation 4.1), Our Communities and Their Economic Transformation (Recommendation 4.4), Our Health (Recommendation 4.5), and Our Environment (Recommendation 4.6).

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

A 2006 National Research Council report stated, “Today, geographic information systems have become central to the ways thousands of government agencies, private companies, and not-for-profit organizations do business. However, the supply of GIS/GIScience professionals has not kept pace with the demand generated by growing needs for more and improved geographic information systems and for more robust geographic data.”

No other public or private college or university in North Carolina offers an undergraduate degree in Geographic Information Science and Technology, and only two equivalent degree programs exist nationally. In the past three years, ECU has established one doctorate, one masters, and two baccalaureate programs, and has discontinued four masters and two baccalaureate programs.

### **Outcome of Consultation with Disciplinary Panels**

The panel included faculty members from FSU, NCSU, UNCC, and UNCG in addition to the ECU faculty presenters. Panel members agreed there is high demand for this new undergraduate degree and discussed the desirability of eventually offering this program online. Overall comments were positive, with consensus on the need for this degree program.

### **Student Demand**

The increasing popularity of the GIST certificate program is evidence of student interest in GIST at ECU. The Department of Geography receives frequent inquiries from students regarding the availability of a focused GIST undergraduate degree. Many students select the study of geography as a result of interest in GIST technology and topics. Some community college campuses (such as Central Piedmont Community College) have active and growing GIST-related programs, which can serve as “feeder programs” to this ECU degree. The program projects full enrollment of the program in its fourth year will be 21 full-time upper division students. It is estimated that approximately 30% of these undergraduates would be students who would not have attended ECU otherwise.

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

The US Department of Labor recently identified geospatial technology as one of the top three growth industries in the US economy (in addition to biotechnology and nanotechnology). Industries employing increasing numbers of geospatial professionals include: architecture/engineering/construction, business, communication, conservation, defense/intelligence, education, government, health and human resources, natural resources, public safety, transportation, and utilities. The degree program can also contribute to small business start-ups and regional economic growth with graduates positioned to establish GIS consulting and services companies.

### **Resource Implications**

**Resource needs:** Because of the multidisciplinary features of this proposed program, no additional faculty, courses, library resources, or physical facilities are needed to implement this new program. Ongoing financial support for the new program will be mainly enrollment growth funding.

**Resources allocated:** In anticipation of initiating this program, the Department of Geography has been gradually strengthening the GIST technological infrastructure in order to be able to offer and support this program.

**Estimated cost to the State:** Based on the University funding formula, when the program reaches full enrollment, ECU would receive additional state appropriations of approximately \$65,000 if fully funded by the General Assembly.

### **Recommendation**

It is recommended that the Board of Governors approve East Carolina University’s request to establish a Bachelor of Science in Geographic Information Science and Technology degree program (CIP 11.0401) subject to the availability of funding.

## General Information Template for Academic Program Review

### ***Degree Area and Level:***

B.S. in Geographic Information Science and Technology (CIP 11.0401) at East Carolina University

### ***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 Communities and Their Economic Transformation (Recommendation 4.4), Our Health (Recommendation 4.5), and Our Environment (Recommendation 4.6).

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

The 2006 National Research Council report stated, “Geographic information systems (GIS), the global Positioning System (GPS), remote sensing, and other information technologies have all changed the nature of work in the mapping sciences and in the professions, industries, and institutions that depend on them for basic research and education. Today, geographic information systems have become central to the ways thousands of government agencies, private companies, and not-for-profit organizations do business. However, the supply of GIS/GIScience professionals has not kept pace with the demand generated by growing needs for more and improved geographic information systems and for more robust geographic data.”

### ***US Labor Department Analysis:***

- *Summary* – Employment of computer programmers is expected to decline slowly, decreasing by 4 percent from 2006 to 2016. The consolidation and centralization of systems and applications, developments in packaged software, advances in programming languages and tools, and the growing ability of users to design, write, and implement more of their own programs mean that more programming functions can be performed by other types of information workers, such as computer software engineers. Another factor contributing to employment decline will be the offshore outsourcing of programming jobs.

Source: [http://www.occsupplydemand.org/OSD\\_UnitOfAnalysis.aspx?CLUSCODE=110B-11&ST=NC&PathNo=1](http://www.occsupplydemand.org/OSD_UnitOfAnalysis.aspx?CLUSCODE=110B-11&ST=NC&PathNo=1)

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

- *Public universities* – Not available.
- *Private universities* – Not available.

### ***Available or not from Academic Common Market:***

North Carolina does not participate in the ACM at the undergraduate level.

### ***ECU Campus enrollment and degrees awarded in similar programs at the Bachelor level:***

(Based on two CIP digits – 11 CIP is the summary group for Computer and Information Sciences and Support Services under which Geographic Information Science and Technology is a program.) Note - The CIP for Information Technology changed from 15.1201 to 11.0103 in 2007 by General Administration.

Enrollment			Academic Year						
			Fall 06	Spr 07	Fall 07	Spr 08	Fall 08	Spr 09	Fall 09
ECU	Information Technology	BS	N/A	N/A	N/A	N/A	1	1	116
	Computer Science	BA	5	5	6	4	5	7	14
		BS	58	58	55	59	56	56	66

# APPENDIX J

Number of Degrees Awarded			Academic Year		
			2006-2007	2007-2008	2008-2009
ECU	Information Technology	BS	N/A	29	26
	Computer Science	BA	2	0	1
		BS	16	13	28

***Campus Average of enrollment and degrees awarded in this degree area at the Bachelors level:***  
*(Based on two CIP digits – 11 CIP is the summary group for Computer and Information Sciences and Support Services under which Geographic Information Science and Technology is a program - over the last 3 Academic Years, Fall 2006-Fall 2009)*

Campus Average			
	Number of Active Programs	Enrollment per Semester	Degrees Awarded per Year
ASU	1	74	26
ECSU	1	38	15
ECU	2	52	24
FSU	1	50	12
NCA&T	1	100	24
NCCU	2	42	10
NCSU	1	330	118
UNCA	2	35	17
UNCC	1	308	83
UNC-CH	2	39	21
UNCG	2	86	27
UNCP	2	22	10
UNCW	1	28	23
WCU	1	24	6
WSSU	3	30	11
Campus Average:		84	28

## ***ECU Degree Programs added in the past three years:***

- Bachelor
  - BS Applied Atmospheric Science (02/12/2010)
  - BA African and African American Studies (02/09/2007)
- Master
  - MS Sustainable Tourism (01/08/2010)
- Doctoral
  - AuD Audiology (06/13/2008)

## ***ECU Degree Programs discontinued in past three years:***

- Bachelor
  - BS Marketing Education (03/20/2009)
  - BS Accounting (08/14/2009)
- Master
  - MM Music Therapy (03/20/2009)
  - MPT Physical Therapy (06/08/2007)
  - EdS Counselor Education – Intermediate Degree (03/20/2009)
  - CAS Library Science – Intermediate Degree (03/20/2009)
- Doctoral
  - N/A