

DATE: July 28, 2011

SUBJECT: East Tennessee State University. Establish a New Academic Degree Program (M.S.) in Geosciences with concentrations in
1) Geospatial Analysis and 2) Paleontology

ACTION RECOMMENDED: Approval

BACKGROUND INFORMATION: The proposed M.S. in Geosciences builds on existing resources. East Tennessee State University is home to one of the largest groups of academic paleontologists in the United States: four in Geosciences and two in Biological Sciences. Additionally, the university has resources in the Gray Fossil Site, the expanding Natural History Museum, and the Sundquist Center for Excellence in Paleontology. These assets, coupled with expertise in geographic information systems (remote sensing, studies of land use, ground water, and natural hazards), will attract highly qualified graduate students from around the country and likely from around the world.

East Tennessee State University’s groundwork for the proposed program was first established in creating a concentration in Geosciences within the M.S. in Technology and forming a new department through merging geology and geography disciplines. These actions created a department of 12 full-time faculty, funded graduate assistantships, and established teaching and research collections in geospatial analysis and paleontology.

PROPOSED START-UP DATE: Fall 2011

1.1.20A MISSION: The proposed program supports the ETSU mission to provide programming in the basic sciences and interdisciplinary studies.

1.1.20B CURRICULUM: The degree program will require completion of 30 semester credit hours, including a 9-hour major field core in geosciences and 9-11 hours in the elected concentration. A thesis will be required. Five new courses (15 credit hours) will be developed for the proposed program.

The first concentration, the Geospatial Analysis concentration, presents opportunity for study in related ETSU graduate fields, such as engineering technology, surveying and mapping, digital media, biological sciences, and public health. Likewise, graduate students in these disciplines may elect courses in the Geospatial Analysis concentration that center on specialized software tools. Graduates will be prepared for employment in higher education; local, state, and federal governments; non-profit organizations; and for-profit entities.

The second concentration, the Paleontology concentration, is also characterized by interdepartmental cooperation. Graduates will be prepared for employment

in higher education and for fossil study and display preparation for museums and national parks.

1.1.20C ACADEMIC STANDARDS: Applicants must meet admission requirements of the School of Graduate Studies and the program. Program admission requires a bachelor's degree in geosciences (or related discipline); a minimum 3.0 overall undergraduate GPA; three letters of recommendation (from previous professors or employers); a two-page letter stating the applicant's career goals and specific academic and research interests; and a resume.

Projected Program Enrollment and Productivity:

Year	Full-Time Headcount	Part-Time Headcount	Total Year Headcount	FTE	Graduates
1	5	0	5	3.75	0
2	10	0	10	7.50	4
3	11	1	12	8.75	6
4	12	2	14	10.0	7
5	12	2	14	10.0	7

Enrollment and productivity projections are based on 5 full-time students being admitted annually. Because of the nature of the degree, the department does not project significant interest in part-time study but would consider part-time enrollment for qualified applicants. Students will generally graduate in 2 to 2.5 years.

1.1.20D FACULTY: The 12 full-time faculty, and associated faculty from other disciplines, are adequate to support the program.

1.1.20E LIBRARY RESOURCES: Library resources are adequate for program implementation.

1.1.20F ADMINISTRATION/ORGANIZATION: The program will be housed in the Department of Geosciences within the College of Arts and Sciences.

1.1.20G SUPPORT RESOURCES: The learning resources associated with the proposed program are:

- 1) The Gray Fossil Site provides training in excavation of fossils for removal to the preparation laboratory in the Natural History Museum.
- 2) The ETSU and General Shale Brick Natural History Museum, situated next to the Site, contains an archival collection of fossils from the Gray Site and the Saltville fossil site (Virginia) available for teaching about fossil preservation of plants, animals, and skeletal anatomy of extinct animals. The Museum contains a state-of-the-art preparation laboratory.
- 3) The Vertebrate Paleontology Laboratory contains an extensive collection of peer- review journals subscriptions and reprints, and books and

monographs considered by the external reviewer as a unique and significant resource.

1.1.20H FACILITIES AND EQUIPMENT: Facilities, equipment, and software (such as computer software systems for geographic mapping), are adequate to support the program. The Department of Geosciences will be physically housed in the renovated Ross Hall. The space will include classrooms, laboratories, and faculty offices. Additional assignment of space to the program at the ETSU Valleybrook facility increases laboratory and office space dedicated to the program. Substantial equipment, research, and library collections were earlier placed at the Gray Fossil Site in support of the Natural History Museum and the Center of Excellence in Paleontology.

1.1.20I NEED AND DEMAND: The US Bureau of Labor Statistics indicates that the number of jobs in the geosciences will grow by 22 percent in the decade ending in 2016. As an indication of need, the Geological Society of America and the American Association of Petroleum Geologists have issued position statements regarding the value and importance of geological and geographical mapping for natural-resource and land-use decision making and study of, global climate change, natural hazards, and water resources. The Paleontology specialization has drawn the attention of professionals in this field and interested students from around the US and world. Labor market analyses indicate a need for individuals prepared to collect appropriate geosciences data, analyze and interpret data, and record and present findings to academic, public, and governmental audiences.

1.1.20J NO UNNECESSARY DUPLICATION: Because of the nature and scope of the proposed degree and its association with a major fossil site and museum, it is not duplicated at either public or private institutions in the state. While other institutions have offerings in geology, earth science, and land-use history from an archaeological perspective, the proposed degree is singular in its paleontology and geospatial analysis construction.

1.1.20K COOPERATING INSTITUTIONS: N/A at this time.

1.1.20L DIVERSITY AND ACCESS: Diversity is an objective in recruiting, mentoring, and graduating students.

1.1.20M ASSESSMENT/EVALUATION AND ACCREDITATION: There are no specialized accrediting bodies for this program. Evaluations of the program will be based on quantitative data, including numbers of applicants to the program; graduates employed in the fields of the major; graduates accepted into doctoral programs; grant proposals; student-faculty publications and presentations at national and international meetings; and theses submitted and published per year in peer-review outlets. Qualitative judgments will include quality of accepted manuscripts for publication, thoroughness of theses, and the quality of granting agencies sponsoring grant awards.

1.1.20O EXTERNAL JUDGMENT: Dr. Ray Bernor of Howard University evaluated the proposal and conducted a February 28-March 1, 2011, site visit. He endorsed the

approval of the program, stating: “The proposed MS Program . . . has the immediate possibility to become a premier program that marries contemporary research and education in Geosciences and Biological Sciences. . . . ETSU has positioned itself to have one of the nation’s very best graduate programs in Geosciences with an emphasis in paleontology and geospatial sciences.”

1.1.20P COST/BENEFIT: Previous investments in the Gray Fossil Site, the Natural History Museum, and the Center of Excellence in Paleontology, with associated space and equipment, enable ETSU to establish the free-standing M.S. in Geosciences with no new costs. Faculty, support staff, and administrative costs associated with programming in geosciences previously existing at the concentration level are in place and are adequate for program operation. Ten graduate assistantships have been assigned in previous years to the geosciences and will be allocated to the department, and these positions along with two additional tuition waiver scholar positions will contribute to the program. In 2002, ETSU received an \$8 million federal grant for a paleontology facility (museum and visitor center) and for funding the first three years of research at the Gray Fossil Site. An additional \$2 million in private gifts and commitment of ETSU resources augmented this grant. Therefore, no new costs are associated with program implementation.

1.1.30 POST APPROVAL MONITORING: An annual performance review of the proposed program will be conducted for the first five years following approval. The review will be based on benchmarks established in the approved program proposal. At the end of this period, campus, governing board, and Commission staff will perform a summative evaluation. The benchmarks include, but are not limited to, enrollment and graduation, program cost, progress toward accreditation, library acquisitions, student performance, and others set by the institution and agreed upon by governing board and Commission staff. As a result of this evaluation, if benchmarks are not met during the monitoring period, the Commission may recommend that the governing board terminate the program. The Commission may choose to extend the period, if additional time is needed and requested by the governing board.