

DATE: November 14, 2013**SUBJECT:** New Academic Program, Tennessee State University, Professional Science Masters (concentration in Applied Geospatial Sciences)**ACTION RECOMMENDED:** Approval

BACKGROUND INFORMATION: The proposed Professional Science Masters (PSM) program with a concentration in Applied Geospatial Sciences (AGS) will combine scientific and technical knowledge in AGS with business workplace skills highly valued by employers. Tennessee State University's groundwork for the proposed program was first established in 2005 by creating a graduate certificate program in Applied Geospatial Information Systems. The geospatial sciences, specifically geospatial information systems (GIS) and global positioning systems (GPS), and remote sensing are being applied to almost all areas of study and application in both the public and private sectors.

The PSM is a unique professional degree grounded in natural science, technology, engineering, mathematics and computational sciences and is designed to prepare students for direct entry into a variety of career options in industry, business or government. It is a distinctive advanced degree for those intending to pursue a career in the practice of science. Since 2006, the Council of Graduate Schools endorsed the PSM program model and currently 127 institutions have developed these interdisciplinary graduate programs that are characterized by science and mathematics with skills-based courses in management and leadership with an internship component. The proposed PSM program with a concentration in Applied Geospatial Sciences meets all those criteria and will seek PSM recognition.

PROPOSED IMPLEMENTATION DATE: Spring 2014

1.1.20A MISSION: The proposed program supports Tennessee State University's mission to provide programming in the agricultural sciences and STEM disciplines. The PSM program will also contribute to the University's mission by producing graduates who will have advanced training in the cutting edge interfaces of science and management. The PSM program is in alignment with the goals outlined in the THEC 2010-15 Public Agenda for Higher Education, specifically the focus on strengthening Tennessee's Knowledge Economy and closing the gaps in the supply of graduates in high demand fields that require post-secondary credentials, particularly in the STEM fields.

1.1.20B CURRICULUM: The degree program will require completion of 36 semester credit hours, including a 15-hour major field core and 21 hours in the concentration. The curriculum is designed based on the model prescribed by the Council of Graduate Schools in order to be recognized as a "Professional Science Master's" program. Curriculum requirements mandate that the majority of course content be derived from STEM disciplines and the inclusion

of a capstone project supervised collaboratively by faculty and employers. Courses will be delivered exclusively online with the exception of the capstone project.

1.1.20C ACADEMIC STANDARDS: Program admission requires a bachelor’s degree; a 2.75 overall undergraduate GPA; satisfactory scores on the Graduate Record Examination (GRE); two letters of recommendations; and a personal statement stating the applicant’s career goals and academic preparation.

Students must meet progression and graduation standards as published annually in the TSU catalog.

Projected Program Enrollment and Productivity

Students will have the option to attend the program on either a part-time or full-time basis.

Year	Full-Time Enrollment	Part-Time Enrollment	Total Headcount	Graduates
2014	6	3	9	--
2015	13	6	19	3
2016	17	10	27	9
2017	19	11	30	10
2018	21	12	33	12

1.1.20D FACULTY: The PSM program will use an interdisciplinary approach by incorporating existing faculty from three Colleges: Agriculture, Human and Natural Sciences; Public Service and Urban Affairs; and Business. All faculty involved have their terminal degree in their respective fields.

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

1.1.20F ADMINISTRATION/ORGANIZATION: This program will be offered through the Department of Agricultural and Environmental Sciences located within the College of Agriculture, Human and Natural Sciences. A departmental faculty member will serve as the program director for the proposed Professional Science Master’s program.

1.1.20G SUPPORT RESOURCES: Students will have access to a wide range of support resources, including advising and mentoring support from the program director and other faculty members.

1.1.20H FACILITIES AND EQUIPMENT: Facilities and instructional equipment are adequate to support the program. Additionally, TSU has developed a delivery system for distance education that provides sufficient technical resources and support for faculty and students.

1.1.20I NEED AND DEMAND: The proposed PSM program with a concentration in Applied Geospatial Sciences (AGS) responds to the demands for continued training,

professional development and credentialing opportunities within the AGS field. With a successful Graduate Certificate Program in this field, students are asking for a Master's degree program to build upon this existing degree credential. The labor market also validates the demand for this proposed PSM program. The U.S. Department of Labor Employment and Training Administration anticipates that an additional 150,000 positions requiring geospatial skills will be created by 2020. Furthermore, according to the recently published *Future U.S. Workforce for Geospatial Intelligence* it was indicated that employers are looking for individuals with a mix of both scientific and practical skills. The PSM program model will incorporate the discipline with applied skills in communication and management.

1.1.20J NO UNNECESSARY DUPLICATION: Currently, there are no Professional Science Master's programs in Tennessee with a concentration in Applied Geospatial Sciences (AGS). This proposed program aligns with the institution's mission and other program offerings such as the undergraduate program in Agricultural Sciences (AGS concentration) and the graduate certificate program in Applied Geospatial Information Systems. TSU's proposed PSM program will provide unique opportunities to prospective students using online course delivery and a required on-ground internship.

1.1.20K COOPERATING INSTITUTIONS: N/A

1.120L DIVERSITY AND ACCESS: Tennessee State University is committed to an inclusive and diverse campus that values the uniqueness of its student body and employees. Diversity is an objective in recruiting, mentoring, and graduating students.

1.1.20M ASSESSMENT/EVALUATION AND ACCREDITATION: There are no accrediting agencies for this specific program; however, the program is structured based on the PSM guidelines established by the Council of Graduates Schools (CGS). As of January 2012, CGS has selected the Keck Graduate Institute to administer the PSM affiliation process. The College of Agriculture, Human and Natural Sciences plans to seek recognition of the PSM program through the Keck Graduate Institute. A Professional Science Master's recognition provides assurance that the program conforms to nationally accepted criteria.

Program effectiveness will be gauged by annual data collection of enrollment, degree completion, and alumni and employer surveys. Additionally, the program faculty committee will review program and student learning outcomes and determine if any revisions to the program is warranted. Program revisions will be shared with the Advisory Board for feedback.

1.1.200 EXTERNAL JUDGMENT: External review of the proposed program was conducted during an institution site visit on April 29-30, 2013. Dr. Lindi Quackenbush, Associate Professor of Environmental Resources Engineering at State University of New York served as the external reviewer. She stated that the proposed program had several strengths that included supportive university administration, qualified faculty to deliver both the core and concentration areas; strong information technology network; strong on-line support services for students; and prior experience

with offering the graduate certificate program in Applied Geospatial Information Systems.

Dr. Quackenbush stated that “there is value in creating the proposed Professional Science Master’s degree in Applied Geospatial Sciences at Tennessee State University. This field is expected to continue to expand and the requirement for professionals with technical expertise in the geospatial field combined with business training addresses a clear marketplace need.”

1.1.20P COST/BENEFIT: The proposed PSM program will be funded through campus reallocations and additional tuition revenues generated by the program.

1.1.30 POST APPROVAL MONITORING: An annual performance review of the proposed program will be conducted for the first five years following program approval. The review will be based on benchmarks established in the approved proposal. At the end of this period, the 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 and other metrics set by the institution and agreed upon by governing board and Commission staff. If benchmarks are not met during the monitoring period, the Commission may recommend that the governing board terminate the program. If additional time is needed and requested by the governing board, the Commission may choose to extend the monitoring period.