

DATE: April 24, 2014**SUBJECT:** Austin Peay State University, Engineering Technology, Master of Science**ACTION RECOMMENDED:** Approval

BACKGROUND INFORMATION: Building upon established associate and accredited baccalaureate degree programs in Engineering Technology, Austin Peay State University proposes to offer a Master of Science in Engineering Technology. The proposed program will provide the advanced knowledge and skills needed by people in technological careers serving in the military or working for companies located at industrial parks throughout the region to advance to leadership positions in the industry. The curriculum is built on a foundation of theoretical and applied concepts related to practical problems in the industry.

A unique element of this proposed program will be the use of rapid prototyping and additive manufacturing technology. At this time, APSU has one of the few undergraduate programs in this field of technology and the Master's program will expand the knowledge base in this area. Coursework in this area, along with courses in sensor technology, nondestructive evaluation, and other advanced topics related to leadership in design and manufacturing operations will give graduate students a unique educational experience.

The program will be based at the Fort Campbell campus where the Department of Engineering Technology already serves a mix of traditional and nontraditional students. APSU has unique expertise and facilities in the Engineering Technology discipline. The university has made a significant investment in a laboratory equipped with range of modern, industry-standard equipment for rapid prototyping and additive manufacturing.

PROPOSED IMPLEMENTATION DATE: Fall 2014

1.1.20A MISSION: The proposed program supports Austin Peay State University's mission of "raising the education attainment of the citizenry, developing programs and services that address regional needs, and providing collaborative opportunities that connect university expertise with private and public resources." The Engineering Technology 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 33 semester credit hours including a capstone course. Students will work closely with their faculty advisor in selecting a project that will incorporate engineering technology standards with product design and manufacturing operations management. The capstone project requires students to submit a formal report along with an oral presentation.

The proposed degree program will be delivered in the traditional classroom format at the Fort Campbell campus of APSU. Courses will be offered in the accelerated eight week course schedule to align with the Army training and unit rotation schedule.

1.1.20C ACADEMIC STANDARDS: Program admission requires a bachelor’s degree in engineering technology, engineering or related field with a GPA of 3.0. Students with a GPA less than 3.0 may be admitted by meeting other requirements such as prior completion of graduate coursework, three years of industrial work experience or successful completion of the Fundamentals of Engineering examination.

Students must meet progression and graduation standards as published annually in the APSU 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 Headcount	Part-Time Headcount	Total Headcount	Graduates
2014	8	4	12	--
2015	16	4	20	5
2016	17	5	22	7
2017	17	5	22	8
2018	18	5	23	8

1.1.20D FACULTY: The instructional workload for this program will be assumed by the seven faculty members in the Department of Engineering Technology, with all faculty members contributing approximately 15 percent to the program. Courses still not covered by current faculty due to reassigned graduate duties will be covered by adjunct faculty members. In addition, a new faculty search will be conducted in year two.

1.1.20E LIBRARY RESOURCES: Library and information technology support are adequate for program implementation.

1.1.20F ADMINISTRATION/ORGANIZATION: This program will be offered through the Department of Engineering Technology in the School of Technology and Public Management. The department chair will be responsible for the proposed program.

1.1.20G SUPPORT RESOURCES: The program will be based at the Fort Campbell campus where students will have access to a wide range of support resources, including advising support from the faculty.

1.1.20H FACILITIES AND EQUIPMENT: Dr. Jeff Gray, who evaluated and conducted a site visit for the proposed Engineering Technology MS program, highlighted the facilities as a strong component of the program. In his site visit report, Dr. Gray stated the following: *“The facilities I saw during my visit are first-class. Their labs are well-equipped not only from the instrumentation needed to teach the degree topics, but also the instructional support that is available within all of the classrooms. In fact, the facilities at APSU in the current Engineering Technology undergraduate program are stronger than most doctoral level research schools that I have visited.”*

1.1.20I NEED AND DEMAND: According to the 2008-2018 THEC Supply and Occupational Demand Projections, the Engineering Technology field was one of the 10 fastest growing STEM disciplines projected. The number of industrial organizations and large companies in the region centered on Clarksville with engineering groups is large and increasing. For entry-level positions, these companies typically hire graduates with bachelor’s degrees in engineering or engineering technology. Master’s degrees in engineering and engineering technology are often required for people in higher level positions. The proposed degree program will provide a path for people hired with a bachelor’s degree to earn the credentials required for promotion to one of these positions.

1.1.20J NO UNNECESSARY DUPLICATION: Similar programs in Engineering Technology are offered at three public institutions (East Tennessee State University, Middle Tennessee State University and University of Memphis). The proposed program at APSU will emphasize advanced technology applications in product creation and evaluation. Additionally, the program was developed in response to the needs of the industrial employers in the university’s service region. The external reviewer commented on program duplication and noted that the *“main appeal of the new MSET is the regional influence (all other programs are over a three hour drive away, which are not able to serve the local industry and Fort Campbell needs).”*

1.1.20K COOPERATING INSTITUTIONS: N/A

1.1.20L DIVERSITY AND ACCESS: Austin Peay State University is an equal opportunity employer committed to the education of a non-racially identifiable student body. The student recruitment plan for the proposed Engineering Technology MS program will be developed to target underrepresented groups. Additionally, an Engineering Technology faculty member is currently pursuing an EdD degree with a research focus on diversity amongst engineering technology students and will utilize the results to guide efforts in developing a more diverse student population.

1.1.20M ASSESSMENT/EVALUATION AND ACCREDITATION: There are no accrediting agencies for this specific program; however, the program has been structured based on faculty experience with the Accreditation Board for Engineering and Technology for the undergraduate program. Program effectiveness will be gauged

by annual data collection of enrollment, degree completion, and the employment history of graduates. Additionally, the program faculty committee will review the assessment results and determine if any revisions to the program is warranted. Program revisions will be shared with the Industrial Advisory Board for feedback.

1.1.200 EXTERNAL JUDGMENT: External review of the proposed program was conducted during an institution site visit on November 18, 2013. Dr. Jeff Gray, Associate Professor of Computer Science at the University of Alabama served as the external reviewer. He recommended the Engineering Technology MS program for approval and noted the following strengths:

- Faculty collectively share both a level of strong academic preparation coupled with deep practical experience.
- Facilities are first-class – labs are well-equipped not only from the instrumentation needed to teach the degree topics, but also the instructional support that available within the all of the classrooms.

1.1.20P COST/BENEFIT: The proposed Engineering Technology MS program will generate tuition and fees to cover the operating costs. Program costs are limited to faculty salaries, travel and marketing activities.

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.