

## **Institutional Effectiveness Report 2020-21**

**Program:** Engineering Management MSEM

**College and Department:** College of Engineering, General & Basic Engineering Department

**Contact:** John Tester

**Mission:**

The MSEM program is currently guided under the General & Basic Engineering Department Mission:

*The General & Basic Engineering (GBE) Department will provide a high quality educational experience for the students under its care through a flexible balance of academic, professional, and extracurricular programs. Additionally, the department will develop and maintain partnerships and service opportunities for its students, faculty, staff with the region and general public as a whole. Finally, the department will contribute to society through its engineering scholarship.*

**Program Goals:**

- PG 1: The program will integrate business and engineering expertise to enable our graduates to manage technology-based projects and technical people and organizations.
- PG 2: This integrated program will contain the most up-to-date technology, techniques, and tools, as well as business concerns, to prepare our graduates for success in a changing work environment.
- PG 3: This program will increase the number of qualified engineering managers available to organizations in Tennessee and beyond.
- PG 4: The program will increase the number of qualified engineering managers who can successfully achieve a PMP certification.

**Student Learning Outcomes:**

- SLO 1: Students will analyze and evaluate quantitative data from multiple sources to make informed project management and organizational decisions.
- SLO 2: Students will understand and apply effective people management skills to enhance relationships and teams within all aspects of a project.
- SLO 3: Students will understand and apply all skills necessary to manage projects to a successful conclusion.
- SLO 4: Students will look beyond a single project, gain an organizational perspective, assure quality, and drive continuous improvement.

**Assessment Plan:**

As a result of the recent external MS program reviews, discussions of best practices for MS program assessment are planned by the College of Engineering Graduate Executive Committee. The MSEM program will include ongoing semester course-level assessments and annual program-level assessments based on the College Graduate Executive Committee's conclusions on best practices.

Among the assessments currently utilized by other MS programs in the College of Engineering are IDEA faculty teaching evaluations, reviews of program admissions and enrollments with respect to diversity, exit surveys of graduates, and periodic surveys of recent alumni. These assessments will be utilized by the MSEM program. In addition, an assessment survey will be developed for those who do not persist or who drop a course. Best practices often suggest a survey of employers of graduates, and such a survey will be considered. However, low response rates often limit the conclusions that can be drawn from employer surveys. As an alternate measure of external employer assessment, the external MSEM advisory board will be asked to help assess and provide feedback on the professional project presentations.

The Division of Digital and Distance Education encourages the ongoing evaluation and upkeep of online courses. An initial re-evaluation occurs immediately following the first offering of the course. This immediate review allows for the correction of any issues, such as a need for providing additional directions or altering resource requirements or activities. Similar to face-to-face classroom activities that do not go as planned, authentic assessment opportunities for online courses may not work as planned. This re-evaluation allows the faculty to test new technologies and restructure current course content. The course should be evaluated prior to each offering to ensure technology needs are being met and links, videos, audios, and other resources are still high quality and active. Each course should be completely reviewed, both content and online components, at least every three years.

**Program Development:**

A new coordinator for the Engineering MSEM program (Dr. John Tester) was hired in Fall 2020. He developed and offered the first two courses in the program: EMGT 6100 and ENGR 6210. A newly hired GBE associate professor has also developed and taught a third course, EMGT 6220, in Summer 2021. Enrollment in all the newly deployed courses have been 5 to 13 in these core courses. Both faculty are scheduled to develop and teach three more courses, EMGT 6220, CEE 6200 (newly titled as ENGR 6200), and EMGT 6230 by end of Spring 2022.

In his first year, the MSEM Coordinator has been addressing program challenges as they have appeared. The current Learning Management System (LMS) for Tennessee Tech University coped well enough for on-campus programs but had technical limitations when applied to online and asynchronous engineering-oriented course content. The coordinator is exploring add-on software enhancements to the LMS for improvement. Another discovery was the slower than planned enrollment from the start to the present. A mixture of factors were likely contributors, including the delayed hire of the first MSEM Coordinator and faculty, leading to the delayed development of the first new MSEM courses.

The coordinator projected that enrolled MSEM students were not likely to graduate in the planned two-year cohort cycle. The immediate cause of this issue was that most students were enrolling in less than one course per semester. Also, the MSEM curriculum had prerequisite links in the core courses, potentially creating future completion delays. The coordinator addressed the curricular drawback early,

as part of the new course developments, but future curricular adjustments are being planned with GBE department coordination.

The 2020-2021 COVID-19 pandemic difficulties also may have troubled overall campus marketing efforts, negatively impacting current enrollments. Dr. Tester is coordinating with the Engineering College and University marketing personnel, with the goal of integrating the MSEM program into overall campus marketing efforts. Longer-term MSEM support activities include planning with the GBE department as it develops additional department programs that will synergistically translate into MSEM student interest and course offering support.