

## Institutional Effectiveness Report 2021-2022

**Program:** Engineering Management MSEM

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

**Contact:** John T. Tester, PhD

**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 have potential to 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 demonstrate their knowledge of engineering management expertise.\*
- SLO 3: Students will demonstrate an ability make appropriate judgments to unique engineering management situations.\*
- SLO 4: Students will demonstrate a knowledge of Quality that applies to Engineering Management and/or Project Management applications.\*

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\* The MSEM Coordinator reported in the 2021-2022 report that the original SLO 2, 3, and 4 are problematic to quantitatively measure. These are the new, more measurable SLO that will be presented for approval in this academic year for this program.

### **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.

Previous MSEM reports noted other campus-based MS programs using a variety of externally based resources, such as department industry advisory boards and alumni surveys. However, there is no department advisory board for the department that hosts the MSEM program, and there are so far no alumni from the MSEM program (first graduates are Fall 2022). Thus, assessment techniques are primarily, if not solely developed from course-level information in this past academic year.

Each course should be completely reviewed, both content and online components, at least every three years.

### **Enrollment:**

Here are updates on the student enrollment as of the present date of 9/2/22.

- There are 27 MSEM students enrolled in Fall 2022 courses as of 9/2/22.
  - Seven newly accepted MSEM Students started Summer or Fall 2022
- Applied for graduation:
  - Three students for end of Fall 2022 (the first MSEM graduates),
  - One for end of Spring 2023
  - Projected to apply for Summer 2023 graduation: Up to six.
    - The projections become more uncertain the farther ahead examined.
- Three MSEM students earned probation due to (low) academic performance.
  - Two of the three applied for reinstatement and were accepted, continuing on in the program actively.
  - One student was dismissed from the program and did not complete the reinstatement application, and thus is currently not enrolled in the MSEM program.
- Five MSEM students enrolled in at least one class since Spring 2019, but have chosen not to enroll in additional classes for at least the previous two consecutive semesters.

### **Program Development:**

A coordinator for the Engineering MSEM program (Dr. John Tester) was hired in Fall 2020. He has developed and delivered EMGT 6100, EMGT 6210, and EMGT 6230. He is currently (Fall 2022) deploying the capstone course, EMGT 6900. A GBE associate professor has developed and taught EMGT 6220, ENGR 6200, and EMGT 6300. *Thus, all the courses will have been developed and delivered at least once to students by the end of the year 2022.* Enrollment in all the newly deployed courses have been 3 to 14 in these core courses.

Slower enrollment growth than originally planned for the program continues to be a challenge. Several factors are involved. 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. This approach spreads out the enrolled students over more than 2 years, thus lowering individual class enrollment. 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. Nevertheless, the structure of the program still results in two courses in particular being potentially with low enrollment: EMGT6230 and EMGT 6300. The reason is that both are required to be offered only each Spring, and many students enroll in only one course per semester. Thus, both courses offered at the same semester end up with less than the full complement of MSE-admitted students for their cohorts. Low enrollment also led to EMGT 6220 to be very low enrolled in Summer 2022. It is probably not reasonable to discuss students as in 'cohorts,' given their irregular enrollment habits.

For this past academic year, Dr. Tester interviewed all incoming students personally, either from a first-advising duty or in the first EMGT class, EMGT 6100. He discovered two important facts with regards to student awareness of the MSEM program:

1. Most MSEM students became aware of the MSEM program through their fellow coworker recommendations. Some also found out through searching the Tennessee Tech University website independently.
2. No MSEM student was aware of any advertising for the program prior to their application, either through Tennessee Tech University or other organizations. NONE.

This last observation is of particular note, as the Tennessee Tech University Alumni Association sent out an email in mid-summer 2022 to all alumni having graduated up to 10 years prior. The MSEM coordinator had also purchased several months of advertising with the WPLN radio station in the past year. Thus, the email campaign and the radio advertisements were clearly unsuccessful in drawing in new MSEM applicants. Another recruiting objective of the MSEM program was to coordinate with the College of Engineering's publicity campaigns. However, that effort must be considered ineffective with regards to the MSEM program, due to the information gathered above.

The MSEM coordinator has proposed a budget for the 2022-2023 academic year which will start a LinkedIn ad campaign for MSEM. However, the delay and uncertainty of the university budget authorization to present has postponed the implementation of that campaign.