

Lamar University

Master of Engineering Management

September 22, 2022

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Master of Engineering Management

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Institutional Mission

Lamar University is dedicated to student success by engaging and empowering students with the skills and knowledge to thrive in their personal lives and chosen fields of endeavor. As a doctoral granting institution, Lamar University is internationally recognized for its high quality academics, innovative curriculum, diverse student population, accessibility, student success, and leading-edge scholarly activities contributing to transforming the communities of Southeast Texas and beyond.

Program Mission

Engineering management is a career that brings together the technological problem-solving ability of engineering and the organizational, administrative, and planning abilities of management in order to oversee the operational performance of complex engineering driven enterprises. Graduates of this program will have an understanding of leadership and organizational management, operations, supply chain, management of technology, systems and industrial engineering, and management science.

1 Program Goals

Master of Engineering Management Program Goals

The Master of Engineering Management program goals are to produce exceptional graduates who within a few years after graduation: 1. Advance professionally with increasing leadership and responsibility in an industry relevant to engineering management. 2. Contribute to organizational objectives with significant societal benefits in an environmentally and ethically responsible manner. 3. Engage in life-long learning through professional activities and training, the pursuit of higher educational degrees, and individual professional development.

1.1 Student Learning Outcomes

Engineering Management Knowledge Application

An ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, management and technology to solve broadly-defined engineering management technology problems appropriate to the discipline;

Supported Initiatives (19)

GENERAL EDUCATION

- Critical Thinking Skills - to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information

- Empirical and Quantitative Skills - to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions
- Social Responsibility - to include intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities
- Personal Responsibility - to include intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities

INSTITUTIONAL PRIORITIES

- Acquiring, constructing, integrating, and applying knowledge
- Critical Thinking
- Problem Solving
- Decision Making
- Reflective Thinking
- Effective Reasoning
- Analytical/Quantitative Literacy
- Information Literacy
- Ethics and Integrity
- Global and Cultural Perspective/Appreciation
- Social and Civic Responsibility
- Change Management
- Technological Competence
- Lifelong Learning

STRATEGIC INITIATIVES

- SP - 2 - Leverage our core strengths while elevating the overall quality of our education and scholarship.

1.1.1

Measures

Measures for outcome 1. Engineering Management Knowledge Application

The Master of Engineering Management is a non-thesis degree program that can be completed on-campus or online. The degree teaches both management and advanced technical skills to prepare students for the job market. The program uses courses from the College of Engineering, College of Business and Computer Science. Our students study topics that are in demand including Automation and Robotics, Project Management, AI and Machine Learning, Supply Chain Management, ERP and Software Development. The program requires a comprehensive final examination prepared by the graduate committee of the student.

METHODOLOGY*

Based on the courses offered by the Department of Industrial Engineering that are used in the comprehensive examination, this portion of the test will be selected to make the assessment of the application of knowledge of engineering management skills of the graduate. A rubric has been developed to measure the success of the students with respect to this outcome. The steps of the process are: 1. Assessment Committee, with input from the faculty and constituency group, constructs rubrics. For consistency, all rubrics are designed with a 4-point scale, including specific performance criteria, and have a minimum performance standard set to an average above 2.5 on the 4-point scale. The scale is 1: Marginal, 2: Acceptable, 3: Adequate, 4: Exceptional. The specific areas that the rubric includes are mathematical, science, and technology concepts; mathematical and technology reasoning; use of diagrams and sketches; use of terminology and notation, strategy and procedures. 2. The faculty discusses the performance criteria in the rubrics. 3. The course instructor grades the student work to be included in the students' course grade. 4. The faculty Assessment Committee then independently assesses the student work with the rubric for that outcome(s). A minimum of three faculty members must evaluate the student work. 5. The results of the assessments are tabulated. 6. Improvement plans are written for every area not meeting the performance standard. Improvement plans can also be generated to improve items meeting our standards. 7. The Faculty Assessment Committee and appropriate faculty members review the assessment data and develop suggest continuous improvement plans when applicable

SOURCE OF EVIDENCE

Rubric Graded Exam - Academic Direct

1.1.1.1 Achievement Target

2019-2020 Met

ACHIEVEMENT TARGET	We aim to obtain a 2.5 or better average response in all the concepts used in the assessment of the rubric.
FINDINGS	Six students graduated from the program in Spring 2020. All but one student approved the comprehensive test at the first attempt, signaling the engineering management skills acquired. The areas of the rubric obtained 2.5 or better
ANALYSIS OF FINDINGS	
IMPROVEMENT TYPE	
IMPROVEMENT	

1.2 Student Learning Outcomes

Engineering Management Communication

An ability to apply written, oral, and graphical communication in broadly-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature; communicating to different audiences

Supported Initiatives (4)

GENERAL EDUCATION

- Communication Skills - to include effective development, interpretation and expression of ideas through written, oral and visual communication

INSTITUTIONAL PRIORITIES

- Oral Communication
- Written Communication

STRATEGIC INITIATIVES

- SP - 2 - Leverage our core strengths while elevating the overall quality of our education and scholarship.

1.2.1 Measures

Measures for Engineering Management Communication

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METHODOLOGY*

Based on the courses offered by the Department of Industrial Engineering to the Master of Engineering Management program, assignments with significant teamwork activities will be selected. A rubric has been developed to measure the success of the students with respect to this outcome. The steps of the process are: 1. Assessment Committee, with input from the faculty and constituency group, constructs rubrics. For consistency, all rubrics are designed with a 4-point scale, including specific performance criteria, and have a minimum performance

standard set to an average above 2.5 on the 4-point scale. The scale is 1: Marginal, 2: Acceptable, 3: Adequate, 4: Exceptional. This rubric is used for the assessment of oral and written communication. The specific areas that the written communication rubric includes are organization; amount of information; quality of information; mechanics; paragraph construction; diagrams and illustrations. The specific areas that oral communication rubric include are speaks clearly; posture and eye contact; content; volume; preparedness; enthusiasm; organization; graphics; elocution. 2. The faculty discusses the performance criteria in the rubrics. 3. The course instructor grades the student work to be included in the students' course grade. 4. The faculty Assessment Committee then independently assesses the student work with the rubric for that outcome(s). A minimum of three faculty members must evaluate the student work. 5. The results of the assessments are tabulated. 6. Improvement plans are written for every area not meeting the performance standard. Improvement plans can also be generated to improve items meeting our standards. 7. The Faculty Assessment Committee and appropriate faculty members review the assessment data and develop suggest continuous improvement plans when applicable

SOURCE OF EVIDENCE

Rubric Scored Assignments - Academic Direct

1.2.1.1

Achievement Target

2019-2020

Met

ACHIEVEMENT
TARGET

We aim to obtain a 2.5 or better average response in all the concepts used in the assessment of the rubric.

FINDINGS

MEM students took INEN 5375 where they developed a complex simulation and turned in a report. The performance was satisfactory

ANALYSIS OF
FINDINGS

IMPROVEMENT
TYPE

IMPROVEMENT
DESCRIPTION

IMPROVEMENT

1.3

Student Learning Outcomes

Engineering Management Teamwork

An ability to function effectively as a member as well as a leader on engineering and managerial teams.

Supported Initiatives (13)

GENERAL EDUCATION

- Teamwork - to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal

INSTITUTIONAL PRIORITIES

- Teamwork
- Ethics and Integrity
- Self-Awareness and Respect
- Leadership
- Global and Cultural Perspective/Appreciation
- Social and Civic Responsibility
- Conflict Resolution
- Change Management
- Time Management/Prioritization
- Adaptability/Risk Taking
- Persistence

STRATEGIC INITIATIVES

- SP - 2 - Leverage our core strengths while elevating the overall quality of our education and scholarship.

1.3.1

Measures

Measures for Engineering Management Teamwork

The Master of Engineering Management is a non-thesis degree program that can be completed on-campus or online. The degree teaches both management and advanced technical skills to prepare students for the job market. The program uses courses from the College of Engineering, College of Business and Computer Science. Our students study topics that are in demand including Automation and Robotics, Project Management, AI and Machine Learning, Supply Chain Management, ERP and Software Development. The program's Assessment Committee developed rubrics for all outcomes.

METHODOLOGY*

Based on the courses offered by the Department of Industrial Engineering to the Master of Engineering Management program, assignments with significant teamwork activities will be

selected. A rubric has been developed to measure the success of the students with respect to this outcome. The steps of the process are: 1. Assessment Committee, with input from the faculty and constituency group, constructs rubrics. For consistency, all rubrics are designed with a 4-point scale, including specific performance criteria, and have a minimum performance standard set to an average above 2.5 on the 4-point scale. The scale is 1: Marginal, 2: Acceptable, 3: Adequate, 4: Exceptional. The specific areas that this is rubric includes are contributions; quality of work; problem-solving; attitude; preparedness; pride; working with others; time-management and focus on the task. 2. The faculty discusses the performance criteria in the rubrics. 3. The course instructor grades the student work to be included in the students' course grade. 4. The faculty Assessment Committee then independently assesses the student work with the rubric for that outcome(s). A minimum of three faculty members must evaluate the student work. 5. The results of the assessments are tabulated. 6. Improvement plans are written for every area not meeting the performance standard. Improvement plans can also be generated to improve items meeting our standards. 7. The Faculty Assessment Committee and appropriate faculty members review the assessment data and develop suggest continuous improvement plans when applicable

SOURCE OF EVIDENCE

Rubric Graded Reflection - Academic Direct

1.3.1.1

Achievement Target

2019-2020

Met

ACHIEVEMENT
TARGET

We aim to obtain a 2.5 or better average response in all the concepts used in the assessment of the rubric

FINDINGS

MEM students took INEN 5375 where they developed a complex simulation working in teams. The performance was satisfactory



ANALYSIS OF
FINDINGS

IMPROVEMENT
TYPE

IMPROVEMENT
DESCRIPTION

IMPROVEMENT

Project Attachments (2)

Attachments	File Size
 M Engineering Management.pdf	79KB
 RUBIRCS for MEASURING GOALS MEM.docx	18KB

Institutional Mission

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1 Program Goals

Master of Engineering Management Program Goals

The Master of Engineering Management program goals are to produce exceptional graduates who within a few years after graduation: 1. Advance professionally with increasing leadership and responsibility in an industry relevant to engineering management. 2. Contribute to organizational objectives with significant societal benefits in an environmentally and ethically responsible manner. 3. Engage in life-long learning through professional activities and training, the pursuit of higher educational degrees, and individual professional development.

1.1 Student Learning Outcomes

Engineering Management Specialized Knowledge

An ability to apply knowledge, techniques, skills, and modern tools of mathematics, science, engineering, management, and technology, administrative, decision making, social, and leadership and negotiation to the field of their specialization

1.1.1 Measures

Measures for outcome 1. Engineering Management Specialized Knowledge

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prepare students for the job market. The program uses courses from the College of Engineering, College of Business and Computer Science. Our students study topics that are in demand including Automation and Robotics, Project Management, AI and Machine Learning, Supply Chain Management, ERP, and Software Development. The program requires a comprehensive final examination prepared by the graduate committee of the student.. The number of specialized courses is too many to mention here and each student selects their specialization courses based on academic background, skills, and future professional interests. The MEM program is one of the most content diverse program since it includes courses from the College of Business, the College of Engineering and it may include courses from the Department of Computer Science. Fifty percent of the courses must be STEM courses which adds to the complexity of the graduation requirement. Based on the courses offered by the Department of Industrial Engineering that are used in the comprehensive examination, this portion of the test will be selected to make the assessment of the application of knowledge of engineering management skills of the graduate. Students select their electives from a vast array of options. When the times come to present the comprehensive examination, students have taken several electives and most likely all the core courses. Students frequently take the specialization electives in the comprehensive examination, therefore to assess their specialized knowledge, we make the assessment through the comprehensive examination. This follows the 2020-25 Strategic Plan measure of success Successful Student Learning and Placement Outcomes)

METHODOLOGY*

The steps of the process are: 1. The student and the program coordinator decide on a suitable graduation committee of three instructors of the courses that the student took/will take in the program 2. Each faculty member is invited to be part of the committee and if accepts, prepares a comprehensive examination of the course(s) the student took. 3. The tests are scheduled and coordinated by the program coordinator to be taken all on the same day with a total available time of 3 hours. 4. The tests are graded distributed by the program coordinator to the faculty for grading, pass or fail. 5. The committee members decide on the passing or failing of the student in that topic. 6. In case of failing, students have a second opportunity at the comprehensive.

SOURCE OF EVIDENCE

Comprehensives - Academic Direct

1.1.1.1 Achievement Target
2020-2021 **Met**

ACHIEVEMENT TARGET	We aim to obtain a 100% passing rate in all comprehensive examinations of the MEM students, regardless of the topic or College on the first attempt.
FINDINGS	100% of the graduating students pass their comprehensive examination on the first attempt
ANALYSIS OF FINDINGS	This fall 2020 five students graduated from the program and in Spring 2021 four graduated from the program, for a total of nine students. All of them passed their examinations on their first attempt.
IMPROVEMENT TYPE	Academic
IMPROVEMENT DESCRIPTION	No Improvements Deemed Necessary
IMPROVEMENT	

1.2 Student Learning Outcomes

Engineering Management Core Knowledge

An ability to apply knowledge, techniques, skills, and modern tools of mathematics, science, engineering, management, and technology, to integrate core engineering management skills of project management, engineering management, accounting and financial knowledge ,

1.2.1 Measures

The Master of Engineering Management that as at its core 3 courses. INEN 5369 Engineering Management, INEN 5380 Project Management, and ACCT 5315. Students need to assimilate the content of these courses in order to become good engineering managers. It is important to know that the students are succeeding in the core courses of the program since these are the only three courses that are common to most students, given the large diversification of interests and areas of specialization. This follows the 2020-25 Strategic Plan measure of success Successful Student Learning and Placement Outcomes)

METHODOLOGY*

The objective is to make an assessment of the students integrating the core courses knowledge by means of their academic performance in the core courses INEN 5369, INEN 5380 and ACCT 5315. 1. We obtained the list of all the students that attended any of these three courses during the year. 2. The list is filtered to only include the MEM students.


SOURCE OF EVIDENCE

1.2.1.1 Achievement Target

2020-2021 Met

ACHIEVEMENT TARGET	80% of the MEM students enrolled in these courses should get a final letter grade of B or better in each one of the courses to consider a satisfactory performance. 70% of the students must get A to get an exceeding expectation status.
FINDINGS	Ninety-three percent (93%) of the MEM students enrolled in a core course during 2020-21 achieved a letter grade of B or better. Fifty-eight percent (58%) of the MEM enrolled in core courses got a letter grade of A in the course.
ANALYSIS OF FINDINGS	A total of 61 students enrolled in MEM core courses during 2020-21. Of them, 17 students were enrolled in ACCT 5315, 25 were enrolled in INEN 5369, and 18 in INEN 5380. There were only two students that obtained a C, two students that obtained an incomplete (I) and one student obtained an (FS). These, taking into consideration global health challenges, seems to be good results since the incomplete and FS are likely related to those issues.
IMPROVEMENT TYPE	Academic
IMPROVEMENT DESCRIPTION	No Improvements Deemed Necessary
IMPROVEMENT	

Project Attachments (1)

Attachments	File Size
 RUBIRCS for MEASURING GOALS MEM.pdf	122KB

Institutional Mission

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1.1 Student Learning Outcomes

Engineering Management Specialized Knowledge

An ability to apply knowledge, techniques, skills, and modern tools of mathematics, science, engineering, management, and technology, administrative, decision making, social, and leadership and negotiation to the field of their specialization

1.1.1 Measures

Measures for outcome 1. Engineering Management Specialized Knowledge

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prepare students for the job market. The program uses courses from the College of Engineering, College of Business and Computer Science. Our students study topics that are in demand including Automation and Robotics, Project Management, AI and Machine Learning, Supply Chain Management, ERP, and Software Development. The program requires a comprehensive final examination prepared by the graduate committee of the student.. The number of specialized courses is too many to mention here and each student selects their specialization courses based on academic background, skills, and future professional interests. The MEM program is one of the most content diverse program since it includes courses from the College of Business, the College of Engineering and it may include courses from the Department of Computer Science. Fifty percent of the courses must be STEM courses which adds to the complexity of the graduation requirement. Based on the courses offered by the Department of Industrial Engineering that are used in the comprehensive examination, this portion of the test will be selected to make the assessment of the application of knowledge of engineering management skills of the graduate. Students select their electives from a vast array of options. When the times come to present the comprehensive examination, students have taken several electives and most likely all the core courses. Students frequently take the specialization electives in the comprehensive examination, therefore to assess their specialized knowledge, we make the assessment through the comprehensive examination. This follows the 2020-25 Strategic Plan measure of success Successful Student Learning and Placement Outcomes)

METHODOLOGY*

The steps of the process are: 1. The student and the program coordinator decide on a suitable graduation committee of three instructors of the courses that the student took/will take in the program 2. Each faculty member is invited to be part of the committee and if accepts, prepares a comprehensive examination of the course(s) the student took. 3. The tests are scheduled and coordinated by the program coordinator to be taken all on the same day with a total available time of 3 hours. 4. The tests are graded distributed by the program coordinator to the faculty for grading, pass or fail. 5. The committee members decide on the passing or failing of the student in that topic. 6. In case of failing, students have a second opportunity at the comprehensive.

SOURCE OF EVIDENCE

Comprehensives - Academic Direct

1.1.1.1 Achievement Target
2021-2022 Partially Met

ACHIEVEMENT TARGET	We aim to obtain a 100% passing rate in all comprehensive examinations of the MEM students, regardless of the topic or College on the first attempt.
FINDINGS	In Fall 2021, six student graduated presenting 18 comprehensive test sections, passing all of them on the first attempt. In Spring 2022, thirteen students presented 39 comprehensive tests with all but one test being passed on the first attempt.
ANALYSIS OF FINDINGS	<p>The Fall 2021 semester the target of 100% was achieved. The second semester with 38 out of 39 tests passed on the first attempt the score was over 97%.</p> <p>The student that failed the test on the comprehensive took it again and passed. The student in question was an overall good student with a GPA of 4.0. She had demonstrated to be apprehensive regarding course of action and examinations and that may have affected the score on the first test.</p> <p>We will keep working with students for them to succeed in their comprehensive test and self reliance in this situations.</p>
IMPROVEMENT TYPE	Academic
IMPROVEMENT DESCRIPTION	No Improvements Deemed Necessary
IMPROVEMENT	

1.2

Student Learning Outcomes

Engineering Management Core Knowledge

An ability to apply knowledge, techniques, skills, and modern tools of mathematics, science, engineering, management, and technology, to integrate core engineering management skills of project management, eginreering management, accounting and financial knowledge ,

1.2.1

Measures

Measures for outcome 1. Engineering Management Core Knowledge

The Master of Engineering Management that as at its core 3 courses. INEN 5369 Engineering Management, INEN 5380 Project Management, and ACCT 5315. Students need to assimilate the content of these courses in order to become good engineering managers. It is important to know that the students are succeeding in the core courses of the program since these are the only three courses that are common to most students, given the large diversification of interests and areas of specialization. This follows the 2020-25 Strategic Plan measure of success Successful Student Learning and Placement Outcomes)

METHODOLOGY*

The objective is to make an assessment of the students integrating the core courses' knowledge by means of their academic performance in the core courses INEN 5369, INEN 5380, and ACCT 5315. 1. We obtained the list of all the MEM students graduated this year. 2. We collect and report the performance of the students expressed as letter grades in the three core courses.

SOURCE OF EVIDENCE

Direct - Internal - Academic Direct

1.2.1.1

Achievement Target

2021-2022

Met

ACHIEVEMENT TARGET

80% of the MEM students enrolled in these courses should get a final letter grade of B or better in each one of the courses to consider a satisfactory performance. 70% of the students must get A to get an exceeding expectation status.

FINDINGS

A total of 19 students graduated in Spring 2021 and Fall 2022. the total number of core courses taken was 55, 2 not taken due to transfer or scheduling conflicting. The results were 28 A; 25 B; 2 C, and 2 either transfer or not taken.

ANALYSIS OF FINDINGS

FALL 2021 INEN 5380 PROJECT MANAGEMENT

There were 23 MEM students enrolled INEN 5380 Project Management class in Fall 2021 but 1 student drop because of the emergency. Among 22 students, there are 12 A (54%), 7 B (32%) and 3 C (14%) grades have been given. The total final grade letter of B or better is 86%. Comprehensive: All MEM students are passed the comprehensive exam of Project Management.

SPRING 2022 INEN 5369 ENGINEERING MANAGEMENT

There were 35 MEM students enrolled INEN 5369 Engineering Management class in Spring 2022. Among 35 students, there are 18 A (52%), 11 B (32%), 4 C (12%), 1 D and 1 F grades have been given. The total final grade letter higher than B is 84%.

Comprehensive: All MEM students are passed for Comprehensive exam of Engineering Management. In Engineering Management, a total of 53 out of 57 (93%) potential courses obtained B or better, achieving the goal for the year

The goal was achieved, but they are not enough to claim we exceeded the goal. No improvement plan is necessary at this time.

IMPROVEMENT TYPE	Academic
IMPROVEMENT DESCRIPTION	No Improvements Deemed Necessary
IMPROVEMENT	