Assurance of Student Learning 2018-2019	
Ogden College of Science & Engineering	School of Engineering and Applied Sciences
Master of Science Engineering Technology Management 0447	

Use this page to list learning outcomes, measurements, and summarize results for your program. Detailed information must be completed in the subsequent pages.			
Student Learning Outcome 1: Graduates will demonstrate the knowledge and capacity to apply managerial/ leadership principles and practices to appropriate situations.			
Instrument 1	Certified Technology Manager exam questions in "Leadership" and "Self-Management."		
Instrument 2	Certified Technology Manager exam questions in "People."		
Instrument 3	Certified Technology Manager exam questions in "Quality" and "Risk."		
Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 1.		**Met**	**Not Met**
Student Learning Outcome 2: Graduates will possess/ demonstrate the ability to identify, formulate, and solve technical problems.			
Instrument 1	Certified Technology Manager exam questions in "Systems."		
Instrument 2	Certified Technology Manager exam questions in "Processes"		
Instrument 3	Certified Technology Manager exam questions in "Operations" and "Projects."		
Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 2.		**Met**	**Not Met**
Student Learning Outcome 3: Graduates will demonstrate an ability to communicate effectively in pertinent areas, both written and oral.			
Instrument 1	Thesis abstract scores		
Instrument 2	Thesis oral presentation scores		
Instrument 3			
Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 3.		**Met**	**Not Met**
Program Summary (Briefly summarize the action and follow up items from your detailed responses on subsequent pages.)			

Student Learning Outcome 1				
Student Learning Outcome	Graduates will demonstrate the knowledge and capacity to apply managerial/ leadership principles and practices to appropriate situations.			
Measurement Instrument 1	DIRECT MEASURE: Certified Technology Manager exam questions in "Leadership" and "Self-Management." Graduate students enrolled in their first semester of Thesis (AMS 599) were required to take the ATMAE Certified Technology Manager (CTM) exam. Leadership is a process of social influence, which maximizes the efforts of others towards the achievement of goals. The Leadership category includes 10 questions. Self-management is the methods, skills, and strategies by which individuals can effectively direct their own activities toward the achievement of goals and objectives. The Self-management category includes 18 questions.			
Criteria for Student Success	The goal is for our graduate students' average performance in each exam category to meet or exceed the national historical average.			
Program Success Target for this Measurement	75%	**Percent of Program Achieving Target**	83.34%	
Methods	Certified Technology Manager (CTM) exam offered by the Association of Technology, Management, and Applied Engineering (ATMAE). The exam is two hours and must be taken in a proctored setting. Scores are released by the ATMAE website. The historical national average scores for two categories of Leadership and Self-management are 6 of 10 and 12 of 18 respectively. In 2018-2019, six MSETM graduate students took the exam *(N=6)*. 83.34% (5 of 6) students achieved 6 or more in the Leadership category and 12 or more in the Self-management category.			
Measurement Instrument 2	DIRECT MEASURE: Certified Technology Manager exam questions in "People." Graduate students enrolled in their first semester of Thesis (AMS 599) were required to take the ATMAE Certified Technology Manager (CTM) exam. Managing people involves the deployment and handling of human resources to work together to accomplish desired goals and objectives using available resources efficiently and effectively. The People category includes 19 questions.			
Criteria for Student Success	The goal is for our graduate students' average performance in each exam category to meet or exceed the historical national average.			
Program Success Target for this Measurement	75%	**Percent of Program Achieving Target**	83.34%	
Methods	Certified Technology Manager (CTM) exam offered by the Association of Technology, Management, and Applied Engineering (ATMAE). The exam is two hours and must be taken in a proctored setting. Scores are released by the ATMAE website. The national historical average score for the category of People is 12 of 19. In 2018-2019, six graduate students took the exam *(N=6)*. 83.34% (5 of 6) students achieved 12 or more in the People category.			

Measurement Instrument 3	DIRECT MEASURE: Certified Technology Manager exam questions in "Quality" and "Risk." Graduate students enrolled in their first semester of Thesis (AMS 599) were required to take the ATMAE Certified Technology Manager (CTM) exam. Quality management involves the use of quality assurance and control of processes and products to achieve consistent and predictable quality. The Quality category includes 19 questions. Risk management is the identification, assessment, and prioritization of risk followed by coordinated and economical application of resources to minimize, monitor, and control their probability and/or impact. The Risk category includes 19 questions.		
Criteria for Student Success	The goal is for our graduate students' average performance in each exam category to meet or exceed the national historical average.		
Program Success Target for this Measurement	75%	**Percent of Program Achieving Target**	66.67% (Achievement in Quality category), and 83.34% (Achievement in Risk category)
Methods	Certified Technology Manager (CTM) exam offered by the Association of Technology, Management, and Applied Engineering (ATMAE). The exam is two hours and must be taken in a proctored setting. Scores are released by the ATMAE website. The historical national average score for two categories of Quality and Risk are 10.3 of 19 and 5.3 of 19 respectively. In 2018-2019, six graduate students took the exam *(N=6)*. 66.67% (4 of 6) students achieved 10.3 or more in the Quality category. 83.34% (5 of 6) students achieved 5.3 or more in the Risk category.		
Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 1.		**Met**	**Not Met**
Actions (Describe the decision-making process and actions planned for program improvement. The actions should include a timeline.)			
The managerial courses contents evaluated to ensure that graduates are achieving competences consistently and were reviewed at graduate faculty meetings. The core courses were evaluated to address the areas above are AMS 520 Recourse Management, AMS 590 Operations Leadership, and AMS 671 Quality Management. Evaluation of the courses contents should be further continued and will be reviewed at upcoming graduate faculty meetings.			
Follow-Up (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.)			
Based on the CTM exam test result since 2015 to 2018, our graduate students' scores were below the historical national average in managerial categories of Leadership, Self-Management, and Risk. In 2018-2019 the CTM exam shows progress in all CTM exam managerial categories, and graduate students' performance achieved to above national average. Moreover, "Pass" rate on CTM exam improved from 77% in 2017 to 100% in 2018-2019.			

Student Learning Outcome 2				
Student Learning Outcome	Graduates will possess/ demonstrate the ability to identify, formulate, and solve technical problems.			
Measurement Instrument 1	DIRECT MEASURE: Certified Technology Manager exam questions in "Systems". Graduate students enrolled in their first semester of Thesis (AMS 599) were required to take the ATMAE Certified Technology Manager (CTM) exam. Systems consist of the management of technology across disciplines and companies in an integrated fashion for the purpose of business venture and development. The System category includes 18 questions.			
Criteria for Student Success	The goal is for our graduate students' average performance in each exam category to meet or exceed the national historical average.			
Program Success Target for this Measurement	75%		**Percent of Program Achieving Target**	83.34%
Methods	Certified Technology Manager (CTM) exam offered by the Association of Technology, Management, and Applied Engineering (ATMAE). The exam is two hours and must be taken in a proctored setting. Scores are released by the ATMAE website. The national historical average score for the category of Systems is 10.7 of 18. In 2018-2019, six graduate students took the exam *(N=6)*. 83.34% (5 of 6) students achieved 10.7 or more in the System category.			
Measurement Instrument 2	DIRECT MEASURE: Certified Technology Manager exam questions in "Processes". Graduate students enrolled in their first semester of Thesis (AMS 599) were required to take the ATMAE Certified Technology Manager (CTM) exam. A process is the transformation of input elements into output elements with specific properties, within defined parameters or constraints. The Processes category includes 19 questions.			
Criteria for Student Success	The goal is for our graduate students' average performance in each exam category to meet or exceed the national historical average.			
Program Success Target for this Measurement	75%		**Percent of Program Achieving Target**	66.67%
Methods	Certified Technology Manager (CTM) exam offered by the Association of Technology, Management, and Applied Engineering (ATMAE). The exam is two hours and must be taken in a proctored setting. Scores are released by ATMAE website. The national historical average score for the category of Processes is 11.9 of 19. In 2018-2019, six graduate students took the exam *(N=6)*. 66.67% (4 of 6) students achieved 11.9 or more in System category.			

Measurement Instrument 3	DIRECT MEASURE: Certified Technology Manager exam questions in "Operations", and "Projects". Graduate students enrolled in their first semester of Thesis (AMS 599) were required to take the ATMAE Certified Technology Manager (CTM) exam. Operations management is the management of technology within a specific industrial specialty. The Operation category includes 19 questions. Projects are the one-time application of a process to produce a unique product or service. The Project category includes 19 questions.		
Criteria for Student Success	The goal is for our graduate students' average performance in each exam category to meet or exceed the national historical average.		
Program Success Target for this Measurement	75%	**Percent of Program Achieving Target**	100% (Achievement in Operation category), and 66.67% (Achievement in Project category)
Methods	Certified Technology Manager (CTM) exam offered by the Association of Technology, Management, and Applied Engineering (ATMAE). The exam is two hours and must be taken in a proctored setting. Scores are released by the ATMAE website. The historical national average scores for two categories of Operation and Projects are 11.5 of 19 and 13.2 of 19 respectively. In 2018-2019, six graduate students took the exam *(N=6)*. 100% (6 of 6) students achieved 11.5 or more in the Operation category. 66.67% (4 of 6) students achieved 13.2 or more in the Project category.		
Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 2.		**Met**	**Not Met**

Actions (Describe the decision-making process and actions planned for program improvement. The actions should include a timeline.)

The technical courses contents evaluated to ensure that graduates are achieving competences consistently and were reviewed at graduate faculty meetings. The courses were evaluated to address the areas above are AMS 510 Emerging Technologies, AMS 540 Theory of Constraints, AMS 594 Lean Systems, AMS 580 Six Sigma Quality, AMS 650 Supply Chain Management, and AMS 671 Quality Management. Evaluation of the courses contents should be further continued and will be reviewed at upcoming graduate faculty meetings.

Follow-Up (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.)

Based on the CTM exam test result since 2015 to 2018, our graduate students' performance was below the historical national average in technical category of Processes. In 2018-2019 the CTM exam shows progress in all CTM exam technical categories, and graduate students' performance achieved to above national average.
Moreover, "Pass" rate on CTM exam improved from 77% in 2017 to 100% in 2018-2019.

Student Learning Outcome 3				
Student Learning Outcome	Graduates will demonstrate an ability to communicate effectively in pertinent areas, both written and oral.			
Measurement Instrument 1	DIRECT MEASURE: Thesis abstract scores			
Criteria for Student Success	The goal is our graduate students' average performance in the thesis topic abstract proposal meets or exceeds the "Competent" level in the grading rubric. Grading rubric criteria ranges are; Mastery (5 points), Competent (4 points), Marginal (3 points), Deficient (2 points), and Unacceptable (1 point).			
Program Success Target for this Measurement	60%	**Percent of Program Achieving Target**	Not available Will be collected for 2019-2020	
Methods	The abstracts are scored by graduate faculty who are not a member of the thesis committee. The thesis proposal is evaluated based on three criteria; 1) subject content, 2) organization and structure, and 3) writing.			
Measurement Instrument 2	DIRECT MEASURE: Thesis oral presentation scores			
Criteria for Student Success	The goal is our graduate students' average performance in the thesis oral presentation meets or exceeds the "Competent" level in the grading rubric. Grading rubric criteria ranges are; Mastery (5 points), Competent (4 points), Marginal (3 points), Deficient (2 points), and Unacceptable (1 point).			
Program Success Target for this Measurement	80%	**Percent of Program Achieving Target**	Not available Will be collected for 2019-2020	
Methods	The oral presentation is scored by graduate faculty who are not a member of the thesis committee. The thesis oral presentation is evaluated based on four criteria; 1) delivery and style, 2) validity and scholarly justification, 3) presentation format/organization, and 4) presentation content.			
Measurement Instrument 3	Will be discussed and developed at upcoming graduate faculty meetings.			
Criteria for Student Success				
Program Success Target for this Measurement		**Percent of Program Achieving Target**		
Methods				
Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 3.			**Met**	**Not Met**

Actions (Describe the decision-making process and actions planned for program improvement. The actions should include a timeline.)
Since spring 2016, students are required to submit a thesis topic abstract proposal at the beginning of their thesis hours and give a thesis oral defense at its completion. The abstracts and oral defenses are scored by graduate faculty who are not a member of the thesis committee. The goal is for 80% of students to average a score of 4 or better (on a five-point scale) for the oral defense and for 60% of students to average a score of 4 or better (on a five-point scale) on the thesis abstract. Since spring 2016, 20 students successfully defended their thesis. Each oral defense was evaluated and scored. The total average for all oral defenses was 3.9. One-half of the students received a score average greater than 4.0. This translated into 50% of students averaging 4 or better on the five-point scale. Since spring 2016, 23 thesis proposal abstracts are evaluated and scored. The total average for all abstracts was 3.4. Only four of the abstracts received a score average greater than 4.0. This translated into 17% of students averaging 4 or better on the five-point scale.
Follow-Up (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.)
The result for 2018-2019 are not collected. The data will collected for current academic year.