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| **Assurance of Student Learning****2020-2021** |
| Ogden College of Science & Engineering | School of Engineering and Applied Sciences |
| Lean Six Sigma Graduate Certificate 0452 |

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| **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** | Analysis of final project in the managerial course. |
| **Instrument 2** | Discussion board contribution in the managerial course. |
| **Instrument 3** | Exit Survey (Self-reported Data) |
| **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** | Analysis of final project in Lean System course. |
| **Instrument 2** | Analysis of final project in Theory of Constraints course. |
| **Instrument 3** | Analysis of final project in Six Sigma Quality course. |
| **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 obtain the knowledge and practical skills needed for successful completion of the American Society of Quality Six Sigma Green Belt or Black Belt Certification exams or the Society of Manufacturing Engineer's Lean Certification-Bronze level exam. |
| **Instrument 1** | Exit Survey (Self-reported Data) |
| **Instrument 2** | Will be discussed and developed at upcoming graduate faculty meetings. |
| **Instrument 3** | Will be discussed and developed at upcoming graduate faculty meetings. |
| **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.)**  |
| The outcomes for the Lean Six Sigma Certificate were created during 2020/2021 academic year. The result for 2020-2021 were not collected due to the coronavirus pandemic. The data will be collected for current academic year |

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| **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: Analysis of final project in the managerial course.Students in the Lean Sigma Certificate courses were given a final, written project that required them to synthesize the main concepts covered in the course. Students should analyze their projects and discuss the important issues about its status, and finally, provide recommendations about their projects. The final reports were evaluated based on plan content, analysis, organization and flow, structure of the report and syntax. Also, students were evaluated on the ability to link theory and concepts to practice. |
| **Criteria for Student Success** | Students should at the end of the managerial course and in the final project report meet or exceed competency grade level. Scores on the rubric ranged from “Mastery (90-100),” “Competency (80-89), “Minimal Competency (70-79),” and “Deficient (69 or Below).” |
| **Program Success Target for this Measurement** | 80% | **Percent of Program Achieving Target** | Not availableWill be collected for 2021-2022 |
| **Methods**  | The result for 2020-2021 are not collected. The data will be collected for current academic year. |
| **Measurement Instrument 2** | DIRECT MEASURE: Discussion board contribution in the managerial course.Students in the Lean Sigma Certificate courses were expected to contribute posts on course discussion board that reflect their knowledge of the topic based upon the assigned readings as well as assigned external sources. This interaction with students/classmates and the instructor offers a rich opportunity to share impressions of the readings and share perspectives of the material. Discussions were evaluated based on timely contributions, demonstration of knowledge and understanding, and structure, mechanics, netiquette, and validity of sources. |
| **Criteria for Student Success** | Students should at the end of the managerial course, in discussion board meet or exceed competency grade level. Scores on the rubric ranged from “Mastery (90-100),” “Competency (80-89), “Minimal Competency (70-79),” and “Deficient (69 or Below).” |
| **Program Success Target for this Measurement** | 80% | **Percent of Program Achieving Target** | Not availableWill be collected for 2021-2022 |
| **Methods** | The result for 2020-2021 are not collected. The data will be collected for current academic year. |
| **Measurement Instrument 3** | INDIRECT measures of student learning: Students were given an online student surveys measuring their self-reported satisfaction of learning in the program related to the four programmatic outcomes. |
| **Criteria for Student Success** | Self-reported data ranged from 1-5 on a 5-point Likert scale. The overall target means for combined categories was M = 4.0 |
| **Program Success Target for this Measurement** | 80% | **Percent of Program Achieving Target** | Not availableWill be collected for 2021-2022 |
| **Methods** | The result for 2020-2021 are not collected. The data will be collected for current academic year. |
| **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 course contents evaluated to ensure that graduates are achieving competences consistently and were reviewed at graduate faculty meetings. Evaluation of the course’s 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.) |
| The result for 2020-2021 are not collected. The data will be collected for current academic year. |

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| **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: Analysis of final project in Lean System course.Students in the Lean Sigma Certificate courses were given a final, written project that required them to synthesize the main concepts covered in the course. Students should analyze their projects and discuss the important issues about its status, and finally, provide recommendations about their projects. The final reports were evaluated based on plan content, analysis, organization and flow, structure of the report and syntax. Also, students were evaluated on the ability to link theory and concepts to practice. |
| **Criteria for Student Success** | Students should at the end of the course AMS 594 Lean System and in the final project report meet or exceed competency grade level. Scores on the rubric ranged from “Mastery (90-100),” “Competency (80-89), “Minimal Competency (70-79),” and “Deficient (69 or Below).” |
| **Program Success Target for this Measurement** | 80% | **Percent of Program Achieving Target** | 100% |
| **Methods**  | The course AMS 594 Lean System was offered on Fall 2020. Final project/ research paper was 60% of course total grade. Scores on the rubric ranged from “Mastery (90-100),” “Competency (80-89), “Minimal Competency (70-79),” and “Deficient (69 or Below).”In fall 2020, sixteen students took the course *(N=16)*. 100% (16 of 16) students achieved competency or mastery grade level. |
| **Measurement Instrument 2** | DIRECT MEASURE: Analysis of final project in Theory of Constraints course.Students in the Lean Sigma Certificate courses were given a final, written project that required them to synthesize the main concepts covered in the course. Students should analyze their projects and discuss the important issues about its status, and finally, provide recommendations about their projects. The final reports were evaluated based on plan content, analysis, organization and flow, structure of the report and syntax. Also, students were evaluated on the ability to link theory and concepts to practice. |
| **Criteria for Student Success** | Students should at the end of the course AMS 540 Theory of Constraints and in the final project report meet or exceed competency grade level. Scores on the rubric ranged from “Mastery (90-100),” “Competency (80-89), “Minimal Competency (70-79),” and “Deficient (69 or Below).” |
| **Program Success Target for this Measurement** | 80% | **Percent of Program Achieving Target** | Not availableWill be collected for 2021-2022 |
| **Methods** | The course AMS 540 Theory of Constraints course was offered on Spring 2021. Scores on the rubric ranged from “Mastery (90-100),” “Competency (80-89), “Minimal Competency (70-79),” and “Deficient (69 or Below).”In spring 2021, nineteen students took the course *(N=19)*.  |
| **Measurement Instrument 3** | DIRECT MEASURE: Analysis of final project in Six Sigma Quality course.Students in the Lean Sigma Certificate courses were given a final, written project that required them to synthesize the main concepts covered in the course. Students should analyze their projects and discuss the important issues about its status, and finally, provide recommendations about their projects. The final reports were evaluated based on plan content, analysis, organization and flow, structure of the report and syntax. Also, students were evaluated on the ability to link theory and concepts to practice. |
| **Criteria for Student Success** | Students should at the end of the course AMS 580 Six Sigma Quality and in the final project report meet or exceed competency grade level. Scores on the rubric ranged from “Mastery (90-100),” “Competency (80-89), “Minimal Competency (70-79),” and “Deficient (69 or Below).” |
| **Program Success Target for this Measurement** | 80% | **Percent of Program Achieving Target** | 100% |
| **Methods** | The course AMS 580 Six Sigma Quality was offered on Fall 2020. Final project was 50% of course total grade. Scores on the rubric ranged from “Mastery (90-100),” “Competency (80-89), “Minimal Competency (70-79),” and “Deficient (69 or Below).”In fall 2020, ten students took the course *(N=10)*. 100% (10 of 10) students achieved competency or mastery grade level. |

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| **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 core 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 540 Theory of Constraints, AMS 594 Lean Systems, and AMS 580 Six Sigma Quality, 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.) |
| Continue to monitor, and data collection. |

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| **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** | INDIRECT measures of student learning: Students were given an online student surveys measuring their self-reported satisfaction of learning in the program related to the four programmatic outcomes. |
| **Criteria for Student Success** | Self-reported data ranged from 1-5 on a 5-point Likert scale. The overall target means for combined categories was M = 4.0 |
| **Program Success Target for this Measurement** | 60% | **Percent of Program Achieving Target** |  |
| **Methods**  | The result for 2020-2021 are not collected. The data will be collected for current academic year. |
| **Measurement Instrument 2** | DIRECT MEASURE: 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** |  |
| **Measurement Instrument 3** | DIRECT MEASURE: 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.) |
| The result for 2020-2021 are not collected. The data will be collected for current academic year. |
| **Follow-Up** (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.) |
| Continue to monitor, and data collection |