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| **Assurance of Student Learning Report**  **2021-2022** | |
| Ogden College of Science & Engineering | School of Engineering and Applied Sciences |
| Lean Six Sigma Graduate Certificate (0452) | |
| John Khouryieh | |

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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 advanced knowledge and competency in Lean Six Sigma to be able to identify, formulate, and solve technical problems.** | | | |
| **Instrument 1** | Analysis of final project in Lean System course | | |
| **Instrument 2** | Analysis of final project in Six Sigma Quality course | | |
| **Based on your results, check whether the program met the goal Student Learning Outcome 1.** | | **Met** | **Not Met** |
| **Program Summary (Briefly summarize the action and follow up items from your detailed responses on subsequent pages.)** | | | |
| The Lean Six Sigma Certificate program outcome was met. We will continue evaluating the program course contents to ensure that graduates are achieving competences consistently. | | | |

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| **Student Learning Outcome 1** | | | | | | | |
| **Student Learning Outcome** | **Graduates will demonstrate advanced knowledge and competency in Lean Six Sigma to be able to identify, formulate, and solve technical problems.** | | | | | | |
| **Measurement Instrument 1** | DIRECT MEASURE: Analysis of final project in Lean System course.  Lean Sigma Certificate Students who were enrolled into the Lean Systems course were required to submit a final, written paper 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** | Lean Sigma Certificate Students who were enrolled into the EGMT594-Lean Systems course should meet or exceed the “Competency” grade level on scale of 1-4. The rubric has the following grading scale: “Mastery (4),” “Competency (3), “Marginal (2),” “Deficient (1).” | | | | | | |
| **Program Success Target for this Measurement** | | | 75% of the students in the certificate will have earned 3 / 4 on the written paper on the rubric | | **Percent of Program Achieving Target** | 100% | |
| **Methods** | The EGMT594-Lean System course was offered on Fall 2021. Final project/ research paper was 60% of course total grade. Scores on the rubric ranged from “Mastery (4),” “Competency (3), “Marginal (2),” and “Deficient (1).”  In fall 2021, two Lean Sigma Certificate students took the course *(N=2)*. 100% (2 of 2) of students achieved competency or mastery grade level on the written paper. Other students in the course were excluded because they were not admitted into the certificate. | | | | | | |
| **Measurement Instrument 2** | DIRECT MEASURE: Analysis of final project in Six Sigma Quality course.  Lean Sigma Certificate Students who were enrolled into the Six Sigma Quality course were required to submit a final, written paper that required them to synthesize the main concepts covered in the course. Students should analyze their projects and discuss the principal 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** | Lean Sigma Certificate Students who were enrolled into the EGMT580-Six Sigma Quality course should meet or exceed the “Competency” grade level on scale of 1-4. The rubric has the following grading scale: “Mastery (4),” “Competency (3), “Marginal (2),” “Deficient (1).” | | | | | | |
| **Program Success Target for this Measurement** | | 75% of the students in the certificate will have earned 3 / 4 on the written paper on the rubric | | **Percent of Program Achieving Target** | | 80% | |
| **Methods** | The EGMT580- Six Sigma Quality course was offered on Spring 2022. The final project was 60% of course total grade. Scores on the rubric ranged from “Mastery (4),” “Competency (3), “Marginal (2),” and “Deficient 51).”  In Spring 2022, five Lean Sigma Certificate students took the course *(N=5)*. 80% (4 of 5) of students achieved competency or mastery grade level. | | | | | | |
| **Based on your results, highlight whether the program met the goal Student Learning Outcome 1.** | | | | | | **Met** | **Not Met** |
| **Actions** | | | | | | | |
| The core courses content 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 EGMT 594 Lean Systems and EGMT 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 collect data from the EGMT 594 Lean Systems and EGMT 580 Six Sigma Quality courses | | | | | | | |
| **Next Assessment Cycle Plan** | | | | | | | |
| Assessment Time:  This outcome will be assessed in early May of each year.  Courses will be sampled:  EGMT594-Lean System course in Fall 2021  EGMT580- Six Sigma Quality course in Spring 2022  Data/artifacts will be collected:  Define Problem; Identifying specific project objectives, standards, and constraints based on general project requirements; Identify Strategies; Evaluate Potential Solutions; Solving Problems  Faculty responsible for collecting and providing data and information:  Certificate students enrolled in EGMT 594 Lean Systems and EGMT 580 Six Sigma Quality will be assessed by Dr. Khouryieh and Dr. Rezasultani. John Khouryieh will analyze the data. | | | | | | | |

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| **Program name:** | Master of Science in Engineering Management | | |
| **Department:** | School of Engineering & Applied Sciences | | |
| **College:** | Ogden College of Science & Engineering | | |
| **Contact person:** | John Khouryieh | | |
| **Email:** | [hanna.khouryieh@wku.edu](mailto:hanna.khouryieh@wku.edu) | | |
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| **KEY:** | |  |  |
| **I = Introduced** | |  |  |
| **R = Reinforced/Developed** | |  |  |
| **M = Mastered** | |  |  |
| **A = Assessed** | |  |  |
|  |  |  | **Learning Outcomes** |
|  |  |  | **LO1:** |
|  |  |  | **Graduates will demonstrate advanced knowledge and competency in Lean Six Sigma to be able to identify, formulate, and solve technical problems.** |
| **Course Subject** | **Number** | **Course Title** |  |
|  | 580 | Six Sigma Quality | M |
|  | 594 | Lean Systems | M |
|  | 540 | Theory of Constraints | R |
|  |  | Electives (select 1) |  |
|  | 655 | Project Management | I |
|  | 671 | Quality Management | I |
|  | 520 | Resource Management | I |
|  | 590 | Operations Leadership | I |
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