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| **Assurance of Student Learning Report**  **2022-2023** | | |
| *Ogden College of Science and Engineering* | | *School of Engineering and Applied Sciences* |
| *Manufacturing Engineeering Technology (5006)* | | |
| *Greg Arbuckle* | | |
| ***Is this an online program***?  Yes  No | Please make sure the Program Learning Outcomes listed match those in CourseLeaf . Indicate verification here  Yes, they match! (If they don’t match, explain on this page under **Assessment Cycle)** | |

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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. Add more Outcomes as needed.*** | | | |
| **Program Student Learning Outcome 1:** Graduates will possess/ demonstrate the ability to identify, formulate strategies and solve technical problems. | | | |
| **Instrument 1** | **Certified Manufacturing Specialist (CMS) examination offered by the Association of Technology, Management, and Applied Engineering (ATMAE)** | | |
| **Based on your results, check whether the program met the goal Student Learning Outcome 1.** | | **Met** | **Not Met** |
| **Program Student Learning Outcome 2:** Graduates will demonstrate an ability to communicate effectively. | | | |
| **Instrument 1** | **Lab reports of MFGE 217: Industrial Materials** | | |
| **Based on your results, check whether the program met the goal Student Learning Outcome 2.** | | **Met** | **Not Met** |
| **Program Student Learning Outcome 3:** Graduates will demonstrate the knowledge and capacity to apply managerial/leadership principles and practices to appropriate situations. | | | |
| **Instrument 1** | **Certified Manufacturing Specialist (CMS) examination offered by the Association of Technology, Management, and Applied Engineering (ATMAE)** | | |
| **Based on your results, check whether the program met the goal Student Learning Outcome 3.** | | **Met** | **Not Met** |
| **Assessment Cycle Plan:** | | | |
| There are no planned changes for the learning outcome measurement. | | | |

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| **Program Student Learning Outcome 1** | | | | |
| **Program Student Learning Outcome** | Graduates will possess/ demonstrate the ability to identify, formulate strategies and solve technical problems. | | | |
| **Measurement Instrument 1** | **NOTE: Each student learning outcome should have at least one direct measure of student learning. Indirect measures are not required.**  The graduates from the MET program are required to take the Certified Manufacturing Specialist (CMS) exam offered by the Association of Technology, Management, and Applied Engineering (ATMAE) before their final graduation. The ATMAE is the accreditation board of the MET program.15 students in the MFGE 490A capstone course took the CMS Exam on May 1, 2023. The ATMAE’s CMS Exam required the students to answer questions about the program’s core courses. The following categories of the ATMAE’s CMS exam were used to evaluate SLO1: Computer Integrated Manufacturing (CIM) (4 areas), Electronics (2 areas), Industrial Materials (4 areas), Machining (5 areas), Manufacturing Philosophies (3 areas), Metrology (4 areas), Non-traditional Machining (5 areas), and Technical Drafting (8 areas). | | | |
| **Criteria for Student Success** | *For each of the 8 technical sections of the CMS examination students will score an average of 54.29% or higher.* | | | |
| **Program Success Target for this Measurement** | For 75% of the technical sections (6 out of 8) that the composite score is 54.29% or higher. | **Percent of Program Achieving Target**  **50%** | The students averaged a 54.45% (Passing) in CIM, 55.00% (Passing) in Electronics, 42.46% (Not-Passing) in Industrial Materials, 49.45% (Not-Passing) in Machining, 45.00% (Not-Passing) in Manufacturing Philosophies, 59% (Passing) in Metrology, 68% (Passing) in Non-traditional Machining, and a 32.85% (Not-Passing) in Technical Drafting. Thus the students passed in 4 out of the 8 criteria and thus did not meet the standard. | |
| **Methods** | All students regeistered for MFGE 490A complete the ATMAE CMS Examination as part of their course. The scores are then provided by ATMAE to the faculty which are compiled and averaged for each section. If a given section average is above 60% than that section is considered successful. The successful sections are counted to measure if the students met the overall target goal. | | | |
| **Based on your results, highlight whether the program met the goal Student Learning Outcome 1.** | | | **Met** | **Not Met** |
| **Results, Conclusion, and Plans for Next Assessment Cycle (Describe what worked, what didn’t, and plan going forward)** | | | | |
| **Results**:  The program faculty are not surprised by the results. Many of the current students had to take courses outside of the discipline because of a lack of faculty to teach required courses. While changes have been made to fix this area there are still courses that have been combined into one course because of lack of faculty.  **Conclusions**: Changes were put forth in in AY 22-23 (removal of courses selections outside of the discipline) will not take effect until the fall of 2023, thus these changes will take a couple of years before those students are accessed in 490.  **\*\*IMPORTANT - Plans for Next Assessment Cycle**:   1. We will evaluate all of the courses to ensure that the course learning outcomes match our assessment tool. 2. We will identify a matrix that shows the learning objectives for each class and record this as a Introductory, Reinforcement, Matery, or Assessment per course. 3. We will identify key learning objectives for a couple of classes for AY23/24 and measure the objectives and put in corrective actions if abjectives not met. 4. We will continue to ask for additional faculty to allow the currently faculty to not have to teach overloads and be able to focus on their classes and in addition be able to split courses that were combined because of lack of faculty. | | | | |

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| **Program Student Learning Outcome 2** | | | | | |
| **Program Student Learning Outcome** | Graduates will demonstrate an ability to communicate effectively. | | | | |
| **Measurement Instrument 1** | The MFGE 217 Industrial Materials laboratory reports. | | | | |
| **Criteria for Student Success** | A rubric was developed for assessing four components of the written evaluation of laboratory reports for MFGE 217 Industrial Materials. Students should receive a 3 or better (0-4 Likert Scale) on each component to be considered successful. | | | | |
| **Program Success Target for this Measurement** | | 75% of reports reviewed received a 3 or better on each criterion. | **Percent of Program Achieving Target**  **89%** | 89% of the reviewed reports eraned a minimum of 3/5 on the reports rubrics. | |
| **Methods** | A random selection of all laboratory reports will be blind reviewed by two program faculty using the rubric. | | | | |
| **Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 2.** | | | | **Met** | **Not Met** |
| **Results, Conclusion, and Plans for Next Assessment Cycle (Describe what worked, what didn’t, and plan going forward)** | | | | | |
| **Results**: 89% of the reports earned 3/5 on the rubric which exceeds the 75% success target.  **Conclusions**: The results exceeded the expected success target.  **Plans for Next Assessment Cycle**: The quality of reports from Dr. Rezasoltani’s class was excellent. It is recommended that s standard format for the lab reports be used by all fculty who teach MFGE 217 course. | | | | | |

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| **Program Student Learning Outcome 3** | | | | | |
| **Program Student Learning Outcome** | Graduates will demonstrate the knowledge and capacity to apply managerial/leadership principles and practices to appropriate situations. | | | | |
| **Measurement Instrument 1** | The graduates from the MET program are required to take the Certified Manufacturing Specialist (CMS) exam offered by the Association of Technology, Management, and Applied Engineering (ATMAE) before their final graduation. The ATMAE is the accreditation board of the MET program. Students in the AMS490 capstone course took the ATMAE’s CMS Exam in Spring 2022. The ATMAE’s CMS Exam required the students to answer areas about the program’s core courses. The following question categories of the ATMAE’s CMS exam were used to evaluate SLO3: Production Planning (3 areas), Quality (4 areas), and Supervision/Management (8 areas) | | | | |
| **Criteria for Student Success** | *For each of the 3 manegerial sections of the CMS examination students will score at 60% or higher.* | | | | |
| **Program Success Target for this Measurement** | | For 66% of the manegerial sections (2 out of 3) that the composite score is 54.29% or higher. | **Percent of Program Achieving Target**  **0%** | The students averaged a 47.00% (Not-Passing) in Production Planning, 43.61% (Not-Passing) in Quality, and a 50% (Not-Passing) in Supervision. Thus, the students passed 0 out of the 3 criteria and thus did not meet the standard. | |
| **Methods** | All students regeistered for MFGE 490A complete the ATMAE CMS Examination as part of their course. The scores are then provided by ATMAE to the faculty which are compiled and averaged for each section. If a given section average is above 60% than that section is considered successful. The successful sections are counted to measure if the students met the overall target goal. | | | | |
| **Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 3.** | | | | **Met** | **Not Met** |
| **Results, Conclusion, and Plans for Next Assessment Cycle (Describe what worked, what didn’t, and plan going forward)** | | | | | |
| **Results**: Are the results what was expected or not? Explain  The program faculty are not surprised by the results. Many of the current students had to take courses outside of the discipline because of a lack of faculty to teach required courses. While changes have been made to fix this area there are still courses that have been combined into one course because of lack of faculty.  **Conclusions**: Changes were put forth in in AY 22-23 (removal of courses selections outside of the discipline) will not take effect until the fall of 2023, thus these changes will take a couple of years before those students are accessed in 490.  **Plans for Next Assessment Cycle**:   1. We will evaluate all of the courses to ensure that the course learning outcomes match our assessment tool. 2. We will identify a matrix that shows the learning objectives for each class and record this as a Introductory, Reinforcement, Matery, or Assessment per course. 3. We will identify key learning objectives for a couple of classes for AY23/24 and measure the objectives and put in corrective actions if abjectives not met. 4. We will continue to ask for additional faculty to allow the currently faculty to not have to teach overloads and be able to focus on their classes and in addition be able to split courses that were combined because of lack of faculty. | | | | | |

**\*\*\* Please include Curriculum Map (below/next page) as part of this document**

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| **Program name:** | Manufacturing Engineering Technology | | |  |  |
| **Department:** | SEAS | | |  |  |
| **College:** | OCSE | | |  |  |
| **Contact person:** | Greg Arbuckle | | |  |  |
| **Email:** | [greg.arbuckle@wku.edu](mailto:greg.arbuckle@wku.edu) | | |  |  |
| **KEY:** | |  |  |  |  |
| **I = Introduced** | |  |  |  |  |
| **R = Reinforced/Developed** | |  |  |  |  |
| **M = Mastered** | |  |  |  |  |
| **A = Assessed** | |  |  |  |  |
|  |  |  | **Learning Outcomes** |  |  |
|  |  |  | **LO1:** | **LO2:** | **LO3:** |
|  |  |  | Graduates will possess/ demonstrate the ability to identify, formulate strategies and solve technical problems. | Graduates will demonstrate an ability to communicate effectively. | Graduates will demonstrate the knowledge and capacity to apply managerial/leadership principles and practices to appropriate situations. |
| **Course Subject** | **Number** | **Course Title** |  |  |  |
| MFGE | 120 | Basic Electricity | I |  |  |
| MFGE | 205 | CADD for Manufacturing | I | I |  |
| MFGE | 217 | Industrial Materials | I | A |  |
| MFGE | 227 | Intro to Manufacturing Methods | R | R |  |
| MFGE | 271 | Industrial Statistics | I |  | I |
| MFGE | 310 | Safety in Industry |  |  | I |
| MFGE | 328 | Robotics and Machine Vision | R | R | I |
| MFGE | 342 | Manufacturing Operations | R |  | R |
| MFGE | 343 | Automated Systems | R | R |  |
| MFGE | 356 | Systems Design and Operation | R | R | M |
| MFGE | 370 | Computer Numerical Control | R | R |  |
| MFGE | 371 | Quality Assurance | R | R | R |
| MFGE | 390 | Project Management |  | M | M |
| MFGE | 394 | Lean Systems |  | R | M |
| MFGE | 430 | Technology Management/Supervision |  | M | M |
| MFGE | 490A | Senior Research | A | A | A |
| SEAS | 398 | Internship I | A | A | A |
| ACCT | 220 | Principles of Financial Accounting |  |  | I |
| AGMC | 371/372 | Agricultural Mechanics and Lab | R |  |  |
| COMM | 345 | Advanced Public Speaking |  | M | R |
| MGT | 301 | Business Law |  |  | R |
| CHEM | 105/106 | Fund of General Chemistry & Lab | I | I |  |
| PHYS | 231/232 | Intro to Physics and Lab | I | I |  |
| MATH | 117 | Trigonometry | R |  |  |