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| **Assurance of Student Learning Report****2023-2024** |
| *Ogden College of Science and Engineering* | *School of Engineering and Applied Sciences* |
| *Manufacturing Engineeering Technology (5006)* |
| *Greg Arbuckle* |
| ***Is this an online program***? [ ]  Yes [x]  No | Please make sure the Program Learning Outcomes listed match those in CourseLeaf . Indicate verification here [x]  Yes, they match! (If they don’t match, explain on this page under **Assessment Cycle)** |

**\*\*\* Please include Curriculum Map as part of this document (at the end), NOT as a separate file.**

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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.** | **[x]  Met** | **[ ]  Not Met** |
| **Program Student Learning Outcome 2:**  Graduates will demonstrate an ability to communicate effectively. |
| **Instrument 1** | MFGE 490A Senior Research Final Presentation Evaluation  |
| **Based on your results, check whether the program met the goal Student Learning Outcome 2.** | **[x]  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.** | **[x]  Met** | **[ ]  Not Met** |
| **Assessment Cycle Plan:**  |
| Nothing will change in Terms of the timeline.  |

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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) during their Senior Capstone Course. ATMAE is the accreditation board of the MET program.16 students in the MFGE 490A capstone course took the CMS Exam on April 30th, 2024. 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: Manufacturing Joining Processes, Manufacturing Casting Processes, Non-traditional Machining, Machining, Industrial Materials, Computer Integrated Manufacturing (CIM), Metrology, Technical Drafting, and Electronics.  |
| **Criteria for Student Success** | *Faculty have determined that students meet this outcome by passing 7 out of the 9 sections for this exam. ATMAE has set a passing score of 54.29% for the CMS examination.*  |
| **Program Success Target for this Measurement** | Passing 7 out of the 9 technical sections as defined above with a score of 54.29%.  | **Percent of Program Achieving Target****100%** | The students averaged:Manufacturing Joining Processes (71.6%)Manufacturing Casting Processes (69.7%)Non-traditional Machining (75.0%)Machining (69.3%)Industrial Materials (60.0%)CIM (76.7%)Metrology (81.5%)Technical Drafting (55.86%)Electronics (54.17%) |
| **Methods**  | All students regeistered for MFGE 490A in spring 2024 completed 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 54.29% 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.** | **[x]  Met** | **[ ]  Not Met** |
| **Results, Conclusion, and Plans for Next Assessment Cycle (Describe what worked, what didn’t, and plan going forward)** |
| **Results**: The faculty were pleased by these results, but there is still improvement to be made. Students passed 8 out of the 9 sections used to assess SLO 1 surpassing the requirement for this outcome. Overall, 13/16 students (81.25%) of the students passes the exam. **Conclusions**: Most of these students have completed the technical courses within the program with the faculty member that is the most qualified to teach the courses. We are starting to see those results. As seen the Technical Drafting (55.86%) and Electronics (54.17%) are the first two courses that are taken within the program and they have the lowest scores. The faculty will look at methods of reinforcement of those skills throughout the program to assist with these areas. **\*\*IMPORTANT - Plans for Next Assessment Cycle**: 1. We will develop a matrix that shows the learning objectives for each class and record this as a Introductory, Reinforcement, Matery, or Assessment per course.
2. We will identify key learning objectives for a couple of classes for AY24/25 and measure the objectives and put in corrective actions if objectives not met.

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** | MFGE 490A Senior Research Final Presentation Evaluation  |
| **Criteria for Student Success** | The program faculty developed a rubric that was used in the assessment of the students Final Capstone Presentation. This rubric covers many different aspects including Communication. Students were assessed based upon Oral, Written, and Graphic Communication skills as well as their Organization of their Presentaiton. Class average should be a 4 or better (0-5 Likert Scale) on each component to be considered successful.  |
| **Program Success Target for this Measurement** | Class average of presentations rubric for each measure should receive a 4 or better. | **Percent of Program Achieving Target****100%** | Oral – 4.32Written – 4.36Graphic – 4.42Organization – 4.56 |
| **Methods**  | A combination of peers (12), faculty (4), and industrial guest (6) met on Wednesday April 24th for the student presentations the reviewers scored the the presentiaton using a rubric with a Likert Scale ranging from 1 (Weak) to 5 (Strong). |
| **Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 2.** | **[x]  Met** | **[ ]  Not Met** |
| **Results, Conclusion, and Plans for Next Assessment Cycle (Describe what worked, what didn’t, and plan going forward)** |
| **Results**: The class average for each section was above a 4.00 in all areas measured for the presentation. **Conclusions**: The results exceeded the expected success target. **Plans for Next Assessment Cycle**: The continued goal is to garner more support from industry on evaluation of these reports. We will continue to try to increase the number of industrial reviewers for these evaluations. |

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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) during their Senior Capstone Course. ATMAE is the accreditation board of the MET program.16 students in the MFGE 490A capstone course took the CMS Exam on April 30th, 2024. 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 SLO3: Manufacturing Philisophies, Quality, Production Planning, and Supervision/Management.  |
| **Criteria for Student Success** | *Faculty have determined that students meet this outcome by passing 3out of the 4 sections for this exam. ATMAE has set a passing score of 54.29% for the CMS examination.*  |
| **Program Success Target for this Measurement** | Passing 3 out of the 4 magerial sections as defined above with a score of 54.29%.  | **Percent of Program Achieving Target****100%** | The students averaged:Manufacturing Philisophies (93.8%)Quality (67.7%)Production Planning (65.6%) Supervision (76.6%) |
| **Methods**  | All students regeistered for MFGE 490A in spring 2024 completed 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 54.29% 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.** | **[x]  Met** | **[ ]  Not Met** |
| **Results, Conclusion, and Plans for Next Assessment Cycle (Describe what worked, what didn’t, and plan going forward)** |
| **Results**: The faculty were pleased by these results, but there is still improvement to be made. Students passed 4 out of the 4 sections used to assess SLO 3 surpassing the requirement for this outcome. Overall, 13/16 students (81.25%) of the students passes the exam. **Conclusions**: Most of these students have completed the managerial courses within the program instead of electives outside of the School of Engineering and Applied Sciences. We are starting to see those results. The faculty will look at methods of reinforcement of skills throughout the program to assist with increasing scores. **Plans for Next Assessment Cycle**: 1. We will develop a matrix that shows the learning objectives for each class and record this as a Introductory, Reinforcement, Matery, or Assessment per course.
2. We will identify key learning objectives for a couple of classes for AY24/25 and measure the objectives and put in corrective actions if objectives not met.

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 name:** | Manufacturing Engineering Technology |  |  |
| **Department:** | SEAS |  |  |
| **College:** | OCSE |  |  |
| **Contact person:** | Greg Arbuckle |  |  |
| **Email:** | 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 |   |   |

MFGE 490A: Spring 2024

Final Presentation on Senior Research

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Circle One:

Industry Guest Faculty Member Student

Group Name: **Team 1**

**Overall Communication** (Weak) (Strong)

 Clear (Oral) 1 2 3 4 5

 Understandable (Written) 1 2 3 4 5

 Appropriate Visual Aids 1 2 3 4 5

 Organized 1 2 3 4 5

**Problem Identification**

Defined 1 2 3 4 5

 Engineering Management

 Principles Applied 1 2 3 4 5

 Innovation 1 2 3 4 5

**Data Analysis**

 Appropriate Tools Applied 1 2 3 4 5

 Organization of Analysis 1 2 3 4 5

**Results and Conclusions**

Origin of Findings from

 research 1 2 3 4 5

Knowledge used relevant

to discipline1 2 3 4 5

 **I**nterpretation of findings1 2 3 4 5

**Teamwork**

 Evidence of equal team

 participation 1 2 3 4 5

 Knowledgeable of topic 1 2 3 4 5

**Overall Evaluation of Presentation** 1 2 3 4 5