

Assurance of Student Learning Reflection 2024-2025

<i>Ogden College of Science and Engineering</i>	<i>Earth, Environmental, and Atmospheric Sciences</i>
<i>Meteorology 578</i>	
<i>Greg Goodrich</i>	
Is this an online program? ☐ Yes ☒ 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 Evaluation)

Instructions: For the 2024-25 assessment, we are asking you to reflect on the last three-year cycle rather than collect data. It's important to take time to look over the results from the last assessment cycle and really focus on a data-informed direction going forward. In collaboration with your assessment team and program faculty, review each submitted template from 2021-2024 and consider the following for each Program Learning Outcome, add your narrative to the template, and submit the draft to your **ASL Rep** by **May 15, 2025**.

Program Student Learning Outcome 1	
Program Student Learning Outcome	Students completing the Meteorology program will be able to demonstrate understanding of the theoretical principles surrounding the basic equations and conservation laws that govern atmospheric motion and energy transfer. (<i>Theoretical Meteorology</i>)
Evaluation	Demonstrating understanding of theoretical principles related to the fundamental laws of motion and energy in the atmosphere will always be a relevant student learning outcome. The courses that are part of this SLO (Dynamic, Synoptic, Mesoscale, and Physical Meteorology and Physical Climatology) are required courses under the GS-1340 standards for a B.S. in Meteorology program.
Measurement Instruments	The measurement tool for this SLO is a multiple choice Senior Exam where faculty select four relevant “big picture” questions from each of the 300-400 level courses in the program. The questions from each course are selected to allow students to demonstrate knowledge of the basic equations and conservation laws that govern atmospheric motion and energy transfer. Faculty are given the option of revising these questions as needed.
Criteria & Targets	The criteria for success for this SLO was last adjusted prior to the 2021-22 assessment season when the SLOs for Meteorology were revised. The goal is for the class average to be 75% on the assessment. No individual course will be less than 60%. Looking back over the past three years we feel that these criteria are effective.
Results & Conclusion	Results: Over the past three years the students have met the requirements for this SLO 2 out of 3 years. Average of six courses (Goal – average should be at least 75%) 2021-22: 78.0% 2022-23: 75.4% 2023-24: 77.2%

	Lowest course average: (no course should be lower than 60%) 2021-22: Dynamic Meteorology II 65.0% 2022-23: Dynamic Meteorology II 55.3% 2023-24: Dynamic Meteorology II 66.7% While the average of the six theoretical courses was above the minimum threshold of 75% each year and thus met the SLO goal, there was one year (2022-23) where the lowest course was less than the minimum threshold of 60%. The most difficult course in the BS in Meteorology curriculum is Dynamic Meteorology II which always has the lowest score each year. For the seniors taking the assessment in 2022-23, it had been a year since they took the course (Spring 2022). This lower score for seniors who last took a course during junior year is common across all courses in the assessment and reflect the length of time between taking the class and taking the assessment. Conclusions: Since this was the first time that the assessment for Dynamic Meteorology II was below 60% we did not make any changes to the curriculum. If our seniors continue to perform at a sub 60% level on future assessments the Meteorology faculty will address the issue.
<u>**IMPORTANT - Plans for Next Assessment Cycle:</u>	The three year assessment window of 2021-2024 has coincided with a time of growth and national recognition within the Meteorology program. Our freshman enrollment has set records each year and has doubled since 2019. We have also seen our national profile increase with two national awards and a 60% share of incoming freshmen coming from out-of-state. We have also seen continued success in the employment of our students despite a challenging job market. Based on the success of our program and the success of our students meeting the goals of this SLO, we have no plans to make any changes to the SLO or the measurement criteria at this time.

Program Student Learning Outcome 2	
Program Student Learning Outcome	Students completing the Meteorology program will be able to demonstrate understanding of the technical principles surrounding the fundamentals of remote sensing and in situ weather instrumentation as well as weather forecasting. (<i>Technical Meteorology</i>)
Evaluation	Demonstrating understanding of technical principles surrounding the fundamentals of remote sensing and in situ weather instrumentation and weather forecasting will always be a relevant student learning outcome. The courses that are part of this SLO (Weather Analysis and Forecasting, Meteorological Instruments, and Satellite/Radar Meteorology) are required courses under the GS-1340 standards for a B.S. in Meteorology program.
Measurement Instruments	The measurement tool for this SLO is a multiple choice Senior Exam where faculty select four relevant “big picture” questions from each of the 300-400 level courses in the program. The questions from each course are selected to allow students to demonstrate knowledge of the fundamentals of remote sensing and in situ weather instrumentation as well as weather forecasting. Faculty are given the option of revising these questions as needed.

Criteria & Targets	The criteria for success for this SLO was last adjusted prior to the 2021-22 assessment season when the SLOs for Meteorology were revised. The goal is for the class average to be 80% on the assessment. No individual course will be less than 60%. Looking back over the past three years we feel that these criteria are effective.
Results & Conclusion	Results: Over the past three years the students have met the requirements for this SLO 2 out of 3 years. Average of three courses (Goal – average should be at least 80%) 2021-22: 83.3% 2022-23: 88.6% 2023-24: 79.7% Lowest course average: (no course should be lower than 60%) 2021-22: Meteorological Instruments 80.0% 2022-23: Meteorological Instruments 83.5% 2023-24: Satellite/Radar Meteorology 75.0% The average of the three technical courses was above the minimum threshold of 80% two of three years and thus did not meet the SLO goal. For the one year (2023-24) the average was under the 80% threshold, the average was 79.7%, which is a rounding error. Looking at the three courses that make up the technical sequence, the Satellite/Radar Meteorology course had the biggest drop from previous years (75% compared to 85%). Conclusions: Since this was the first time that the average for the technical courses was below 80% we did not make any changes to the curriculum. If our seniors continue to perform at a sub 80% level on future assessments or if the average for the Satellite/Radar Meteorology continues to be below the long-term average the Meteorology faculty will address the issue.
**IMPORTANT - Plans for Next Assessment Cycle:	The three year assessment window of 2021-2024 has coincided with a time of growth and national recognition within the Meteorology program. Our freshman enrollment has set records each year and has doubled since 2019. We have also seen our national profile increase with two national awards and a 60% share of incoming freshmen coming from out-of-state. We have also seen continued success in the employment of our students despite a challenging job market. Based on the success of our program and the success of our students meeting the goals of this SLO, we have no plans to make any changes to the SLO or the measurement criteria at this time.

Program Student Learning Outcome 3	
Program Student Learning Outcome	Sophomore Meteorology students will be able to quickly and accurately analyze a surface map and present a weather forecast discussion based on their analysis (<i>Applied Meteorology</i>)
Evaluation	Being able to demonstrate skill at being able to quickly and accurately analyze a surface map and present a weather

	forecast discussion based on the analysis will always be a critical task for a meteorology student. This is a skill that meteorologists do on a daily basis as professional meteorologists. The skill is assessed in METR 324 – Weather Analysis and Forecasting which is taken by sophomore meteorology students. This course is a prerequisite for all 300-400 level meteorology courses.
Measurement Instruments	As part of Weather Analysis and Forecasting (METR 324), sophomore-level students will be given a surface map for analysis. Each week a different student will be responsible for leading a map discussion of current and future weather conditions. Both the map analysis and map discussion will be scored on a rubric.
Criteria & Targets	The average score of sophomore students on the map analysis and map discussion will be no less than 80%. On no individual rubric category will the average score be less than 70% of the possible points.
Results & Conclusion	Results: Over the 2021-24 measuring period our sophomore students in METR 324 have averaged 90% on this assessment. This far exceeds the stated goal of 80%. Conclusions: It is not surprising that students exceed the criteria for this assessment since analyzing weather data is a favorite assignment for meteorology majors. In fact, many of our students have been analyzing weather data in this way since before they were students at WKU. Prior to when Meteorology program faculty revised the ASL in 2021, students were trained on how to analyze a surface map and do a map discussion for the first time in METR 324. In order to ensure our students were more prepared, we introduced surface map analysis to our METR 122 Aviation Meteorology course which is taken during the spring of freshman year. This extra training has ensured that our sophomores are more prepared for map analysis and the scores on this assessment have increased accordingly.
<u>**IMPORTANT - Plans for Next Assessment Cycle:</u>	The three year assessment window of 2021-2024 has coincided with a time of growth and national recognition within the Meteorology program. Our freshman enrollment has set records each year and has doubled since 2019. We have also seen our national profile increase with two national awards and a 60% share of incoming freshmen coming from out-of-state. We have also seen continued success in the employment of our students despite a challenging job market. Based on the success of our program and the success of our students meeting the goals of this SLO, we have no plans to make any changes to the SLO or the measurement criteria at this time.

To add more outcomes, if needed, select the table above and copy & paste below.