



**Course-Level Assessment Project  
Final Report**

*To complete the Final Report, type your responses to the prompts below. Share a copy of the document with your supervisor and the Associate Provost of Assessment and Institutional Effectiveness.*

Faculty Name(s): Janice Stencil and Jenelle Cutitta (Course Coordinators)  
Division/Department: Mathematics and Engineering Division  
Course to be Assessed: Math 130 – Precalculus

**Step 1. Define**

*Explain the purpose or rationale for assessing the selected course.*

*Identify which course objective(s) were assessed. Briefly explain why you selected these course objectives for assessment.  
Identify to which program goal(s) selected course objective(s) align.*

This course was assessed because there were significant changes to the course. The following objectives were selected since they were themes that occurred with more than one topic across the course.

- Objective 1: Examine rules, properties, laws, and structures to solve, simplify, verify and/or prove various types of functions. (GE2, GE3)
- Objective 2: Determine domain and range of various types of functions. (GE2)
- Objective 4: Evaluate transformations of various types of functions. (GE2, GE3)
- Objective 5: Use various elements to sketch the graph of functions. (GE2, GE3)

**Step 2. Design**

*Describe the instrument (project/assignment) used to assess identified course objective(s).*

*What benchmarks and/or controls were established?*

*Explain how the assessment instrument was externally reviewed and validated.*

We created two versions of common assessments for all Math 130 professors to use. The assessments were distributed to the professors of the course for feedback prior to test administration. Changes were made when appropriate. The finalized assessments contained a specific question, with multiple parts, which measured the course objectives as defined in Step 1. A grading rubric was provided to ensure consistency in grading. We, the courses coordinators, compiled the results of the specified question.

We are taking the approach that this course, Math 130, is brand new as of Fall 2022. We will not compare the results to previous courses (Math 123/124/130). Our benchmark for this project was...

*At least 70% of student will earn 70% or more of the possible points.*

We collected data on the specified questions over the Fall 2022 and Spring 2023 semesters. However, there were modifications between semesters since the Fall 2022 semester was the first run of the course.

### Step 3. Implement

*Explain how the assessment was implemented.*

*Did any unexpected challenges arise in implementing the assessment?*

*See Step 2: Design*

One challenge we faced was professors not following the grading rubric consistently. Due to this, the data recorded was adjusted corresponding with the coordinator's intent instead of the submission provided by the professor.

### Step 4. Analyze

*Explain the data that was collected and how the data was analyzed.*

*To what degree did students meet the established benchmarks?*

*Consider intention of learning activity and assessment as compared to results.*

Professors made copies/scans of the graded questions from the assessments. Those copies/scans were provided to the coordinators to compile the results and compare to the established benchmark in Step 2 above.

The results are as follows:

| <b>Question Topic</b>                                      | <b>Fall 2022</b><br>Percent of Scores<br>70% or above | <b>Spring 2023</b><br>Percent of Scores<br>70% or above |
|------------------------------------------------------------|-------------------------------------------------------|---------------------------------------------------------|
| Quadratic Functions<br>(with Transformations)              | 59.6% (57 scores)                                     | 86.0% (50 scores)                                       |
| Logarithmic Functions<br>(with Transformations)            | 76.6% (47 scores)                                     | 95.5% (44 scores)                                       |
| Sinusoidal Functions<br>(with Transformations)             | 70.3% (37 scores)                                     | 76.7% (43 scores)                                       |
| Percent of Students Passing<br>Math 130 with a C or better | 32.8% (61 students)                                   | 61.8% (55 students)                                     |

The benchmark of 70% of students scoring 70% or above was not met in Fall 2022 for the quadratic functions problem only. However, it is important to note that the benchmark was met in Spring 2023 for the same question. It is important to note that 17 students were repeating the course in Spring 2023.

### Step 5. Modify/Maintain

*Based on analysis of data, describe changes made to the course and/or course materials.*

*Summarize the results of implementing changes, re-administering the assessment, and collecting and analyzing new data.*

As mentioned previously, an additional hand-written assignment was put into place for the Spring 2023 semester. We had hoped that with students seeing questions similar in format and content to what would be assessed and with students getting consistent clear feedback on their written work from the instructor that there would be a greater understanding overall. We believe this is part of the reason for the increase in the percentage in Spring 2023.

Other changes made to the course after Fall 2022 but before Spring 2023:

- Broke the course content into 5 units instead of 3 units
- Adjusted the ALEKS Adaptive assignments to be unit-long assignments instead of for each lesson.

- Provided students with list of topics corresponding to reach lesson (to focus on those) to reach benchmarks.
- Quizzes removed and replaced with the one hand-written and graded homework problem for each lesson
- Cut down some of the content that was not as important to MATH-130 or MATH-135&136 (Calculus I & II)
- Rearranged remaining topics for better flow

#### Final Results and Recommendations

Anecdotally, students and instructors preferred having the written homework assignments for each lesson instead of a quiz. It is also in the student's best interest to receive the feedback provided on the hand-written problems to correct not only conceptual understanding, but also notation and mathematical syntax. We will continue with the hand-written homework assignments for each lesson.

Coordinators will continue to provide similar questions to those given for this assessment project and collect data to monitor changes in success rates.

Additionally, coordinators are piloting the following items in the Summer 2023 semester:

- Students may use one side of a 3-inch by 5-inch notecard in their own handwriting on each of the unit assessments (both sides on the Final Exam).
- At the end of the semester, students have the option to retake one unit assessment. In order to do so, they must notify the instructor, complete corrections to the unit assessment and explain their errors (submitted to coordinators) and complete the retake with the Testing Center. The higher of the two assessment grades will be the grade of record.

Supervisor Signature \_\_\_\_\_ Date \_\_\_\_\_

Please forward a copy of the signed report to the Associate Provost of Assessment and Institutional Effectiveness.