

**Assessment Data Mathematical, Information and Computer Sciences  
General Education: Mathematics (TUG)  
2025-26**

**Learning Outcome:** 1e. Quantitative Reasoning: Students will be able to solve problems that are quantitative in nature.

Components of this outcome as defined by the department:

- Students will be able to formulate a mathematical model from a verbal description of a problem.
- Students will be able to solve non-routine problems using logic and quantitative techniques.
- Students will be able to construct solutions to problems using computational techniques.

**Outcome Measure:** Problems placed on the final exam. Classes measured on an alternating year cycle starting in 2025-26.

Classes assessed in years with odd fall and even spring

- MTH1044 Calculus with Applications
- MTH1064 Calculus I
- MTH1073 Business Calculus

Classes assessed in years with an even fall and an odd spring

- MTH1033 Precalculus (added as GE in 2024)
- MTH1053 Mathematical Analysis for Business and Economics (added as GE in 2024)
- MTH2013 Fundamentals of Elementary Mathematics I (added as GE in 2024)
- MTH3003 Problem Solving

Note that all classes use the same learning outcomes even if the problems used to measure those outcomes are different. Because it is a life skill, all classes spend some time on financial mathematics (loans, interest and credit cards) in a manner appropriate for the skill level of the students in the class.

**Criteria for Success:** Average score of 2.5 or higher for each problem. Note that this data is gathered by taking a random sample of the students in each section of each course.

Scale Used:

- 0 Unsatisfactory - Completely Incorrect
- 1 Low Satisfactory - Missed more than one key concept or step
- 2 Satisfactory - Missed one key concept or step
- 3 High Satisfactory - Made a minor error
- 4 Outstanding - Completely correct

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**Longitudinal Data (Most Recent Six Years):**

		Students will be able to formulate a mathematical model from a verbal description of a problem.	Students will be able to solve non-routine problems using logic and quantitative techniques.	Students will be able to construct solutions to problems using computational techniques.
MTH1033	Fall 2024	2.56	2.92	2.31
MTH1033	Spring 2025	2.76	3.50	3.63
<i>MTH1044</i>	<i>Spring 2020</i>	2.60	3.18	3.95
<i>MTH1044</i>	<i>Spring 2021</i>	2.47	3.06	3.03
MTH1044	Spring 2022	2.16	2.59	3.41
MTH1044	Spring 2023	2.88	3.05	3.45
MTH1044	Spring 2024	3.35	2.93	3.65
MTH1044	Spring 2025	3.45	3.40	3.55
MTH1044	Spring 2026	2.93	3.08	2.93
MTH1053	Spring 2025	2.58	3.25	2.25
MTH1064	Fall 2019	2.05	3.00	3.29
<i>MTH1064</i>	<i>Fall 2020</i>	2.70	3.50	3.48
<i>MTH1064</i>	<i>Fall 2021</i>	2.15	3.29	3.26
MTH1064	Fall 2022	3.15	3.10	2.98
MTH1064	Fall 2023	1.45	2.32	2.58
MTH1064	Fall 2024	2.68	2.89	3.13
MTH1064	Fall 2025	1.89	2.47	2.44
MTH1073	Fall 2019	3.25	2.60	2.38
<i>MTH1073</i>	<i>Spring 2020</i>	3.05	3.30	3.68
<i>MTH1073</i>	<i>Fall 2020</i>	2.48	3.00	3.60
<i>MTH1073</i>	<i>Spring 2021</i>	2.00	2.54	3.57
<i>MTH1073</i>	<i>Fall 2021</i>	3.43	3.00	2.57
MTH1073	Spring 2022	1.98	2.33	3.23
MTH1073	Fall 2022	3.42	3.13	2.18
MTH1073	Spring 2023	2.97	3.08	3.25
MTH1073	Fall 2023	2.95	2.70	3.20
MTH1073	Spring 2024	3.55	2.30	2.60
MTH1073	Fall 2024	2.67	2.61	3.47
MTH1073	Spring 2025	2.95	2.00	3.13
MTH1073	Fall 2025	3.15	2.53	3.12
MTH1073	Spring 2026	2.58	2.74	3.11
MTH2013	Fall 2024	1.85	3.25	3.30
MTH3003	Fall 2019	3.19	2.86	3.31
<i>MTH3003</i>	<i>Spring 2020</i>	3.38	3.49	3.12
<i>MTH3003</i>	<i>Fall 2020</i>	3.21	3.81	3.13
<i>MTH3003</i>	<i>Spring 2021</i>	3.44	3.19	3.56
<i>MTH3003</i>	<i>Fall 2021</i>	2.59	2.79	2.09
MTH3003	Spring 2022	2.77	2.32	2.50
MTH3003	Fall 2022	2.50	2.87	2.73
MTH3003	Spring 2023	2.90	2.63	2.88
MTH3003	Fall 2023	2.85	2.58	3.18
MTH3003	Spring 2024	2.98	3.06	3.15
MTH3003	Fall 2024	2.83	2.45	3.18
MTH3003	Spring 2025	3.30	2.66	2.48

Italics means taught during the COVID pandemic with non-standard class arrangements.

**Conclusions Drawn from Data:** The data shows some weaknesses during the Covid pandemic and we have seen some student weakness in freshman classes (particularly MTH1044, MTH1064 and MTH1073) after the end of the pandemic. There seem to be some holes in students' knowledge. This has persisted with Fall 2025 data in MTH1064.

We are seeing some weaknesses in the classes recently added to GE (MTH1033, MTH1053 and MTH2013). We believe that some of this is the result of the wording of some of the problems chosen for assessment. We have seen this same pattern in needing to refine the assessment problems each time that we introduce a new class to the GE mathematics list.

**Changes to be Made Based on Data:** Students seem to have had more than a typical level of difficulty with formulating mathematical models from a verbal description during the pandemic. We continue to work on this issue and have seen some post-pandemic improvement.

Based on the experience we had with MTH1064 in the fall of 2023, we have changed the labs in MTH1064 and MTH1074 to be more like traditional recitation sessions that will focus on problem solving to try to address some of the weaknesses in the students' high school preparation. We saw improvement in the fall 2024 student scores, so it looks like this approach is working. However, we saw a dip in the Fall 2025 scores, we need to review the specific questions used to see if that is the root of the issue.

In addition, we have changed the tool that we are using for the university-wide math placement exam. This new tool allows students to do some online remediation before retaking the exam. We are hoping that this opportunity for review will help students to enter classes more prepared for the demands of college-level mathematics courses. The placement exam change has been a success, but we are becoming concerned that some students are using AI to complete the exam.

Finally we need to continue to work on refining our assessment questions for MTH1033, MTH1053 and MTH2013.

**Rubric Used**

General Education Mathematics Rubric

	Unsatisfactory (0)	Low Satisfactory (1)	Satisfactory (2)	High Satisfactory (3)	Outstanding (4)
Students will be able to formulate a mathematical model from a verbal description of a problem.	Completely incorrect	Missed more than one key step or concept	Missed one key step or concept	Made a minor error	Completely correct
Students will be able to solve non-routine problems using logic and quantitative techniques.	Completely incorrect	Missed more than one key step or concept	Missed one key step or concept	Made a minor error	Completely correct
Students will be able to construct solutions to problems using computational techniques.	Completely incorrect	Missed more than one key step or concept	Missed one key step or concept	Made a minor error	Completely correct

Calculus (MTH1044, MTH1064 and MTH1073)

- Interest
- Max/min
- Complex derivative

Problem Solving (MTH3003)

- Compound interest
- Scheduling
- Interest

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