

Course Tag Reflection Exemplar
Scientific Inquiry & Research Skills

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MAT 284: Business Calculus

Identify the course learning objectives in the syllabus that are clearly aligned to Scientific Inquiry & Research Skills and respective assignment(s).

Three CLOs clearly align to Scientific Inquiry and Research Skills

1. Find the derivatives of rational, exponential, and logarithmic functions, and their compositions
2. Find indefinite integrals of the powers of the variable
3. Recast a word problem in terms of mathematical optimization and then solve it

The first two CLOs concern the mathematical relationship between a quantity and its rate of change. The third one teaches the students to apply this relationship to problems arising outside of mathematics.

Explain the connection between specific assignment(s) and Scientific Inquiry & Research Skills. At least 30% of the course grade must engage students in the selected competency for the course to be tagged.

Midterm Exam 2 (24%): students practice the methods for finding a derivative

Final Exam (27%): students solve optimization problems and find indefinite integrals

At least 51% of the final grade relates to this competency.

Describe in detail the instructional strategies faculty use to intentionally teach Scientific Inquiry & Research Skills in the course.

In this course, faculty give lectures and administer online assignments which break the larger objectives into smaller tasks like applying the chain rule to the square root of a polynomial. Teaching assistants hold weekly meetings in small groups, engaging students in a discussion, demonstrating examples, and administering quizzes. Larger summative assessments are given in the exam form. They ask the students to synthesize the atomic skills they practiced earlier into the solution of multi-step problems. Such tasks involve setting up a mathematical model matching a verbal description, which is a fundamental part of quantitative research.

Describe the feedback tool(s) faculty use to support students' competency development on Scientific Inquiry & Research Skills.

Online assignments provide instant feedback to the students, who then have an opportunity to correct and resubmit their work. The number of attempts is unlimited.

Exams are graded by a team including both faculty and teaching assistants; the students receive written feedback explaining the mistakes they made. Rubrics are used to ensure the consistency of grading within the team.