

Q-core Assessment Report

Course: M 182, Honors Calculus II

Section assessed: M 182-001

Semester: Spring 2016

Instructor(s) and/or supervisor: Christina Hayes

Assessment done by (2 faculty members): Christina Hayes and John Lund

Number of students in the course: 37 (over two sections)

Number of students assessed (at least 6): 29

Problems on the final exam were used to determine if the learning outcomes were demonstrated at an acceptable or unacceptable level. The description of the signature problem is listed below next to each learning outcome.

Learning Outcome 1: *Interpret and draw inferences from mathematical or statistical models represented as formulas, graphs, or tables.*

Problem 12 on the final exam. Set up an integral to calculate the work required to drain a tank of a shape given in a figure. (cylindrical tank laying on its side).

- Total number of assignments assessed: 29
- Number of student assignments demonstrating the learning outcome at an acceptable level, as defined in the *Q-core Rationale and Assessment Plan* : 24
- Proportion of assignments rated as “acceptable”: 24/29

- Is this over the specified threshold of 2/3?

- Yes, 82.7% 83% of the students were successful in setting up an integral to drain the tank. 28 out of the 29 students demonstrated understanding that work is computed using the product of force against gravity and vertical distance pumped, and that the force is computed as a product of gravity, density and volume. Those students who were not successful had trouble creating an axis system and an appropriate product in the Riemann Sum due to the difficult shape of the tank, not necessarily due to not understanding the concept of setting up a sum of work on a particular “layer” using a product of force and vertical distance pumped.

- Comments and ideas for improving the process of assessment: None.

Learning Outcome 2: *Represent mathematical or statistical information numerically and visually.*

Problem 3 on the final exam. Given a parametrically defined curve, calculate the arc length of the curve over a given interval.

- Total number of assignments assessed: 29

- Number of assignments demonstrating the learning outcome at an acceptable level, as defined in the *Q-core Rationale and Assessment Plan* : 24
- Proportion of assignments rated as “acceptable”: 24/29

- Is this over the specified threshold of 2/3? Yes, 83%

Learning Outcome 3 : *Employ quantitative methods such as arithmetic, algebra, geometry, or statistical inference to solve problems*

Problem 4 on the final exam. Integrate $(x^2)\ln(x)$ with respect to x .

- Total number of assignments assessed: 29
- Number of assignments demonstrating the learning outcome at an acceptable level, as defined in the *Q-core Rationale and Assessment Plan* : 27
- Proportion of assignments rated as “acceptable”: 27/29
- Is this over the specified threshold of 2/3? Yes, 93%