DeAnza College **SLO ARCHIVE**

Student Learning Outcomes for MATH 1C

Calculus

Team Members:

Team Leader:
Harman Dhaliwal (8222) in MATH

Other members:

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Additional team members/notes about team:

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Additional Notes:

Outcomes:

Outcome 1 Phase I: Statement

Graphically, analytically, numerically and verbally analyze infinite sequences and series from the perspective of convergence, using correct notation and mathematical precision.

Outcome 1 Phase II: Assessment Strategy Used:

Assessment Quarter: Spring 2010
Assessors: Harman Dhaliwal, Doli Bambhania
Assessment Tools: •

Outcome 1 Phase III: Reflect & Enhance

Number of people involved in Phase III: 2

Changes:
There were not any significant changes in how we assessed this outcome. As before, the assessment was done through quizzes and exams. However, each quarter, we do update the exam questions. These included questions that required students to graphically, analytically, numerically and verbally analyze infinite sequences and series from the perspective of convergence, using correct notation and mathematical precision.

Methods:
We used homework assignments, quizzes and exam problems to assess the outcome.

Findings and Conclusions:
Students generally did well in determining sequence convergence. They also were able to evaluate geometric series sums correctly, and generally use appropriate mathematical notation. Some of the areas where they experienced difficulty were:* confusion in the convergence of a series versus the convergence of the underlying sequence* ability to use Direct Comparison Test correctly* determination of the appropriate test to evaluate convergence of a series

Enhancement (Planned Actions)
Part I:
We plan to provide more practice in class and on the homework for the determination of convergence for series that leads to improved intuition around the concept of convergence.

Part II:

Outcome 2 Phase I: Statement

Apply infinite sequences and series in approximating functions.

Outcome 2 Phase II: Assessment Strategy Used:

Assessment Quarter: Spring 2010
Assessors: Harman Dhaliwal, Doli Bambhania
Assessment Tools: •

Outcome 2 Phase III: Reflect & Enhance

Number of people involved in Phase III: 2

Changes:
There were not any significant changes in how we assessed this outcome. As before, the assessment was done through quizzes and exams. However, each quarter, we do update the exam questions. These included questions that required students to apply infinite sequences and series in approximating functions.

Methods:
We used homework assignments, quizzes and exam problems to assess the outcome.

Findings and Conclusions:
Students successfully came up with appropriate Taylor series for functions. Some instances that proved difficult for them included dealing with the arbitrary constant resulting from the integration of an infinite series, as well as understanding and applying Taylor's Inequality.

Enhancement (Planned Actions)
Part I:
We plan to provide more examples in class and on the homework in order to improve the

understanding and the intuition behind Taylor's Inequality and integration of series.

Part II:

Outcome 3 Phase I: Statement

Synthesize and apply vectors, polar coordinate system and parametric representations in solving problems in analytic geometry, including motion in space.

Outcome 3 Phase II: Assessment Strategy Used:

Assessment Quarter: Spring 2010
Assessors: Harman Dhaliwal, Doli Bambhania
Assessment Tools: •

Outcome 3 Phase III: Reflect & Enhance

Number of people involved in Phase III: 2

Changes:
There were not any significant changes in how we assessed this outcome. As before, the assessment was done through quizzes and exams. However, each quarter, we do update the exam questions. These included questions that required students to synthesize and apply vectors, polar coordinate system and parametric representations in solving problems in analytic geometry, including motion in space.

Methods:
We used homework assignments, quizzes and exam problems to assess the outcome.

Findings and Conclusions:
Students were able to understand the three-dimensional coordinate system. They were able to extend the concepts of polar coordinates to cylindrical and spherical coordinate systems. Students did have some trouble developing intuition for the graphs stemming from parametric equations and understanding the usefulness of the orthonormal basis consisting of the unit tangent, normal and binormal vectors for parametric curves in 3-space.

Enhancement (Planned Actions)
Part I:
We will bring in 3-dimensional models of the coordinate system, quadratic surfaces and planes to help student intuition. We will demonstrate some of the difficult concepts using mathematical software.

Part II:

Course Competencies:

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