

West Los Angeles College

SLO Addendum

Course Name and Number MATH 261

Course Title CALCULUS I

Course Objectives (as stated in the Course Outline of Record)

1. FUNCTIONS AND MODELS.

- a. Able to Represent a Function in four ways.
- b. Analyze Mathematical Models and recognize A Catalog of Essential Functions.
- c. Synthesize New Functions from Old Functions.
- d. Able to utilize Graphing Calculators and Computers in solving problems.

2. LIMITS.

- a. Evaluate and compare Tangent and Velocity Problems.
- b. Interpret The Limit of a Function.
- c. Calculating Limits Using the Limit Laws.
- d. Explain The Precise Definition of a Limit.
- e. Illustrate and explain Continuity.

3. DERIVATIVES.

- a. Set up Derivatives and Rates of Change problems.
- b. Describe The Derivative as a Function.
- c. Memorize and apply Differentiation Formulas.
- d. Interpret Derivatives of Trigonometric Functions.
- e. Explain and apply The Chain Rule.
- f. Employ Implicit Differentiation.
- g. Evaluate Rates of Change in the Natural and Social Sciences.
- h. Recognize and set-up Related Rates.
- i. Identify and compute Linear Approximations and Differentials.

4. APPLICATIONS OF DIFFERENTIATION.

- a. Evaluate Maximum and Minimum Values.
- b. Explain and employ The Mean Value Theorem.
- c. Explain How Derivatives Affect the Shape of a Graph.
- d. Evaluate and interpret Limits at Infinity; Horizontal Asymptotes.
- e. Summarize Curve Sketching.
- f. Apply Graphing with Calculus and Calculators.
- g. Solve Optimization Problems.
- h. Demonstrate Newton's Method.
- i. Describe and contrast Antiderivatives.

5. INTEGRALS.

- a. Compute Areas and Distances.
- b. Evaluate Definite Integral.

- c. Explain and apply The Fundamental Theorem of Calculus.
- d. Identify Indefinite Integrals and apply the Net Change Theorem.
- e. Apply The Substitution Rule.

6. APPLICATIONS OF INTEGRATION

- a. Compute the Areas between Curves.
- b. Compute Volume.
- c. Calculate Volumes by Cylindrical Shells.
- d. Relate to Work in Physics.
- e. Evaluate Average Value of a Function

Math Division Program SLOs (as stated in the Course Outline of Record)

Program SLOs:

- 3. Use mathematical tools essential for analyzing quantitative problems and for producing solutions. (Theme: mathematical tools)
- 4. Apply advanced mathematical concepts and tools (algebra, calculus) essential in upper division academic work and/or workplace tasks. (Theme: advanced mathematical operations—algebra, calculus)

| <p align="center"><u>Course SLO</u></p> <p>One sentence that describes a major piece of knowledge, skill, or ability that students can demonstrate by the end of the course</p> <p><i>Finish the sentence, "At end of the course, the successful student will be able to... "</i></p> | <p align="center"><u>Assessment Method</u></p> <p>Major assignment, project or test used to demonstrate or apply outcome</p> <p><i>Remember to have a mix of qualitative and quantitative assessment methods.</i></p> | <p align="center"><u>Criterion Level</u></p> <p>Reflects satisfactory performance on the SLO</p> <ul style="list-style-type: none"> • <i>At least X percent of students achieve this course SLO.</i> • <i>All students achieve at least the Y level on this SLO.</i> • <i>At least X percent of students achieve the Y level on this course SLO.</i> |
|---|--|--|
| <p>1. Use and interpret the derivative algebraically, graphically, and numerically to model rates of change in physical phenomena (e.g. velocity, acceleration, population growth, rates of change when the independent variable is not time) and in other quantifiable contexts (e.g. marginal analysis in economics, slope of a graph).</p> | <p>Students will answer questions embedded on a final exam or other in-class exercise.</p> | <p>At least 60% of students will achieve at least the 75% level on this SLO.</p> |
| <p>2. Use and interpret the integral algebraically, graphically, and numerically to model summation in physical phenomena (e.g. distance traveled) and other quantifiable situations (e.g. average value, net change,</p> | <p>Students will answer questions embedded on a final exam or other in-class exercise.</p> | <p>At least 50 % of students will achieve at least the 70% level on this SLO.</p> |
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Mapping to Program SLO and Institutional SLOs

Please indicate with an "X" in the appropriate boxes below, the Course SLO mapping to the corresponding Program and Institutional SLO(s).

| Course SLO | Program SLO | | | | | | | | | | | | Institutional SLO | | | | | | | | |
|------------|-------------|---|---|---|---|---|---|---|---|----|----|----|-------------------|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | A | B | C | D | E | F | G | H | I |
| #1 | | x | X | X | | | | | | | | | x | x | x | | | x | | x | |
| #2 | | x | X | X | | | | | | | | | x | x | x | | | x | | x | |
| #3 | | | | | | | | | | | | | | | | | | | | | |
| #4 | | | | | | | | | | | | | | | | | | | | | |

Course SLO Acknowledgements

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