NAPA VALLEY
UNIFIED SCHOOL DISTRICT

High School Course of Study Approval Request Form

High School Site	Signature - Principal or Academic AP Designee	Signature - Teacher Leader (enter N/A if no Teacher Leader)	Comments:
American Canyon HS	Andrew Goff	Ron Eick	
Napa HS	Kate Gauger	Heather Oja	
Napa Valley Independent Studies	Susan Wilson	NA	
New Tech HS	Riley Johnson	Jon Southam	
Valley Oak HS	Maria Cisneros	Rafael Garcia Avila	
Vintage HS	Katelyn Estudillo	Brandon DeJesus	

Course submitted by:	Annie Petrie	School Site:	NVUSD Instructional Services

Executive Director, Secondary Education: _____

X New ☐Revised

COMPUTER (Short) TITLE: CLG Math
TRANSCRIPT SPECIAL COURSE TITLE: College Calc 1
COURSE NUMBER: CC401 [NVC Math 120]
GRADE LEVEL: 11 - 12
LENGTH OF COURSE: 1 College Semester (1 year)
GRAD REQUIREMENT: Mathematics (H)
CSU/UC REQUIREMENT: "c" (Mathematics)
COLLEGE PREP: Yes
HONORS: Yes
VOCATIONAL ED: No
CALPADS CODE: 2490 (Dual Enrollment College Course - Mathematics)
PATHWAY CODE: No
NCLB : Yes
NCLB CORE SUBJECT: MT

Course Outline Information

1. Student Learning Outcomes:

A. Compute derivatives of elementary functions and their algebraic combinations.

B. Solve applications involving derivatives.

C. Evaluate definite and indefinite integrals using the Fundamental Theorem of Calculus.

2. Course Objectives: Upon completion of this course, the student will be able to:

A. Compute the limit of a function at a real number;

B. Determine if a function is continuous at a real number;

C. Find the derivative of a function as a limit;

D. Find the equation of a tangent line to a function;

E. Compute derivatives using differentiation formulas;

F. Use differentiation to solve applications such as related rate problems and optimization problems;

G. Use implicit differentiation;

H. Graph functions using methods of calculus;

I. Evaluate a definite integral as a limit;

J. Evaluate integrals using the Fundamental Theorem of Calculus;

K. Apply integration to find area.

3. Course Content

1) Definition and computation of limits using numerical, graphical, and algebraic approaches;
2) Continuity and differentiability of functions;
3) Derivative as a limit;
4) Interpretation of the derivative as: slope of tangent line, a rate of change;
5) Differentiation formulas: constants, power rule, product rule, quotient rule and chain rule;
6) Derivatives of transcendental functions such as trigonometric, exponential or logarithmic;
7) Implicit differentiation with applications, and differentiation of inverse functions;
8) Higher-order derivatives;
9) Graphing functions using first and second derivatives, concavity and asymptotes;
10) Maximum and minimum values, and optimization;
11) Mean Value Theorem;
12) Antiderivatives and indefinite integrals;
13) Area under a curve;
14) Definite integral; Riemann sum;
15) Properties of the integral;
16) Fundamental Theorem of Calculus;
17) Integration by substitution;
18) Indeterminate forms and L'Hopital's Rule;

4. Methods of Instruction:

Discussion Lecture In-class practice problems

5. Methods of Evaluation:

Describe the general types of evaluations for this course and provide at least two, specific examples.

Typical classroom assessment techniques

Exams/Tests -- Home Work -- Final Exam --

Additional assessment information:

Examples:

1) An exam including differentiation where the student would be expected to calculate derivatives using a variety of techniques (power rule, product rule, quotient rule, and the chain rule).

2) An exam including integration where the student would be expected to find antiderivatives for a variety of functions using manipulation and u-substitutions and calculate definite integrals using area of rectangles and the Fundamental Theorem of Calculus.

6. Minimal Percentage for Passing: 60%

Letter Grade Only

7. Assignments: State the general types of assignments for this course under the following categories and provide at least two specific examples for each section.

A. Reading Assignments

Read sections from the text, for example:

1. Read the section on the chain rule for derivatives
2. Read the section on the Mean Value Theorem

B. Writing Assignments

Daily homework will be completed from the text, for example: 1. Find the largest open-top box that can be constructed with 200 square feet of cardboard. 2. Find the area under $f(x) = x$ between $x = 0$ and $x = 1$ as the limit of a sum.

C. Other Assignments

Other assignments such as research into applications or group projects assigned at instructor's discretion.

Instructional Materials

Title: ***Calculus Early Transcendentals***
Author: **James Stewart**
Publisher: **Cengage**
[New - request for adoption approval submitted at this Board Meeting.]

B. Other materials and/or supplies required of students.

- Graphical calculator is required.