

Course Description

A. COVER PAGE

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| <p>1. Course Title Calculus A (AP)</p> | <p>9. Subject Area</p> <p><input type="checkbox"/> History/Social Science</p> <p><input type="checkbox"/> English</p> <p><input checked="" type="checkbox"/> Mathematics</p> <p><input type="checkbox"/> Laboratory Science</p> <p><input type="checkbox"/> Language other than English</p> <p><input type="checkbox"/> Visual & Performing Arts (for 2003)</p> <p><input type="checkbox"/> College Prep Elective</p> |
| <p>2. Transcript Title / Abbreviation Calculus A (AP)</p> | <p>10. Grade Level(s) Some 11th but primarily 12th</p> |
| <p>3. Transcript Course Code / Number MA 6550</p> | |
| <p>4. School Ernest Righetti High School</p> | |
| <p>5. District Santa Maria Jt. Union High School</p> | |
| <p>6. City Santa Maria</p> | |
| <p>7. School / District Web Site www.smjuhsd.k12.ca.us</p> | <p>11. Seeking "Honors" Distinction?</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> |
| <p>8. School Contact</p> <p>Name: Kevin J. McNamara</p> <p>Title/Position: Math Department Chair and Instructor</p> <p>Phone: (805) 937-2051 Ext.: 2505</p> <p>Fax: (805) 934-0819</p> <p>E-mail: kmcnamara@smjuhsd.org</p> | <p>12. Unit Value</p> <p><input type="checkbox"/> 0.5 (half year or semester equivalent)</p> <p><input checked="" type="checkbox"/> 1.0 (one year equivalent)</p> <p><input type="checkbox"/> 2.0 (two year equivalent)</p> <p><input type="checkbox"/> Other: _____</p> |
| <p>13. Date of School Board Approval February 13, 2002</p> | |
| <p>14. Was this course previously approved by UC? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If so, year removed from list? _____</p> <p>Under what course title? _____</p> | |
| <p>15. Is this course modeled after an UC-approved course from another school? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>If so, which school(s)? _____</p> | |
| <p>16. Pre -Requisites Math Analysis</p> | |
| <p>17. Co-Requisites Algebra II and Trigonometry</p> | |
| <p>18. Brief Course Description The course covers all topics required for the Calculus AB Exam. See attached outline.</p> | |

Course Title: CALCULUS A (AP)

Department: ERHS Mathematics

Description of Target Group:

This is a two semester course for college bound students who have successfully completed MATH ANALYSIS or its equivalent, and are entering into any mathematical or science related field. All students are encouraged to take the College Board Advanced Placement Exam for Calculus (AB or BC) in May.

Course Length: One Semester, 5 units

Course Adoption: UC/CSU "a-g" inclusion

Standards of Expected Student Achievement: Upon completion of this course, students will be able to successfully demonstrate understanding of the following standards:

- I. Limits of Functions (Including one-sided limits)
 - A. Computational Techniques of limits of sums, products, quotients, and composite functions.
 - B. Use of Graphing Calculators to verify and estimate limits.
- II. Continuity of Functions (Including the formal definition and graphical Interpretation)
- III. Application of the Intermediate Value Theorem and the Extreme Value Theorem.
- IV. The Derivative of a Function at a Point
- V.
 - A. Slope of a curve at a point
 - B. Instantaneous rate of change
 - C. Relationship between differentiability and continuity
 - D. Techniques of differentiation
 1. Product Rule and Quotient Rule
 2. Derivatives of Trigonometric Functions
 3. The Chain Rule and multiple derivatives
 4. Derivatives of Logarithmic and Exponential functions, and Inverse functions
 5. Implicit Differentiation
 6. L'Hopital's Rule
 7. Parametric functions

V. Applications of the Derivative

- A. Related rates
- B. Absolute (global) and Relative (local) Extrema (maxima and minima)
- C. Rectilinear motion
- D. Newton's Method
- E. Rolle's Theorem and the Mean-Value Theorem
- F. Analysis of functions (increasing, decreasing, concavity, and inflection points)

Methods of assessment of student learning: Assigned homework, written examinations (multiple choice and free response)

Text and Supplementary Materials:

Refer to: Secondary Adopted Texts and Approved Supplementary Books Used in the Santa Maria Joint Union High School District

This course is not a graduation requirement for the Santa Maria Joint Union High School District