General Course Information

Course Name: Advanced Placement Calculus	
Department: Math	Grade Level(s): 11, 12
Duration/Credits: 1 year/ 1.0 credit math and available for Dual Credit	Prerequisites: Pre-Calculus
BOE Approval Date: 12/19/19	Course Code: 2411W
Course Description:	
This course includes the study and application of continuity, limits, derivatives, the definite integral, techniques of integration and plane analytical geometry. Each student is required to have a scientific calculator (TI-84+ recommended). Dual Credit and Advanced Placement credit offered. See pages 10 and 11 for more information about Dual Credit and Advanced Placement fees.	
Course Rationale:	
The need to understand and be able to use mathematics in everyday life and in the workplace has never been greater and will continue to increase. Just as the level of mathematics needed for intelligent citizenship has increased, so too has the level of mathematical thinking and problem solving needed in the workplace. Those who can problem solve, think critically, and communicate will have significantly enhanced the opportunities and options for shaping their futures. Mathematical competence opens doors to productive futures. This course allows students to develop these problem solving, critical thinking, and communication skills within the context of higher level mathematical reasoning.	
Course Objectives:	

1. The student will calculate limits for function values and apply the properties of limits.
2. The student will identify the intervals upon which a function is continuous and understand the meaning of a continuous function.
3. The student will use the rules of differentiation to calculate derivatives, including second and higher order derivatives.
4. The student will read and solve application problems involving finding minimum or maximum values of functions and problems involving related rates. (A+ Reading)
5. The student will integrate functions using various techniques including the Fundamental Theorem of Calculus.
6. The student will use integration to calculate areas of regions in a plane and volumes of solids.
7. The student will provide mathematical arguments by verbally explaining solutions and critiquing the rationale of others. (A+ Speaking and Listening)
8. The student will research calculus topics and present findings written and verbally. (A+ Research and Writing)

Dual Credit

- Missouri Baptist University: Students who enroll in the dual credit course will receive 4 college credits for this course. Information on how to sign up will be given in class. The college course grade received will be an average of the two high school semester grades earned.
    - MBU Course title: MATH 164
- UMSL: Students who enroll in the dual credit course will receive 5 college credits for this course. Information on how to sign up will be given in class. The college course grade received will be an average of the two high school semester grades earned.
    - UMSL Course title: MATH 1800
- SLU: Students who enroll in the dual credit course will receive 4 college credits for this course. Information on how to sign up will be given in class. The college course grade received will be an average of the two high school semester grades earned.
    - UMSL Course title: Math 1510

Standards Alignment:

US: AP Calculus Standards (2019) from AP CollegeBoard
https://apstudents.collegeboard.org/sites/default/files/2019-05/ap-calculus-ab-bc-course-and-exam-description.pdf