TAMALPAIS UNION HIGH SCHOOL DISTRICT
Larkspur, California

Course of Study
AP CAPSTONE/ADVANCED PLACEMENT RESEARCH

I.   **Introduction: Course Description**

Overview
AP Capstone is a two-year program consisting of two courses: AP Seminar & AP Research, offered consecutively for juniors and seniors. AP Research is open to students who have successfully completed AP Seminar during their junior year. AP Research is a two-semester, elective course (UC "g") that aims to allow students to deeply explore an academic topic, problem, issue, or idea of individual interest. Students design, plan, and implement a yearlong investigation to address a research question. Through this inquiry, they further the skills they acquired in the AP Seminar course by learning research methodology, employing ethical research practices, and accessing, analyzing, and synthesizing information. Students reflect on their skill development, document their processes, and curate the artifacts of their scholarly work through a process and reflection portfolio. The course culminates in an academic paper of 4,000-5,000 words (accompanied by a performance, exhibit, or product where applicable) and a presentation with an oral defense.

Student learning is evaluated in a number of ways, including the following two required assessments: a collaborative team project and presentation, an individual research-based essay and presentation, and an end-of-course examination. The instructor evaluates the first two assessments within the course, and the last assessment is a skills-based AP exam offered in May. The assessments are summative and will be used to calculate a final AP Score (using the 1-5 scale) for AP Seminar. Successful completion of AP Seminar is required for continuation to AP Research the following year. Upon successful completion of both courses, students are eligible for either a certificate or a diploma, depending on the number of other AP courses they take and the results of their exams.

II.   **Student Learning Outcomes**

Curricular Requirements
The following curricular requirements are the core elements of AP Research.

Overview of the Curriculum Framework
Based on the Understanding by Design (Wiggins and McTighe) model, the curriculum framework is intended to provide a clear and detailed description of the course requirements necessary for student success. This conceptualization will guide the development and organization of learning outcomes from general to

specific, resulting in focused statements about content knowledge and skills needed for success in the course. The curriculum framework contains the following structural components:

- The course is organized around five **big ideas**. Tied to each big idea are several **essential questions**. These are open-ended questions that encourage students to think deeply about a topic, ask additional questions and investigate solutions, and develop the deeper conceptual understanding that the course seeks to foster.
- Within each big idea are several **enduring understandings**. These are the long-term takeaways related to the big ideas that a student should have after exploring the content and skills. These understandings are expressed as generalizations that specify what students will come to understand about the key concepts in the course. Enduring understandings are numbered to correspond to each big idea.
- Linked to each enduring understanding are the corresponding **learning objectives**. The learning objectives articulate what students need to be able to do in order to develop the enduring understandings. The learning objectives will become targets of assessment for the course. Learning objectives are numbered to correspond with the appropriate big ideas and enduring understandings.
- For each of the learning objectives, **essential knowledge** statements describe the facts and basic concepts that a student should know and be able to recall in order to demonstrate mastery of the learning objective. Essential knowledge components are numbered to correspond with the appropriate big ideas, enduring understandings, and learning objectives.

Each of the five big ideas, along with the corresponding enduring understandings and essential questions are described below. For a chart illustrating the learning objectives and essential knowledge associated with each big idea and enduring understanding, please see the College Board's complete Course and Exam Description Guide: https://secure-media.collegeboard.org/digitalServices/pdf/ap/ap-research-course-and-exam-description.pdf

Big Idea 1: Question and Explore
        Inquiry and investigation begins when students encounter information about complex issues and problems that stimulates their intellectual curiosity. They then continue the research process by developing a critical question about one or more of those complex issues or ideas. Seeking answers to such questions requires exploration of numerous, often competing perspectives; the context surrounding those perspectives; and the reliability and credibility of the perspectives. Through this exploration, students begin to develop their own perspectives, rather than simply accept those of others. They consider the purpose of their research — what is supposed to be achieved and why. Ideally, they also develop additional questions

that lead to further inquiry. The intrinsic value of asking and answering questions cannot be overstated. Giving students the opportunity to dig deeper and feed their curiosity makes for meaningful discoveries and discussions.

Essential Questions
- What do I want to know, learn, or understand?
- What questions have yet to be asked?
- How does my research question shape how I go about trying to answer it?
- How does my project goal shape the research or inquiry I engage in to achieve it?
- What information/evidence do I need to answer my research question?

Big Idea 2: Understand and Analyze

Developing understanding starts with comprehension of the concepts and perspectives under examination. Being able to summarize by identifying and explaining the salient ideas in a text is foundational. When students summarize and explain an author's perspective to others, they are building understanding. Students must comprehend a perspective or argument in order to be able to analyze it. That analysis — including consideration of the author's point of view and purpose, the reasoning and details the author selects, develops, and conveys, and the way the author chooses to situate those details — in turn leads to greater understanding of the topic or concept being explored. Students evaluate the strength of an argument by examining the line of reasoning and the quality of the evidence the author uses. This level of understanding allows students to recognize the implications and predict the consequences of an argument.

Essential Questions
- What strategies will help me comprehend a text?
- What is the argument's main idea and what reasoning does the author use to develop it?
- What biases may the author have that influence his or her perspective?
- Does this argument acknowledge other perspectives?
- How can I assess the quality or strength of others' research, products, or artistic works?

Big Idea 3: Evaluate Multiple Perspectives

Understanding the complexity of an issue, idea, or problem requires students to compare and contrast different perspectives. These multiple perspectives, which may support, oppose, compete with, or otherwise vary from one another, come together to create the conversation on the issue. Students must consider the biases and assumptions behind those perspectives in order to evaluate their relevance and importance in the conversation. Evaluating multiple perspectives and arguments allows students to better understand the complexities of an issue or topic.

Essential Questions
- What patterns or trends can be identified among the arguments about this issue?
- What are the implications and/or consequences of accepting or rejecting a particular argument?
- How can I connect the multiple perspectives? What other issues, questions, or topics do they relate to?
- How can I explain contradictions within or between arguments?
- From whose perspective is this information being presented, and how does that affect my evaluation?
- How might others see a problem differently?

Big Idea 4: Synthesize Ideas

Once enough information is gathered and evaluated, students synthesize their accumulated knowledge, emerging ideas, and perspectives to form conclusions of their own. Students must consider other points of view but also analyze material to develop their own perspectives and scholarly works. The goal is for students to think critically about the information and then add to, no simply repeat, the ideas of others. In this way, students establish a unique, creative voice within the larger conversation.

Essential Questions
- How do I connect and analyze the evidence in order to develop an argument and support a conclusion?
- Are there other conclusions I should consider?
- How does my scholarly work emerge from my perspective, design choices, or aesthetic rationale?
- How do I acknowledge and account for my own biases and assumptions?
- What is the most appropriate way to acknowledge and attribute the work of others that was used to support my argument? How do I ensure the conclusions I present are my own?

Big Idea 5: Team, Transform, and Transmit

Collaboration, communication, and reflection are skills that provide opportunities for students to develop their learning. When collaborating, students draw upon their own strengths and the strengths of teammates to achieve a common goal. An argument is effectively communicated when its purpose is clear, it is tailored to a specific audience and context, and it is conveyed through a medium appropriate and appealing to the intended audience. Adhering to standard language conventions and engaging delivery techniques establishes a writer's or speaker's credibility with his or her audience. Whether working alone or in a group, students reflect on their work and learning processes, which can lead to personal growth as well as even more effective inquiry, learning, and collaboration.

Essential Questions
- How can I best appeal to and engage my audience?
- What is the best medium or genre through which to reach my audience?
- How might I adapt my argument for different audiences and situations?
- How might my communication choices affect my credibility with my audience?
- How can I benefit from reflecting on my own work?
- Which revision strategies are most appropriate to developing/refining my project at different stages?
- How do I provide feedback that is valuable to others? How do I act upon feedback I have received?

II.   Instructional Approaches

Organizing the Course

Inquiry and the Academic Conversation

Critical inquiry focuses on the creation of new ideas, perspectives, and arguments. Teachers must help students understand that the research process is not simply about collecting evidence or facts and then piecing them together. Instead, the research process is about *inquiry* — asking questions and coming to solutions and conclusions through serious thinking and reflection. The researcher seeks relevant information in articles, books, and other sources and develops an informed perspective built upon, but not merely derivative of, the ideas in the examined material. As a result, the research process is recursive, meaning that the researcher regularly revisits ideas, seeks new information when necessary, and reconsiders and redefines the research questions, topic, and/or approach. Additionally, students should understand that sometimes the inquiry leads to the development of an additional piece of scholarly work (e.g., product, exhibit, performance).

Facilitating students' entrance into academic or real-world conversations about complex issues is another key goal of the AP Research course. AP Research provides students the opportunity to build upon the skills they acquired during AP Seminar--critical thinking, examining multiple perspectives, evaluating credibility of sources--by choosing and deeply exploring a topic or question of personal interest, and developing and defending a more comprehensive argument and conclusion. Throughout the research or inquiry process, students document and reflect on feedback received and on their own thinking, writing, and creative processes through a process and reflection portfolio. The AP Research course culminates in the students' presentations and oral defenses of their academic papers.

Course Content
Teaching the Skills
The acquisition of knowledge through research methods (regardless of the field of enquiry) can be set on a framework of a series of skills that will be taught during the course of the year long program. The curriculum identifies the learning objectives

and essential knowledge that address the core skills. These are examples of Core skills identified and developed in the course:

- Identifying and Refining Research Questions. This is the process of narrowing the scope of interest into a research question to serve as a foundation of a long-term investigation or enquiry. Typical strategies used are Graphic Organizers, Question Formulation techniques, Peer Review, elevator Speech, and others.
- Seeking and Synthesizing Background Information. The process of becoming familiar and synthesizing what others have discovered about a topic in order to verify the existence of a problem or gap in knowledge base to form the basis of a long-term investigation. Typical strategies include the creation of an annotated bibliography of context and background, source mining, and others.
- Aligning Study Design. This is the process of identifying an aligned, feasible research or inquiry design to accomplish the purpose of the research question and/or project goal while taking into consideration time constraints, availability of resources, participant accessibility, and paperwork due to ethics guidelines. Typical strategies include the creation of a Bibliography of Methods, Poster Presentation and Peer Review, and others.
- Analyzing and Evaluating Findings. The process of interpreting the significance of the findings, results, or product and exploring connections to the original research question. Typical strategies include the use of Flowcharts, Statistical Analyses, Data Table, and Graphical Analysis.
- Engaging with Discipline-Specific Expert Advisers. This is the process of communicating with experts in the discipline or field of study to obtain guidance and feedback on one's research question, study purpose, interpretation of findings, or extended piece of scholarly work. These communications can be achieved through the use of online file access and feedback (e.g. Google Docs, etc.), email and/or video chat (e.g. Google Hangouts, etc.)
- Peer Review. This is the process of providing and receiving timely, constructive feedback according to a set of guidelines in order to improve one's critical eye and scholarly work. Typical strategies used are Rubric Reviews, exchange of compliments and suggestions, and others.
- Showcasing Scholarly Work. This is the process of conveying a clear message in a way that engages and appeals to a specific audience. This is achieved through public practice, peer review, videotaping with self-evaluation and reflection, and practice modeling.
- Defending Inquiry Outcomes. This is the process of demonstrating significance of one's research by explaining the research process, findings, conclusions and reflections to those in attendance. Typical examples would be Peanut Galleries, where the students deliver short presentations to their peers, with their peers asking critical questions and providing constructive feedback on the clarity, validity, and coherence of the scholarly work.
- Reflecting. This is the important process of making learning goals, assessing one's achievement towards such goals, and identifying both challenges that

hindered and effective strategies that helped one achieve the goals. Typical strategy is the use of a Research Process and Reflection Portfolio, Where the students document and curate scholarly work with reflective commentary on the artifacts they've chosen to reflect moments of insight, clarity, and growth.

- Strengthening Self-Directedness and Time Management. This is the process of personally identifying tasks, setting deadlines, and holding oneself accountable to achieve a learning goal or create a scholarly product. Here the teachers provide opportunities for scholars to present their work in progress to their peers and to receive feedback addressing challenges, time management, or even data interpretation.

The following are projected units that will allow students to acquire the skills necessary for the successful completion of the course and performance tasks for AP Research:

Unit 1: Structure of Research
Topic 1.1: Research Structure; Question, Background, Testing, Conclusions
Topic 1.2: Structure of the Academic Paper and Presentation for Defense

Unit 2: Assembling the Research Proposal
Topic 2.1: A model of Research Process; idea, problem definition, procedures, observation, data analysis, interpretation, and communication
Topic 2.2: AP Research Deliverables for both RHS and College Board

Unit 3: Evaluating Research Methodology
Topic 3.1: Experimental vs Causal-Comparative Studies
Topic 3.2: Introduction to Empirical Research
Topic 3.3: Measures of Variability and Statistical Analysis, margin of confidence

Unit 4: Planning Research
Topic 4.1: Levels of Constraints in Research: naturalistic, case study, correlational research, differential research, experimental
Topic 4.2: Organizing a Literature Review
In this unit students will work on understanding how to select, filter, and evaluate sources useful for the research project. An example of the performance task associated with this topic would be for the students to work on 5 pre-selected sources regarding a research topic and read them annotate them, rank them and arguing the merits of each of them as support on the presented rank. Students would work in teams and present their results to the class.

Unit 5: Data Collection and Analysis
Topic 5.1: Quantitative vs Qualitative Research
Topic 5.2: Research Hypothesis, Purposes, and Questions

Topic 5.3: Ethical considerations in Research/IRB

Unit 6: Assembling Research Findings
Topic 6.1: Biased and Unbiased Sampling
Topic 6.2: Introduction to Validity
Topic 6.3: Creating a Synthesis

Unit 7: Communicating Results
Topic 7.1: A Primer on Logic and Reasoning
Topic 7.2: Introduction to Style Guides
Topic 7.3: Communicating Quantitative and Qualitative Results
Topic 7.4: Evaluating and Presenting Research Conclusions, Implications, and
        Limitations

Unit 8: Preparing Paper, Presentation, and Defense
Topic 8.1: AP Assessment Part I: Academic Paper
Topic 8.2: AP Assessment Part II: Oral Defense

Engaging Community Members

Community members can play an integral role in students' experiences with scholarly research. Discipline-specific expert advisers can guide students' formulation of research questions, interpretation of data, and the academic paper or presentation revision process as well as provide critical, constructive feedback to strengthen students' voices in the academic conversation. Institutional review boards can provide guidance on students' designs and approve students' implementation of ethical research practices. Additionally, expert advisers--faculty, community members, local or nonlocal businesses and industries, or higher education institutions--will serve as a resource for teachers and students in a variety of areas.

Formative Assessments

During the course, students will have ample opportunities to practice the skills needed for the through-course performance tasks. These formative assessments are intended to be opportunities for both students and teachers to evaluate student progress, address problems or misconceptions, and improve student learning. Examples of such formative assessments may include but are not limited to the following:
- Rubric and Evaluation of Papers
- Annotated Bibliographies
- Peer Review
- Practice Presentations
- Inquiry Method Design

- Peer panels
- Reflection

Preparing the Process and Reflection Portfolio (PREP)

The primary purpose of the process and reflection portfolio (PREP) is to document students' development as they investigate their research questions, thereby providing evidence that students have demonstrated a sustained effort during the entire inquiry process. This portfolio will be reviewed throughout the year as a vital part of the formative assessment for the course.

Throughout the inquiry process, students will document their research or artistic processes, communication with their expert advisers, and reflections on their thought processes. Students should also examine their strengths and weaknesses with regard to implementing such processes and developing their arguments or aesthetic rationales. The combined group of questions and tasks in the PREP document should address all five big ideas in the curriculum framework (QUEST), with specific attention paid to the following:

- Choice of the research question and interest in the subject matter
- Research process, including resources, analysis of evidence, directions in which the inquiry or project seem to lead, and changes to initial assumptions
- Ways in which students have worked both on their own and as part of a larger community
- Challenges and solutions

Teachers will engage students in individual discussions or interviews to help them reflect on and document their work, organize their time, and reach appropriate milestones. In addition to responses and tasks provided by teachers, the final form of the PREP should include:

- Table of Contents
- Completed and approved proposal form
- Specific pieces of work selected by the student to represent what he or she considers to be the best showcase of his or her work
- Documentation of permission(s) received from primary sources, if required
- Documentation or log of student's interaction with expert adviser(s) and the role the expert adviser(s) played in the student's learning and inquiry process
- Questions asked to and feedback received from peer and adult reviewers both in the initial stages and at key points along the way
- Reflection on whether or not the feedback was accepted or rejected and why
- Attestation signed by the student which states, "I hereby affirm that the work contained in this Process and Reflection Portfolio is my own and that I have read and understand the AP Capstone™ Policy on Plagiarism and Falsification or Fabrication of Information"

Additionally, teachers will meet the needs of diverse learners throughout the course. As students work to build the key skills needed for their performance tasks, teachers will scaffold skills to meet the needs of all students in the class and will differentiate when needed. Such differentiation may include things such as letting students work independently or collaboratively, individual meetings with students to discuss and check in on their progress, and re-teaching skills that students may be struggling with as evidenced by myriad formative assessments.

Texts and Materials

Because people share their perspectives through many different types of media, teachers and students are encouraged to draw upon a wide variety of texts. These texts can include printed and online articles, speeches, interviews, and personal narratives, artistic works and performances, or other kinds of texts — anything that conveys a perspective and can be examined.

When selecting texts for study, teachers should challenge students to engage with and analyze complex and scholarly sources. Helping students with the identification of scholarly materials requires a discussion of peer review, which differentiates scholarly from non-scholarly sources in an academic, research community. Students should be invited to find and contribute texts for study, providing them opportunities to make connections of their own. For research purposes, students will have access to Research databases specifically through AP Capstone or the school library.

Access to a variety of print and online style guides, writing and argumentation handbooks, databases, and other reference materials is essential to equip students and teachers with the tools necessary for research and communication. The AP Capstone program does not require or specify a specific style guide. However, students should maintain the conventions of a single style guide in an individual project; students should select a style that is appropriate for the topic and discipline in which they are conducting research and writing for their academic paper.

Specific book-length texts, including style guides, writing and argumentation handbooks, readers, and fiction and nonfiction texts, assigned for required course readings are subject to prior Board approval in compliance with the District's textbook adoption policies. Examples of such texts include, but are not limited to:

***Understanding Research Methods, an Overview of the Essentials;* Mildred L. Patten, Ninth Edition, Routledge, ISBN - 13 978-1-936-52317-7**
The Bedford Researcher, Palmquist
Patterns for College Writing, Kirszner and Mandell
Joining the Conversation, Palmquist and Wallraff
Race, Class, and Gender in the United States (a Reader), Rothenberg and Mayhew

III.   Assessment

In addition to teacher-administered, in-course formative and summative assessments used to determine progress and semester grade reports, students are assessed with one College-Board-required through-course performance assessment task consisting of two distinct components. Both components will be used to calculate a final AP score (using the 1–5 scale) for AP Research.

Students design, plan, and implement a yearlong, in-depth study or investigation in an area of personal interest through a chosen or designed inquiry method and develop a well-reasoned argument based on the evidence collected in an academic paper. As a culmination of their research, students deliver (using appropriate media) a presentation and orally defend their research design, approach, and findings. Please refer to the College Board rubrics for AP Research for a more complete breakdown of the performance criteria for both formative assessments and the performance tasks below.

➢ **Academic Paper**--75%

Students will write a 4,000-5,000 word academic paper that includes the following elements: Introduction; Method, Process, Approach; Results, Product, Findings; Discussion, Analysis, and/or Evaluation; Conclusion and Future Directions; Bibliography.

➢ **Presentation and Oral Defense**--25%

Students will develop a 15-20 minute presentation (using appropriate media) delivered to an oral defense panel of three evaluators focused on the research question/project goal, method/processes, and conclusions. Each student will defend his or her work through oral responses to three or four questions posed by the oral defense panel.