



The Packer Collegiate Institute Proposals for Advanced Topics Courses

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THE ARTS

Advanced Topics in Studio Art

Course Description:

This course, open to juniors and seniors, can be taken for one or two years. We explore advanced methods and media in the fine and design arts, with emphasis on developing each student's individual abilities.

Advanced Topics in Studio Art provides the committed art student with an opportunity to explore and refine personal areas of interest and concentrate on honing skills through the portfolio process. With an emphasis on painting, printmaking, mixed media and drawing, this advanced course provides students with both independent explorations as well as skill oriented group work that encourage them to discover, develop and push their creativity. The portfolio places a strong focus on the development of one's personal voice, as well as encourages creative thinking and problem solving. Students are expected to use New York City galleries and museums to inspire their own art and through their portfolios, reflect upon themselves and make connections with larger audiences.

Goals of the Course:

- To complete an actual portfolio that reflects growth, direction, and the completion of a major personal focus in visual art
- To become immersed in making art and make a major commitment to explore and develop one's an individual voice and style
- To embrace and enlarge the skills demanded by this voice
- To have the ability to take risks, and create work that is both personal and is shared with a larger audience
- To discover and think deeply about world art from different traditions
- To visit and reflect upon art being displayed in NYC
- The discovery of joy, frustration and excitement through the creation of one's art

Topic Outline:

- Observational drawing and drawing from the figure (using a professional model)
- Drawing with perspective and non-perspective systems
- Realistic, abstract and non-representational forms
- Content, symbolism, meaning and narrative
- Pure formal attributes of line, shape, color, texture, shape and composition
- Value, use of light and shade

- Artistic mediums including all dry drawing materials, all wet drawing material, collage and assemblage, non-traditional drawing
- Printmaking (including relief prints, intaglio (etching and drypoint)
- Painting materials including tempera, acrylic, oil, small scale to large scale work
- Conceptual and site-specific venues
- Mixed media including photography, digital arts, Xerox, Photoshop manipulation

Assignments/Assessments:

- Numerous assignments and directions, which will arise from the needs and interests of the individuals as the course progresses

Meeting the Advanced Topics Criteria:

- **Academic rigor and high intellectual press:** Each work of art one begins presents numerous challenges; for example, in the completion of an etching, students must master advanced printmaking skills beyond the creation of the subject. These include experimenting with the strength of the acid and the time needed in the acid bath to achieve specific outcomes. If the print is not created with the required skill and technique, the results immediately fall short; To become immersed in making art; To explore one's own style by developing the individual voice of the artist; To enlarge the mastery of skills demanded by this voice; To discover world art from different traditions; To visit and reflect upon art being displayed in NYC; To analyze and reflect on one's own and other's art work
- **Authentic, real world work:** By sharing their own art in public displays, and by seeing the work of others, both in and out of class; Through field trips to commercial galleries, museums and alternative exhibition spaces as well as presentations by guest art professionals, students address issues of art.
- **Demonstrations of mastery and performance based learning featuring student driven design:** Culminating papers, projects and performances
- **The portfolio's concentration section is student driven:** Creating a work is always an active pursuit. Exhibitions in the front hall, Scholastic Arts Awards and other venues; Developing one's own style and the individual voice as an artist; Ability to embrace the mastery of skills demanded by this voice; Completion of an actual portfolio of work to be

- seen and commented on by peers and outside experts; Thinking deeply about different traditions from the world of art
- **Interrogation, analysis, and synthesis of varied texts:** Analysis of work we see in galleries and museums and artist studios; Active scholarship and original research; independent thinking; Encouraged by projects, which stretch conceptual and emotional parameters
 - **Deep understanding:** Through self and peer evaluations.

Engendering Non-Discipline Specific Habits of Mind:

- Self-awareness and self-reflection
- Understanding Emotional responses through creating actual work
- The use of intuition
- The use of logic
- The development of self-discipline
- The response to frustration
- The exploration of creativity
- Cognitive and Emotional function and growth
- Discovering questions
- Visual articulation of thoughts, feelings and ideas
- Communicating with others

Advanced Topics in Photography

Course Description:

The Advanced Topics Photography course provides an in-depth experience for interested high school students to pursue photography with dedication and concentrated focus. The end goal is a portfolio, which represents their best efforts from both creative and technical standpoints. The portfolio should also reflect an area of strong personal interest and commitment. More demanding than first year photography, this course requires students to demonstrate a high level of engagement in both classwork and homework. Students are encouraged to push the limits of their creativity and conceptual understanding, through both their creative efforts and their written and verbal efforts to “read” and analyze photographs.

This course is similar in many ways to the current AP photography course, especially in the development of the portfolio, which includes 2 principal sections: Breadth, which demonstrates a broad understanding of photographic concepts and Concentration, which demonstrates a thorough exploration of a self-selected theme.

The course differs, though, in one very important way. Instead of the portfolios being reviewed anonymously and with no feedback offered, they would be reviewed by a panel of professional photographers who would give both formative feedback during the course of the year as well as a summative evaluation at the end of the year. This one significant change would shift the course towards a more authentic project-based learning experience and would engage the students in more thorough and substantive ways.

Texts/Resources:

- Photographs by established artist/photographers who may serve as inspiration for new ways of looking at and thinking about photography; Students learn to “read” images in depth.

Topic Outline:

One of the most challenging aspects of this course is the selection and development of a concentration topic. To support this process, students will study thematic series by established photographers as well as previous work by their high school peers. Guest photographers will share their work and discuss how they select topics to pursue in depth. The class will also engage in a group assignment to collectively develop one selected theme in depth. The question: *how can you take this idea to the next level?* will become a leitmotif of the course.

Assignments/Assessments:

- Each week the class will study the work of one or two photographers whose work relates to the shooting assignments that follow. The photographers selected will represent a diverse range of men and women from varied backgrounds and representing different conceptual approaches to photography.
- Text in the form of writings by and interviews with the selected photographers will serve additionally to expand and deepen students' understanding of the photographers' approaches to their work.
- There will be a research paper and presentation in the second quarter on a photographer whose work informs or supports the student's choice of a concentration topic.
- One museum/gallery visit and report each semester in which students will view an exhibit and respond in depth to several photographs as well as reflect on the photographer's aesthetic philosophy.

Meeting the Advanced Topics Criteria:

- **Academic rigor and high intellectual press - Thinking deeply in photography:** What does it mean to think deeply in photography?; There are three fundamental ways to understand *thinking deeply* in this course. The first is the most elusive as thinking deeply in the visual arts has aspects different from those associated with thinking in a text-based academic course. To think deeply in the arts requires more than a cognitive process, but one that engages the emotional life of the student, and one that cultivates the intuitive mind, which knows less through a linear process of thought and more through a kind of direct, subjective, instinctual knowing. This sort of intuitive knowing is developed in more and more subtle ways through the act of photographing itself, and the gradual honing of one's ability to identify the potential photograph, to explore the angle and perspective, to frame the image in a way that grabs the essence of the subject and eliminates unnecessary information. This is typically an instantaneous knowing; a different sort of thinking as it were, that deepens with experience and reflection.

An example: An assignment was given: How can you use physical signs (such as traffic or store signs, for instance) in the environment to create significant photographic images that go beyond simple documentation? How might the sign, for instance, play a metaphoric or ironic role in the image? The work of well-known photographer Lee Friedlander was discussed, noting how he uses signs in juxtaposition with others things in the environment to create

new meaning, at times playful, or paradoxical, or even disorienting;

- When out on the street photographing for this assignment, one student saw the potential in a missing child sign posted on a pole and waited for a moment when she could juxtapose something else with the sign. After several trials she photographed a small child holding its caretaker's hand, except the caretaker's face and body are unseen, off the edge of the frame. The suggestion of abduction is chilling next to the missing child poster, even though the viewer knows that this is not the case. This student was demonstrating very deep understanding of the power of the selective frame of the camera to suggest narrative and to tap into potentially emotional ways of experiencing an image; The process of deepening thought in photography is multi-faceted, a melding of the cognitive, visual, and emotional. It also draws on the student's own history, her affective life, her understanding and appreciation of social issues, all of which come together in the instant of pressing the shutter. Those instants, though, are informed by the larger and extended background of experiment, trial and error, study, and reflection; The second form of thinking deeply - studying and discussing photographs - is more similar to thinking in other disciplines. In this process students develop the ability to articulate in increasingly thoughtful ways their experience of looking at photographs, analyzing both the formal elements (composition, light, etc.) and the content. They learn to read images with a more critical mind and eye by increasing their ability to observe with great care and to follow intuitive leads suggested by the content; the third way students think deeply in photography is by sustained reflection about their own work. In thoughtfully reviewing their work students develop a sharper ability to discern what it is about photography that is most compelling to them. Understanding and articulating what they like and dislike about their own and others' work leads them to more thoughtful choices; The slow and intentional process of discernment and reflection, which are a fundamental part of the course, is one that is not directly taught, but cultivated by sustained looking and persistent challenging of boundaries. "How can you take this work to a deeper level?" is the central driving question; and by *deeper*, meaning more intellectually challenging, or more emotionally engaging, or more visually demanding or exciting.
- **Authentic, real world work:** Adjudication of works-in-progress and the final portfolio by professionals in the field will provide the real world framework for the course; The current AP portfolios are reviewed by a remote and anonymous group of reviewers and no feedback is given

- beyond a single-digit score; By having a live panel of reviewers students will receive much more thorough and authentic feedback; Work will also be periodically displayed in public settings. Students will be encouraged to participate in the Scholastic Art competition.
- **Demonstrations of mastery and performance-based learning:** Performance based learning is the essence of the course. The creation of the portfolio is entirely driven by student design, specifically a self-selected area of concentration that students work on for more than half the year. For this section students typically begin with a broad topic such as doorways, which initially might seem too limited and mundane. Through the process of photographing the student will narrow the exploration with clearer boundaries, as one student did this last year, focusing only on doorways with windows that reflected the outside scene. The resulting layers of imagery with outside, inside, and the character of the door, itself all compressed into two dimensions provided much more fertile territory for deep thinking. The tension between inside and outside, the metaphoric suggestion of doorways as entrances into another space or even world became the new subject of the concentration rather than doorways themselves. The process of distillation requires time and reflection.
 - **Interrogation, analysis, and synthesis of varied texts:** A daily part of the course is the analysis and reflection on works by major photographers. Frequent peer assessment also encourages analysis. Students are challenged to go deeper into their responses by finding language to give voice to subjective feelings.
 - **Active scholarship and original research; independent thinking:** Original research is demonstrated by the creation of the specific concentration area for the portfolio. This performance-based aspect of the course requires an active, not a passive form of learning; Each assignment encourages independent thought and unique solutions to a visual problem; A specific goal of the course is to encourage creative thinking and to develop an individual voice through photography.

Engendering Non-Discipline Specific Habits of Mind:

- Habit of discerning what is personally important; that is to recognize one's own distinct ways of being and perceiving and thinking and to find the value in that
- Habit of being flexible and the ability to seek more complex or demanding solutions to a question; the willingness to not accept "first drafts" and to hone one's craft through re-visiting and revision of ideas
- Persistence, the habit of sticking with an idea and following through with it

COMPUTER SCIENCE

Advanced Topics in Computer Science

Course Description:

Does the NSA really track everyone's phone calls and emails? How does Facebook know whom to suggest as a new friend? Is there any privacy for a modern-day person? The digital world is as real as the real world. In the same way that we have archeologists making predictions about ancient creatures and civilizations, students will be able to make predictions about the profiles left in the digital world. This advanced computing course will allow students to explore a variety of advanced techniques in Computer Science through conducting thoughtful manipulation, analysis, and synthesis of large-scale datasets. Students will be able to write complex software solutions that involve building algorithms, data structures, and user interfaces.

Texts/Resources:

- Greenfoot
- Processing
- Eclipse
- SPSS – predictive analytics software suitable for analyzing large datasets.

Topic Outline:

- I. Program Implementation
 - a. Implementation techniques
 - b. Programming constructs
 - c. Java library classes
 - d. Object-oriented design
- II. Program Analysis
 - a. Testing
 - b. Debugging
 - c. Understand and modify existing code
 - d. Extend existing code using inheritance
 - e. Understand error handling
 - f. Reason about programs
 - g. Analysis of algorithms
 - h. Numerical representations and limits
- III. Standard Data Structures
 - a. Simple data types (int, boolean, double)
 - b. Classes
 - c. Lists
 - d. Arrays

- IV. Standard Algorithms
 - a. Operations on data structures previously listed
 - b. Searching
 - c. Sorting
- V. Computing in Context
 - a. System reliability
 - b. Privacy
 - c. Legal issues and intellectual property
 - d. Social and ethical ramifications of computer use
- VI. Predictive Data Analysis (Big Data)
 - a. Data-cleaning
 - b. Data types
 - c. Assumptions about large data
 - d. Correlations
 - e. Regression (Linear and Logistic)

Assignments/Assessments:

- Quizzes
- Large-scale exams
- Projects
- Brief formative assessments, consisting of isolated skills
- Summative assessments, which will require cumulative knowledge of course materials

Meeting the Advanced Topics Criteria:

- Developed to mimic the strong points of AP Computer Science, and blended in cutting-edge predictive solutions that are primarily taught at a college level
- High levels of intellectual rigor due to the nature of the assignments
- Students' mathematical abilities will be challenged through the demands of programming solutions in and of themselves.
- College-level algorithms and associated data structures, included, but not limited to: search, sort, queues, binary trees, and vectors.
- Real world solutions, which involve interdisciplinary work with intermediate-level statistics
- Students asked to authentically apply means, medians, standard deviations, Pearson and Spearman Correlations, and various types of regressions including, multiple regression, and linear and logistic regression

- Take real-world data and create studies centered on the methodologies taught in the course. This is an exciting opportunity for students to engage in real-world, cutting-edge methodologies.

Engendering Non-Discipline Specific Habits of Mind:

- Develop data-driven arguments for explaining social-science phenomena
- Develop the research skills that are so critical for humanities research and science research
- Cite sources; use critical thinking to synthesize various sources and their results to develop coherent conclusions
- Collaborate on research and, by the nature of learning to code, students will need to practice resilience and the refining of solutions
- Manipulating real-world data, students will become the aforementioned “architects” of the digital world – which is as real as the real world

ENGLISH

Advanced Topics in English

Course Description:

The focus of AT English will be on literature that departs from the conventional, with particular attention to poetry, novels, and plays. What happens when the story of a novel is told by all of its characters and not by just one? How do we decide what's true when faced with different versions of the same event? What is it like when a play starts at the end of the story and traces back to the beginning? Why do some poets write in traditional forms and others create their own? In Advanced Topics English, we will study writers and works that depart from the traditional, reading poetry, novels, and plays that break new ground, that play with structure and story-telling, and that offer multiple perspectives. Assignments will include traditional literary analysis, research into writers' processes, and creative experimentation with well-known works of literature.

Texts/Resources:

- "The Jilting of Granny Weatherall"
- "A Rose for Emily"
- *Mrs. Dalloway*
- *Atonement*
- *Cane* (possibly)

Topic Outline:

- I. Poetry
 - a. An examination of conventional forms (i.e. sonnet)
 - b. Departures from the conventional (i.e. free verse, visual poetry)
 - c. Particular focus on African-American poets who both embrace and reject traditional forms of poetry
 - d. A discussion of the politics that inform and result from those choices
 - e. A corollary discussion about the appropriation of African American musical forms (blues, jazz, rap, hip hop) by the dominant musical and social culture
 - f. Research to include interviews with authors regarding their poetic choices and literary criticism
- II. Fiction
 - a. The short story ("The Jilting of Granny Weatherall," "A Rose for Emily")
 - b. The novel (*Mrs. Dalloway*, *Atonement*, possibly *Cane*)

- c. Examine alternative narrative structures, their effects on readers, and their place in the literary tradition
- d. When does a gimmick become an innovation, and vice versa?
- e. What is the relationship between form and content?
- f. How do perspective and narrative structure affect our interpretations of character, conflict, and theme?

III. Drama

- a. Reading *Betrayal*
- b. Watching *The Last Five Years*
- c. Focus on alternate chronologies and their effect on perspective and interpretation
- d. Do they unsettle the reader?
- e. Why begin a work of literature at the end of the story and work back to the beginning?
- f. What, if any, role does dramatic irony play?

Assignments/Assessments:

- Regular short writing assignments in response to the works that we are reading, including both reflection and analysis
- At least one, possibly two, literary analysis papers that will include integration of secondary sources
- One project, to be designed in large part by students, that will ask students to re-envision a work of literature in an alternative structure (narrative or chronological)

Meeting the Advanced Topics Criteria:

- **Academic rigor and high intellectual press:** Students will read challenging literature; practice scholarly research; and be expected to produce work that is of high academic quality. They will be expected to demonstrate their facility with research beyond the world of Google and Wikipedia, accessing databases and scholarly journals.
- **Authentic, real world work:** Possible “real world” work could include discussions with authors (depending on author availability, IRL or virtually) and presentations to the Packer community.
- **Demonstrations of mastery and performance-based learning featuring student-driven design:** As noted above, students will complete a self-designed project at the end of the course. The project will include a presentation. Additional, smaller assignments might include research-based presentations on the history and context in which the works we read were written.
- **Interrogation, analysis, and synthesis of varied texts:** Students study works in a variety of genres and across a variety of eras, presenting a variety of voices and perspectives. Two works, *Mrs. Dalloway* and *Atonement*, are informed particularly by wars in Europe; students may be

asked to discuss how that setting lends itself to experimentation with literary style. *Betrayal* and *The Last Five Years* both focus on the beginning and end of love affairs, and students will compare the choices made in the dramatic renderings of the two works. In each unit, students will implicitly or explicitly compare and contrast content, theme, conflict, and style.

- **Active scholarship and original research; independent thinking:** Research, both formal and informal, will be an integrated, essential, nearly everyday element of the course. Some will focus on the background of the works; some on critical reception; some on the authors' crafts. Students will be expected to demonstrate regularly their facility with every element of the research process, from finding sources, to assessing them, to integrating them, to documenting them.
- **Deep understanding:** By the end of our class, students will be expected to demonstrate their understanding of the texts that we've studied; of the contexts in which they were written; of the authors' stylistic and narrative choices; and of the effects of those choices on readers.

Engendering Non-Discipline Specific Habits of Mind:

- Wrestle with difficult texts
- Establish sophisticated research practices
- Accept the non-traditional
- Put aside expectations and welcome the novel (not as in the literary form, but as in the new or innovative)
- Manage time effectively
- Draft, write, and revise
- Present student work

HISTORY

Advanced Topics in American Government

Course Description:

Advanced Topics in American Government explores the philosophical and constitutional underpinnings of the United States political system; major institutions of government; the roles of interest groups, political parties, elections and the media; as well as debates about national security, civil liberties and civil rights. Since we live in an interdependent world, an important objective of the course is to situate our government in a global context. How, for example, does our Constitution compare to the South African Constitution, or the European Convention on European Rights? Should a democracy guarantee social and economic rights as well as civil liberties and the right to vote? What are the implications of extreme economic inequality for democratic societies? How does our two-party system compare to parliamentary models of democracy? How is our nation involved in critical areas around the world? How can we equip ourselves as citizens and members of a global community to work for a more just, humane and sustainable future?

Through an examination of politics in the United States and case studies of government in other countries, students will develop a vocabulary and conceptual framework which will enable them to better analyze political developments at home and abroad. In the process students will cultivate their abilities to think and to write critically and persuasively, to interrogate sources and develop their abilities to make effective, well-informed presentations. In the second semester, students will conduct and present scholarly research on an urgent public policy issue of their choice: domestic - such as education, health care and job creation or international - such as development, security and sustainability.

Texts/Resources:

- Janda, Berry, Goldman, *Challenge of Democracy*, Twelfth (2014)
- Serow & Ladd, *The Lanahan Readings in the American Polity*, Fifth Edition
- An array of primary and secondary sources, including websites/media outlets encompassing an array of political ideologies, i.e. the *New York Times*, *National Review*, *The Nation*, *The Economist*, *The Guardian*, *Wall Street Journal*, *Democracy Now*, Fox News, and CNN.
- Audiovisual sources, including: Robert Reich, *Inequality for All* (2013); Bill Moyers, *The Secret Government* (1987); Laura Poitras, *Citizen Four* (2014); Eugene Jarecki, *Why We Fight?* (2005); Davis Guggenheim (AI

Gore), *An Inconvenient Truth* (2006); Spike Lee, *When the Levees Broke: A Requiem in Four Acts*, Charles Ferguson, *Inside Job* (2012)

Topic Outline:

- I. Constitutional Democracy
 - a. Paradigms of Democracy
 - b. Constitution
 - c. Federalism
- II. American Political Beliefs
 - a. Political culture and political socialization
 - b. Public Opinion
- III. Participation & Linking Institutions
 - a. Political Parties, Interest Groups & Social Movements
 - b. Voting, Elections & Campaigns
 - c. C. Media
- IV. Institutions of Government & Their Interaction
 - a. Legislature
 - b. Executive
 - c. Bureaucracy
 - d. Judiciary
- V. Civil Liberties & Civil Rights
 - a. Constitution & anti-discrimination
 - b. Privacy & national security
- VI. Public Policy
 - a. Economic
 - b. Environment
 - c. Social Welfare Policy
 - d. Foreign & Military Policy

Assignments/Assessments:

- In addition to tests students will demonstrate enduring understandings and key skills through a variety of assessments, some student-designed.
- Debates/round table discussions and oral presentations – i.e. role of judicial interpretation in changing nature of federalism, Affordable Health Care Act: pros and cons; role of social movements in influencing legislation, responsibility for economic crash of 2008, debates over privatization and campaign finance laws.
- As the campaign manager for a presidential candidate, design a campaign for your candidate, which reflects your strategic awareness of the factors necessary to win the election.
- Final project/assessment of the year will be the presentation of extensive research a student has conducted on some area of governmental policy (i.e. local, state, national or international)*. The idea is that students would apply principles they have learned about how government operates as

they explore a particular interest in politics and deepen their knowledge of the area. The culmination of the final project would be a 10-15-page paper, which would be presented in a public forum.

Meeting the Advanced Topics Criteria:

- **Academic rigor and high intellectual press:** The course aims to develop skills in analytical writing, research and oral presentation, which require the kind of independence and maturity characteristic of college-level work. In the process students should become more informed citizens capable of exercising critical judgment about institutions and policies that affect us all.
- **Authentic, real world work:** Application of principles of government to real-world examples gives meaning and vitality to the study of government. This approach enables students to appreciate the relevance of what they are learning, and to prepare them for informed citizenship.
- **Demonstrations of mastery and performance-based learning featuring student-driven design:** culminating papers, projects and performances
- **Interrogation, analysis, and synthesis of varied texts**
- **Active scholarship and original research; independent thinking**
- **Deep understanding** (aided by the opportunity for experiential learning)
See intent/design of the course and examples above, which pertain to the last four criteria.

Engendering Non-Discipline Specific Habits of Mind:

In accordance with the mission of the school:

- **Think deeply:** To think “deeply” requires both solitary reflection and dialogue with others. To think creatively and synthetically means considering an array of sources, perspective and voices. It means critical consideration of the society and world in which we live. It means dynamic, respectful and constructive collaboration, which is so vital to the demands of the 21st century.
- **Speak Confidently:** This is evident in the ability to engage in discussion of ideas, to make well-thought-out, poised, and engaging oral presentations as well as in the ability to write clearly and persuasively in one’s own voice.
- **Act with purpose and heart:** As Packer students have some degree of privilege and may well be shaping policies that affect other people, I would hope to instill a sense of empathy and compassion for those less fortunate. When considering social welfare policies for example, I would have students simulate what living on a severely restricted budget would be like, as part of what otherwise could be a very abstract debate with little

impact on our students but with significant consequences for those whose lives may be deeply affected by the terms of such policies.

Ultimately, “thinking deeply” and “acting with purpose and heart” must be interconnected, for thought without compassion - the brain without the heart – is folly. In the face of what can sometimes seem like insurmountable obstacles to meaningful change, we teachers are warriors against despair, fostering hope in our students.

Advanced Topics in European History

Course Description:

Advanced Topics in European History tracks the evolution of Western society from the Renaissance to the twenty-first century. In the first semester, students mine the raw material of the historian—the journals, letters, physical remains, literature, and art—in order to re-construct the world of the Renaissance, the Reformation, the Enlightenment, and the French Revolution.

In the first quarter, students discover the ideological and national foundations of the West in the Renaissance and Reformation. Our writing assignments address thesis development, use of evidence, argumentation, and the proper use of citations. The fall features a class tour of the Metropolitan Museum of Art that will launch a study of art as cultural artifact.

In the second quarter, students discover the scientific and societal foundations of the West in the Enlightenment and the Age of Democratic Revolutions. This unit features film and fiction to gauge the ability of literary and cinematic recreations of the past to both distort and inform our understanding of history. As the culminating project of the semester, each student will submit an example of his or her work in a medium to be decided in consultation with the teacher. Possibilities might include a piece of art, a short film, a work of literary fiction, or a series of lectures.

In the second semester, the class will examine critical topics that link Europe with Asia and Africa through units on the global impact of industrialization, nationalism, and imperialism, and on the achievements and tragedies of the 20th century.

The centerpiece of the second semester is the first step in a long-term research project on World War II. Using skills honed in the first semester, each student will research a specific artifact from private collections that include photographs, letters, unpublished memoirs and material relics from the war years. In May, we will acknowledge the seventieth anniversary of the end of the Second World War with each student presenting the results of her or his research.

Texts/Resources:

- Palmer, R. R., Colton, Joel, Kramer, Lloyd, *A History of Europe in the Modern World* 11th edition (McGraw Hill, 2014)
- Online primary source collection

- Machiavelli, Niccolò, *The Prince*
- Voltaire, *Candide*
- Kipling, Rudyard, *The City of the Dreadful Night*
- Frantz Fanon, *Wretched of the Earth*
- George Orwell, *Down and Out in Paris and London*
- Isabelle Eberhardt, *The Oblivion Seekers*
- Simone de' Beauvoir, *The Second Sex*

Topic Outline:

- I. Fall Semester
 - a. Renaissance in Italy and Northern Europe/Reformation and Counter-Reformation
 - b. The Intellectual Revolutions: The Scientific Revolution and the Enlightenment
 - c. The French Revolution and the Birth of Modern Society
- II. Spring Semester
 - a. The “Isms” including: Industrialism, Nationalism, Socialism and Capitalism, Feminism, and Imperialism
 - b. World Wars I and II
 - c. The Russian Revolution
 - d. The Cold War and Decolonization

Assignments/Assessments:

- Essays (primary source and research based critical analyses, in-class, short and long-term papers), including:
 - 17th century medical history document-based essay
 - The History Film: Depiction of the Past or Mirror to the Present?
 - Voices of Imperialism document-based essay
 - The French and Russian Revolutions Compared: A Search for Patterns
- Oral reports/presentations (both individual and group)
- “Creative” projects, (film, works of art, historical fiction)
- Tests
- During the first semester, each student will propose in writing to study a particular topic in depth and submit a presentation in a medium agreed upon with the teacher. This work may be done either by individuals or in partnership with another student.
- In the second semester, each student will research a particular artifact or unpublished document (memoir, letter, or report) related to the Second World War, and submit his or her work as part of what will be a multi-year class project.

Meeting the Advanced Topics Criteria:

- The reading and writing expectations are high.
- This course is designed to be roughly equivalent in structure, content, and skills to a first year college history course.
- While preserving chronology in unit sequence, the limited number of units permits a deep exploration of thematic content and allows students multiple opportunities to explore topics of interest and develop discipline specific and general academic skills.

Engendering Non-Discipline Specific Habits of Mind:

Students are expected to:

- Read, write
- Collaborate with one another
- Meet deadlines
- Attend to detail
- Speak before audiences
- Make use of technology
- Make use of online databases and local libraries

Inter-disciplinary elements of the course (film, literature, history of science, painting, sculpture, and architecture) will encourage the development of skills and habits complementary to those commonly associated with the study of history.

Making History: Conducting Scholarly Research in the Archives

Course Description:

This Advanced Topics course will enable students to conduct original research to gain insight into history by using the materials held in the Packer Collegiate Institute's archives located at the Brooklyn Historical Society (BHS). Working as research historians in the archives, students will develop advanced research and writing skills and provide feedback to others throughout the research process. Each participant will be expected to work confidently and with a high degree of independence throughout the research process by seeking to draw meaningful connections between items in the Packer collection and national and international events. For example, potential research questions might include: What role did Packer community members play with regard to World War I or what was the relationship between Packer and nineteenth-century religious movements? Students will present their research in two forms: first, in the composition of a scholarly essay suitable for submission to *The Concord Review* or comparable journals that publish quality works by high school students and, second, in a public presentation at a research seminar held at the end of the year. The class will meet four times a week, including one meeting every seven days at the Brooklyn Historical Society during the long block. Students will be expected to do substantial work in the archives outside of class sessions.

Texts/Resources:

- *Brooklyn Eagle Online*, Brooklyn Public Library Databases.
- Brooklyn Historical Society Archives
- Cronon, William. "Learning Historical Research." Accessed October 25, 2014, <http://www.williamcronon.net/researching/>
- Foner, Eric, Lisa McGirr, and American Historical Association, Eds. *American History Now*. Philadelphia: Temple University Press, 2011
- *The New York Review of Books*
- New York State History Conference
- Packer Collegiate Institute Archives (at BHS)
- ProQuest Historical Newspapers (Blackburne Library Database)
- *Reviews in American History*
- "State of the Field Series." *Journal of American History*

Assignments/Assessments:

- Finding Aid Assignment: Exploring both Packer Archives and BHS finding aids
- Analysis of Scholarly Article: Each student use JSTOR or Questia to locate one journal article related to students' topics of interest (or time period of interest); Short written analysis (2 pages): Identify and comment

- on Structure; Identify and comment on “scholarly apparatus” (e.g. footnotes, status of journal); Group discussion of analyses of scholarly articles
- Exploring the Historical Discourse: Identify a critical question to the topic or time period and explore how multiple authors address it; 1 page
 - One Page Primary Source Analysis & Presentation
 - Review of History Presentation
 - Research Paper (first draft) 15-20 Pages
 - Revision Plan: Self Assessment; Identification of missing primary sources; Identification of missing secondary sources
 - Research Paper (revision) 15-20 Pages
 - Formal Presentation of Research (20-25 minutes)

Meeting the Advanced Topics Criteria:

This course will provide students with the opportunity to become historians. Drawing on skills developed during earlier coursework in history, students will, from the outset of the course, travel the path of the scholar, following their own interests and engaging with a wide variety of primary sources and historical works in order to develop their own original analysis of a topic relevant not only to Packer’s history but also to the wider history of the United States.

- **Academic rigor and high intellectual press:** Students will deepen their understanding of how to utilize primary and secondary sources. They will need to work independently to create a synoptic overview of the historical literature on a topic of their own choosing. Additionally, they will sift through and locate primary sources from both the Packer Collegiate Archives and the broader Brooklyn Historical Society collection.
- **Authentic, real world work/interrogation, analysis, and synthesis of varied texts:** Students will undertake the work of the historian, by identifying compelling artifacts that shed light on important historical topics. They will approach these artifacts much as a scholar would, by using other sources to make meaning from their artifacts, and use what they find to address broader historical questions that populate historical debates.
- **Demonstrations of mastery and performance-based learning featuring student-driven design:** Students will execute a research and writing plan wherein they identify research questions, conduct secondary and archival searches, and engage in written analysis. They will engage in further iterations of research and revision to the point of a final, polished paper as well as a public presentation.

- **Culminating papers, projects, projects and performance/ Active scholarship and original research; independent thinking:** Over the span of the two semesters, students will compose and refine a substantial scholarly paper, focused on connecting original research to scholarly discourse on the topic, and, near the close of the year, will present their work at a conference that Packer (or the Brooklyn Historical Society) will host.
- **Deep understanding:** Through the process of undertaking their independent research, students will develop a deep understanding of the web of topics that extend out of the primary sources that they uncover in the Packer and BHS archives. This deep understanding will be revealed in their writing and during their presentation.

Engendering Non-Discipline Specific Habits of Mind:

This course aligns with both Packer’s mission statement and develops key twenty-first century skills students will need to negotiate their paths after graduating from high school. Creating a research agenda builds independence, intellectual curiosity, and helps students develop the capacity to shepherd a single project over the course of an entire academic year. Additionally, the collaboration (i.e. peer editing, group problem solving, presentation feedback) that will take place as part of this course will help prepare students and enhance their capacity to play an active role in working with others to move scholarly projects forward.

- **Think deeply:** The way that information is disseminated and the amount of information that is readily available to those with Internet access has transformed the global society in recent years. With the advent of easy access to the Internet, the amount of information undigested by a “trusted source” expanded exponentially. Sifting through raw information in the form of archival sources, and placing them into context by engaging with scholarly interpretations prepares students to be informed and critical “consumers” and “producers” of knowledge in the twenty-first century.
- **Speak confidently:** By developing, writing, practicing, and presenting their research, students will learn how to convey their own ideas in different venues. Working individually, in small groups, and as a class as a whole, students will identify what makes a good presentation. At the same time, students will have the opportunity to present, revise, and re-present their work, affording them valuable experience in the practice of public speaking.
- **Act with purpose and heart:** This course honors students’ intellectual interests and allows them the opportunity to design the shape of their research program over the course of the year. They will experience firsthand the fact that having a personal connection to a topic leads to greater intellectual engagement, even over a relatively long span of time.

MATHEMATICS

Advanced Topics in Differential and Integral Calculus

Course Description:

This is a rigorous, college-level course in calculus that will cover much of the content typically covered in the first semester of college. In class, most learning will be discovery based. Students will generate the ideas on their own through guided worksheets and other activities. Students will prove the theorems that we use. Students will be expected to demonstrate their knowledge orally, in written form and by solving problems. This course will require students to spend significant time outside of class practicing the skills they learn at school. We will emphasize a multi-representational approach to calculus, learning to express concepts graphically, numerically, analytically, and verbally. Making connections between these approaches will help students to develop a deep understanding of calculus.

Texts/Resources:

- Rogawski, Jon. *Calculus*.
- Seife, Charles. *Zero, The Biography of a Dangerous Idea*.
- Bardi, Jason. *The Calculus Wars*.
- Geogebra
- Desmos
- Wolfram Alpha Demonstrations
- Calculus in Motion
- Many other online resources

Topic Outline:

- I. Functions Review
- II. Limits and Continuity
- III. The Derivative Part I: Definition of the Derivative and Derivative Rules
- IV. The Derivative Part II: The Chain Rule and Implicit Differentiation
- V. The Derivative Part III: Related Rates, Derivatives of Inverse, Exponential and Logarithmic Functions, L'Hopital's Rule
- VI. Applications of the Derivative: Analysis of Functions
- VII. Applications of the Derivative: Curve Sketching, Rectilinear Motion and Optimization Problems
- VIII. Integration and Anti-differentiation
- IX. Applications of Integration
- X. Differential Equations and Slope Fields

Assignments/Assessments:

- The students will take a unit test at the end of each unit.
- Problem sets will be assigned 3 or 4 times throughout the year.
- The students will complete at least two projects, possibly more.

Meeting the Advanced Topics Criteria:

- Academic rigor and high intellectual press - we will be covering college level math in a way that will require students to reason analytically and quantitatively. Abstract thinking will be essential in this course.
- Authentic, real world work - applications of calculus will be used regularly. Mathematical modelling is fundamental to most STEM fields, and will be studied in this class.
- Demonstrations of mastery and performance-based learning featuring student-driven design: culminating papers, projects, projects and performances - Students will be completing at least two projects.
- Interrogation, analysis, and synthesis of varied texts
- Active scholarship and original research; independent thinking
- Deep understanding - students will be required to demonstrate their understanding of concepts orally and in written form. They will regularly work in groups, which will help them to solidify their understanding.

Engendering Non-Discipline Specific Habits of Mind:

- Problem solving
- Critical thinking
- Collaboration
- Exploration
- Quantitative Reasoning

Advanced Topics in Statistics

Course Description:

The purpose of this AT statistics course is to introduce students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Students are exposed to four broad conceptual themes: (1) Exploring Data: Describing patterns and departures from patterns, (2) Sampling and Experimentation: Planning and conducting a study, (3) Anticipating Patterns: Exploring random phenomena using probability and simulation, and (4) Statistical Inference: Estimating population parameters and testing hypotheses. Throughout each of these themes, students will be exposed to technological tools that assist in the analysis of data and creation of distributions as well as real, relevant studies that are just now being published.

Texts/Resources:

- Starnes, Yates, and Moore. *The Practice of Statistics*, 4th Edition.
- Kahnemann, Daniel. *Thinking Fast and Slow*.
- Ellenberg, Jordan. *How Not to Be Wrong*.
- *Radiolab* (<http://www.radiolab.org/>)
- *Freakonomics: The Hidden Side of Everything* (<http://freakonomics.com/radio/>)
- Geogebra software (www.geogebra.org)
- R programming language (<http://www.r-project.org/>)

Topic Outline:

- I. Collecting and displaying data
- II. Describing univariate data
- III. Describing bivariate data
- IV. Experimental Design
- V. Programming and Simulation
- VI. Probability and Random Variables
- VII. Sampling Distributions
- VIII. Confidence Intervals
- IX. Hypothesis Testing for One- and Two-sample Procedures
- X. Chi-Square Tests
- XI. Inference for Slope

Assignments/Assessments:

- Unit Problem Sets and Test

- Collecting, displaying, and analyzing univariate data (students choose a variable, collect a random sample, and analyze the distribution for features of known distributions)
- Response bias project (students design a survey to test whether subjects' responses are influenced by wording of questions, appearance of interviewer, etc.)
- Reading and analyzing research journal articles (students choose an area of interest and complete a critical reading of a research text to see statistical techniques in use)
- Op-Ed submission (students will write a response to a recently published claim (based on a scientific study) citing specific reasons for why they agree or disagree with how the study was conducted and what results are plausible.
- Generating statistics (students generate their own statistic -- a measurement obtained from a sample -- create its distribution, and assess its value as an estimator for a population parameter)
- First Semester Project: Programming Simulation (students learn introductory programming to simulate chance variation in order to measure likelihood of actual results)
- Year-end Project: Design and implement a statistical study or experiment to estimate a population parameter or assess the effect of a variable (students will pose a question, design an experiment, collect and analyze data choosing appropriate statistical methods)

Meeting the Advanced Topics Criteria:

- Academic rigor and high intellectual press
- Authentic, real world work
- Demonstrations of mastery and performance-based learning featuring student-driven design: culminating papers, projects, projects and performances
- Interrogation, analysis, and synthesis of varied texts
- Active scholarship and original research; independent thinking
- Deep understanding

In the world where we live in, we are constantly being bombarded with data and statistics -- this course is intended to teach students how to wade through this onslaught of information and draw their own conclusions. By teaching how data and statistics are gathered, how they are analyzed, and what conclusions can and should be made, the aim of the course is for students to become statistically

literate. We will dissect headlines touting recommendations based on research and dig deeper with careful readings of the actual underlying scientific studies. We will study the designs of classic experiments from the fields of psychology and behavioral economics, reading both the study itself as well as books that present the study as part of a larger theme. We will learn some basics of computer programming in order to design and analyze our own statistics as well as to simulate random chance (which is the basis for statistical inference). Students will design and implement their own statistical studies and experiments.

Engendering Non-Discipline Specific Habits of Mind:

- Persisting -- Students will have to struggle through problems until they can make sense of them.
- Managing Impulsivity -- The world of statistics can be sensational, and we are trying to teach students to be deliberate thinkers -- slow down and look carefully at all the evidence presented to think about appropriate conclusions.
- Thinking Flexibly -- There are a variety of ways to develop experiments, solve probability problems, etc., so students will have learn to consider multiple points of view and plans of attack.
- Striving for Accuracy -- This is tough for statisticians since there isn't often 'one right answer'. However, by implementing agreed-upon standards, students will learn to focus on the precision of their work (especially in their writing) in order to clearly communicate their ideas.
- Questioning and Posing Problems -- By having students think about questions they have about the world, students will learn how the material they are learning can be used to answer these questions. We want students to constantly be generating questions: some that are accessible using the skills they are learning and some that might require even more advanced techniques.

SCIENCE

Advanced Topics: Biology

Course Description:

The Advanced Studies in Biology course will lay the groundwork for students to succeed in college level courses intended for science majors. The course will require both independent inquiry and a capacity for a high volume of work, including a significant self-study component. Students are expected to enter the course having acquired a strong foundation in physics, chemistry, and biology and having honed their critical thinking and problem solving skills. Students will be expected to have the ability to read and interpret primary scientific sources, and design their own labs to test scientific questions.

Texts/Resources:

- Raven, Johnson, Losos, Singer. *Biology*, Seventh Edition
- Scientific Journals (*Science*, *Nature*, etc.)

Topic Outline:

- I. Ecology
- II. Biodiversity
- III. Evolution
- IV. Energy
- V. Genetics

Assignments/Assessments:

- Dissolved Oxygen Lab
- Photosynthesis & Respiration Lab
- Plant Pigment Lab
- Transpiration Lab
- Animal Behavior Lab
- Fruit Fly Lab
- DNA Fingerprinting of Lambda Digests
- DNA Barcoding
- Transformation Lab
- Protein Isolation Lab
- Capstone Project designed by individual students

Meeting the Advanced Topics Criteria:

- Academic rigor and high intellectual press
- Authentic, real world work
- Demonstrations of mastery and performance-based learning featuring student-driven design: culminating papers, projects, projects and performances
- Interrogation, analysis, and synthesis of varied texts
- Active scholarship and original research; independent thinking
- Deep understanding

Advanced Studies in Biology will be taught from a blanket approach rather than a progression. A multitude of topics will be weaved together, of which unlimited, individual threads can be teased out and analyzed. In this way students will gain both a local and global perspective of the living world and all of its interactions. The design of the course will allow its path to vary slightly from year to year depending on student interest and the availability of physical sites for study. Student assessment will be heavily weighted in research, experimental design, modeling, analytical skills, and ability to communicate, rather than formal testing.

Topics may be left open-ended, allowing students to both apply new ideas as well as transfer previous knowledge to challenging contexts. Additionally, labs and field studies will be used to discover new content, rather than just reinforce previously taught material. Exploration outside of the classroom will include areas such as the Brooklyn Bridge Park, Gowanus Canal and Hudson River. Longer periods will allow students time to interact directly with their surroundings. This will help them to develop insightful and meaningful questions about their living environment.

Students will spend the final weeks of the course designing a capstone project that they will present in lieu of a final exam. The capstone will enable students to delve even deeper into one of the main areas of study that they are most interested, ecosystems and genetics, in relation to our local environment. Students will be asked to come up with a research question they wish to answer and use primary sources as the basis for their experimental design. After carrying out their research, students will analyze and present their findings and include ideas for what additional studies would be useful to support their results.

Students will leave Advanced Studies in Biology with the confidence that they have completed authentic work in science that is relevant to the local area, but can also be extended into and applied to other aspects of their future coursework.

Engendering Non-Discipline Specific Habits of Mind:

Students will develop:

- Empathy
- Responsibility
- Global mindedness
- A deep understanding and a close connection to the living world

Advanced Topics in Chemistry

Course Description:

Advanced Topics in Chemistry will be a yearlong elective designed to replace the current AP Chemistry course. It will be formatted as a survey of advanced inorganic chemistry, structured around units that flow from intensive lab work.

Texts/Resources:

- Zumdahl and other college level texts
- Various readings as appropriate, particularly for the labs

Topic Outline:

- I. Review of Sophomore Chemistry (Atomic structure, stoichiometry, gas laws, precipitation reactions)
- II. Redox Reactions
- III. Kinetics
- IV. Equilibrium
- V. Acid/Base Chemistry
- VI. Thermodynamics
- VII. Electrochemistry

Assignments/Assessments:

- *Homework.* There will be weekly homework, largely consisting of problem sets. Students will be given the answers to the problems in advance. Students will be responsible for checking their own answers, working at problems until they are confident they understand the solution. The day the homework is due, only problems that posed a general challenge will be mutually explicated.
- *Tests and Quizzes.* Quizzes will be on specific topics, and tests will cover entire units and serve as cumulative assessments. Tests will be designed to encourage students to apply existing knowledge to challenging new situations.
- *Laboratory Work.* The course will feature multi-stage labs that culminate in a formal, “published” report. Student-directed inquiry will emphasize critical thinking, decision-making skills, and analytical engagement.

Meeting the Advanced Topics Criteria:

- **Academic rigor and high intellectual press:** The topics under review are not only advanced topics, they will be approached in a way that facilitates a complex array of engagement strategies, involving higher-

level mathematics, theoretical modeling, and synthesizing existing knowledge to solve new problems.

- **Authentic, real world work:** The lab experiments will be designed to utilize a wide inventory of equipment, and will model actual chemical procedures such as qualitative analysis. Many of the course's topics will evolve from genuine questions that arise during lab.
- **Demonstrations of mastery and performance-based learning featuring student-driven design: culminating papers, projects, projects and performances:** This area will be largely addressed through lab work. Students will carry out complex, multi-stage procedures, using laboratory notebooks to record their procedures, note their observations, collect data, and record ideas. Students will meet in groups to discuss conclusions and analysis, and then work to create first drafts of "formal reports." These drafts will be peer reviewed by other lab groups, with final "published" drafts assessed by the instructor.
- **Interrogation, analysis, and synthesis of varied texts:** Supplementary texts will be introduced into the course, including readings excerpted from scientific journals and papers, extracted chapters from books outside the main text, and non-technical works that reflect the topics under examination, particularly regarding societal impact.
- **Active scholarship and original research; independent thinking:** This is addressed in the discussion of lab work.
- **Deep understanding:** One of the hallmarks of this class will be testing how well students can take their existing knowledge and apply it to new situations. This will be done on unit tests as well as labs.

Engendering Non-Discipline Specific Habits of Mind:

- Excellent reading habits
- Learn to express themselves in writing both articulately and professionally
- Engage in meaningful peer review
- Partake in class discussions about real-world scenarios
- Measure, record, and interpret data
- Work in groups to achieve goals
- Work independently to deepen their understanding of the material through research.

Advanced Topics in Physics

Course Description:

Advanced Topics in Physics is designed to be the equivalent of a general physics course usually taken during the first year of college. For some students, this course will enable them to undertake, as freshmen, second-year work in the physics sequence at their chosen institution, or to register in courses in other fields where general physics is a pre-requisite. In less quantifiable terms, it exposes the student to what an undergraduate course might be like and, due to the nature of the curriculum and the teaching methodology, seeks to provide the student with enhanced problem solving skills and intellectual reasoning abilities which will serve the student well, whatever their chosen field or life endeavor. Beyond the pursuit of knowledge and understanding of physics at a level commensurate with a college-level physics class, will be the objective of connecting such knowledge and understanding to the task of creating an informed citizenry. Without such, particularly in a highly technological society such as ours, it is not possible to have a functioning democracy.

Students will attain a depth of understanding of the fundamentals and work toward competence in solving higher-level physics problems. The course will contribute to the development of the students' abilities to think clearly and to express their ideas, orally and in writing, with clarity and logic. In contrast to usual second year advanced courses, there is increased emphasis on critical thinking and applying knowledge to new situations, using qualitative arguments, backed by calculations and the mathematical formulation of principles. In addition, the nature, extent, and variety of laboratory work is greatly enhanced. The class is conducted in developmental lesson format and will be run similar to a university seminar.

Texts/Resources:

- Giancoli. *Physics*.
- Various supplemental readings as appropriate

Topic Outline:

- I. Kinematics
- II. Dynamics
- III. Energy, Work, Power, Linear Momentum
- IV. Circular Motion & Rotational Dynamics
- V. Electrostatics & Electricity
- VI. Electricity & Magnetism
- VII. Waves

Assignments/Assessments:

- **Laboratory Work.** The course will feature multi-stage labs that will often culminate in a formal report. Some of these reports will be individual, some submitted collectively by the lab group. The majority of the experimental procedures for experiments will be generated and designed by individual student groups. In addition to lab reports, several labs will be assessed on the accuracy of student data and their results during the experiment itself. Other than the actual writing of an individualized lab report, students are encouraged to discuss ideas, data and their analysis and meaning of their results with one another.
- **Homework.** Homework is generally assigned from the text, and consists of problem sets assigned to student pairs. Rotating pairs of students are responsible for completing 3-4 problems and submitting their hardcopy solutions to the teacher for scanning. Student pairs will present their homework problems to the class using the smart board and are subject to questioning by fellow students and the teacher. Homework completion and the ability to explain and present problems are part of the assessment. Students are encouraged to work together on all homework assignments
- **Tests and Quizzes.** Quizzes will be on specific topics, tests will cover entire units and involve challenging new applications.

Meeting the Advanced Topics Criteria:

- **Academic rigor and high intellectual press:** Students will be held to a higher standard than the AP's through the complexity of assessments, integration of concepts and skills at a high level, and through the level of initiative and independent work that is expected of the students. Enrollment is restricted to students with proven ability, who have illustrated a high level of performance in related introductory courses. AT Physics is directed toward independent, mature learners who are intellectually and emotionally ready for the academic rigor and independence required of college-level work. Rather than a focus on content coverage, the emphasis will be placed on going deeper into the conceptual underpinnings of some core ideas in physics, more detailed experiments, more long-term experiments, thorough data collection and analysis, and field trips. Students will be expected to synthesize knowledge in order to apply it to new situations, and apply what they have learnt in the first semester to their learning in the second.
- **Authentic, real world work:** The emphasis is not on the maximum coverage of content, but the scientific, social and practical relevance of a deep understanding of physics and exposing students to novel ideas, challenging concepts and giving them the opportunity and time to connect

with each other and their teachers in critical dialogue, interactive, experiential learning and skill-building which develops and further deepens their understanding of the physical universe. Students are given the time and opportunity to explore, debate and discuss knowledge and how we acquire it, as well as the meaning of concepts and their societal implications. The importance of epistemological development is stressed, as students are required to describe, explain, predict, critique each other's ideas, and defend or modify their own, in a collective and interactive growth process.

- **Demonstrations of mastery and performance-based learning featuring student-driven design: culminating papers, projects and performances:** This area will be largely addressed through lab work. Students will carry out complex, multi-stage procedures, thoroughly documenting their procedures, note their observations, collect data, and record ideas and analysis.
- **Interrogation, analysis, and synthesis of varied texts:** Various short readings will be given from the history and philosophy of science, beginning with readings from Aristotle, Galileo, Newton and more contemporaneous scientists and writers, such as Carl Sagan. All formal lab reports will incorporate a Theory section, where students will be required to carry out research on the origins of the concepts they are utilizing in any given experiment.
- **Active scholarship and original research; independent thinking:** In order to be successful at this level, independent thinking will be required throughout the course. The multi-faceted nature of laboratory work will be a major component of promoting a more holistic understanding of the processes of scientific thinking.
- **Deep understanding:** One of the hallmarks of this class will be testing how well students can take their existing knowledge and apply it to new situations. This will be done on unit tests as well as lab work.

Engendering Non-Discipline Specific Habits of Mind:

- “Science and technology influence every aspect of our lives, and in turn, we influence the direction and use of scientific and technological endeavors (Roberts 2007). In addition, science and technology are central to our well-being and success as individuals, as members of society, and as members of the global community...The purpose of understanding science and technology is not solely for the sake of learning, but rather to enable and motivate citizens to contribute to and engage in society (DeBoer 2000).”

- Part of the purpose of this course will be to educate students as responsible members of a global community, which means putting physics in its historical, cultural and social context. By definition this requires a multi-disciplinary approach, weaving in current events as they relate to physics, such as the November 2014 controversy concerning the decision by Dr. Matt Taylor, lead scientist on the Rosetta Philae probe that landed on the comet, to wear a shirt adorned with semi-clad women.
- Through this course, students should develop excellent reading habits; learn to express themselves in writing articulately and professionally; engage in meaningful peer review and debate; partake in class discussions about real-world scenarios; measure, record, and interpret data; work in groups to achieve goals; and work independently to deepen their understanding of the material through research.

WORLD LANGUAGES

Advanced Topics in Chinese Conversation and Culture

Course Description:

Chinese Conversation and Culture is a full-year course intended for qualified students who are interested in completing Chinese language studies equivalent to a third year college level in content and difficulty. The course is taught entirely in Chinese.

The objectives are to refine and further develop students' abilities to conduct semi-formal or formal discussion of social-cultural issues; to increase vocabulary by making context-based guess about the meaning of a new word; to write and present fully developed narrative and structured arguments; to learn to appreciate Chinese literature. Throughout the course, we will have in-depth discussions on Chinese culture and history. The course will focus on improving reading comprehension and writing skills through readings on social-cultural topics relevant to today's China. We will also rely on students' personal experiences to draw comparisons between American and Chinese cultures.

Students will have a chance to get involved in Chinese cultural events and immerse themselves in the class with authentic resources. Guest speakers will be invited to present on current China's social-cultural issues, and interactions with local Chinese school students will provide students more opportunity to apply the target language in daily discussion.

Texts/Resources:

- *Travel in Chinese*
- *Harvest Intermediate Chinese*
- Printed materials

Topic Outline:

- School and family
- Festival and customs
- Travel and transportation
- People and society
- Famous people and history
- Literature and arts, education
- Chinese geography

Assignments/Assessments:

- Oral presentations
- Individual and group projects
- Vocabulary quizzes
- Writing, listening and speaking tests

Meeting the Advanced Topics Criteria:

- **Academic rigor and high intellectual press:** students will have an opportunity to learn about Chinese cultures and current Chinese society. Through the study of Chinese cultures and social issues, students will re-examine their own cultures by comparing the east and west
- **Authentic, real world work:** students will read authentic Chinese novels and other published works, including engaging in digital media such as the latest Chinese movies and documentaries
- **Demonstrations of mastery and performance-based learning featuring student-driven design:** culminating papers, projects and performances: the individual and group projects will be based on students' options and preferences
- **Interrogation, analysis, and synthesis of varied texts:** students will learn to read Chinese novels to understand the target language in different contexts
- **Active scholarship and original research; independent thinking:** students will be asked to compare the east and west cultures and societies according to their research and studies
- **Deep understanding:** Hopefully, with this advanced course students will not only improve their language skills but also have a better understanding of Chinese cultures, society and history in general

Engendering Non-Discipline Specific Habits of Mind:

- Develop skills necessary for communicating accurately and authentically in Mandarin Chinese
- Explore Chinese cultures and current society
- Encourage students to develop open attitudes that will enable them to appreciate and thrive in a pluralistic world
- Working on fluency and precision
- Be inquisitive
- Work interdependently
- Communicate with clarity and heart
- Examine, compare, and contrast eastern cultures to western cultures

Advanced Topics in French Literature

Course Description:

This yearlong advanced topics French language and literature course, taught exclusively in French, will focus on the theme of “the stranger, the other” in three major texts: *Moderato Cantabile* by Marguerite Duras, *Pierre et Jean* by Guy de Maupassant, and *Mondo* by J.M.G. LeClézio. The course will expose students to the social, historical, and cultural contexts of the texts, offering a rich interdisciplinary approach to the study of literature. Poetry, visual art, and source materials (e.g., film, music, articles) will be used to establish the varying contexts and develop a deeper understanding of Francophone history and culture.

Students in this course will study advanced grammar structures as well as sophisticated vocabulary in the context of the texts. They will also acquire knowledge of the different literary terms and techniques necessary for analyzing literature, and refine their persuasive and analytical composition-writing skills.

Texts/Resources:

- Duras, Marguerite. *Moderato Cantabile*.
- de Maupassant, Guy. *Pierre et Jean*.
- LeClézio, J.M.G. *Mondo*.
- Deschamps, Eustache. *Anthologie de la poésie française*.

Topic Outline:

- I. Improving reading comprehension and written expression skills
 - a. Reading
 - b. Discussing
 - c. Analyzing
 - d. Writing about texts
- II. Improving oral expression and listening comprehension skills
 - a. Guided class discussions
 - b. Audiovisual aids that support students’ understanding of the texts
 - c. Student presentations

Assignments/Assessments:

- Students will read three major texts while maintaining a personal reading journal and writing three analytical papers.
- Through regular assessments on advanced vocabulary and literary terminology, students will develop a firm understanding of the literary

- terms and techniques necessary for analyzing literature, and will also have a mastery of a great deal of vocabulary from the texts.
- Through regular assessment of advanced grammar concepts, students will have a firm understanding of advanced grammar structures that they encounter in the texts and that they need to use in their analytical writing and class discussions.
 - Through group discussions, short written assignments, reading and analysis of source materials, collaborative work, and course lectures, students will gain an understanding of the writers and their place in French culture, as well as an understanding for the historical and social context of the works.

Meeting the Advanced Topics Criteria:

- The main theme of this course (“the stranger, the other”) is highly relevant to current events both in France and in other parts of the world (i.e., immigration, Charlie Hebdo killings, rise of xenophobic right wing political parties in parts of Europe, particularly France).
- Students will read, discuss, analyze, and write about three major French literary texts and numerous French poems
- Students will be required to express themselves in French only for this class
- Students will write at least three five-page literary analysis papers in French over the course of the year and engage in three collaborative learning projects
- In literary analysis discussions and writing, students will be challenged to make connections between texts and synthesize information

Engendering Non-Discipline Specific Habits of Mind:

- Students will be encouraged to persist in expressing themselves in French at an advanced level even when it becomes very challenging.
- The theme of this course will help foster understanding and empathy with individuals or groups in society who may be considered “strangers” or “outsiders.”
- High standards on assessments will ensure that students are striving for accuracy.
- While learning about, questioning, and analyzing texts from a socio-historical perspective will allow students to apply past knowledge to new situations.

Advanced Topics in Latin Poetry: Vergil, Ovid & Catullus

Course Description:

This advanced topics course is designed to build upon the students' introduction to poetry in level IV. In this course, students will experience two different genres of Roman poetry, Epic and Lyric. Students will discover the conventions, literary styles and characteristics associated with each respective genre. They will likewise explore the historical, cultural, social, and political context within which the literature on the syllabus was created, with an emphasis on the political perspectives and the historical events that accompanied the transition from the end of the Roman Republic to the advent of the Empire. The overall objective of the course will be to read, understand, translate and analyze selections from the works of three master poets: Vergil, Ovid and Catullus.

During the first semester, students will read selected portions from Vergil's epic, the *Aeneid*. Besides examining the *Aeneid* as a work of art, students will explore how Vergil's work was envisioned as an instrument of propaganda within Augustus' new regime. Students will become familiar with the Homeric precedent of the *Aeneid*, but will also become aware of the important role Vergil and his epic play within the continuing literary framework that, centuries later, would eventuate in such later epics as Dante's *Inferno* and Milton's *Paradise Lost*.

During the second semester, students will transition from the epic poetry of Ovid's *Metamorphoses*, to lyric poetry, as represented by the same poet in his lighter, love poems, the *Amores*. Students will then continue to explore personal, lyric poetry through an in-depth look at the lyrics of the Roman poet, Catullus. Besides comparing and contrasting the three poets and the two genres they represent, students will take a look at the significant influence exerted by each of these poets in later centuries, in both the realm of literature and of art.

The skills and topics developed during the course include accurate translation and critical interpretation; familiarity with the terms used to describe or analyze Latin grammar, syntax and literary style; the identification and analysis of figures of speech; the scansion of dactylic hexameter, elegiac couplet and hendecasyllabic meter; and the exploration of imagery, structure, characterization and related themes within each of the literary works we examine. At times, students will also read various sections or ancillary selections in English and will be asked to relate key themes, characters and ideas to the content read in Latin.

Texts/Resources:

- Pharr, Clyde. *Vergil's Aeneid, Books I – VI*. Bolchazy-Carducci Publishers, 1998.

- Garrison, Daniel. *The Student's Catullus*, Third Edition, Oklahoma Press, 2004.
- Richard LaFleur. *Love and Transformation: An Ovid Reader*, Second Edition, Scott Foresman - Addison Wesley, 1999.
- Besides the above texts, I plan on supplying handouts of secondary source articles and ancillary English readings.

Topic Outline:

- I. The legendary, quasi-historical foundation myths of Rome
 - a. A comparison of the poetic version of Vergil with the sober, prose history of Livy
- II. Leaders and leadership
 - a. What constitutes a good leader?
 - b. What elements are involved in the important Roman concept/quality of *pietas*?
 - c. In what way can Aeneas be seen as an evolving, rather than fully formulated, epic hero or leader?
- III. The role of women in antiquity
 - a. What options were open to women within the highly patristic societies of Greece and Rome?
 - b. When the predominant male voice in Roman literature talks about women, can we extrapolate reliable information, or are we actually learning more about the men whose voice is represented?
 - c. Why are most of the monsters in Greek and Roman mythology female?
 - d. A look at some of the larger-than-life female characters from ancient mythology, literature and tragedy: Clytemnestra, Phaedra, Medea
 - e. What we can learn from focusing on the female characters in the Aeneid: Juno, Venus, Helen, Dido, Creusa, the Amazon Penthesilea, the Bacchantes/Maenads
 - f. In what ways is Dido a reflection of both Euripides' Medea and the historical figure of Cleopatra?
- IV. Topics/themes addressed in the lyric poetry
 - a. Love and friendship
 - b. Mythology and religion
 - c. Moralizing and philosophy
 - d. The urban life of the city versus country life
 - e. War versus peace
 - f. Marriage in ancient Greece and Rome
 - g. What artists and writers have to say about art and writing
 - h. Soldiers and politicians; the Roman family
 - i. The long shadow cast by the precedent set by the Greeks
 - j. How the expanding empire affects travel, trade and the acquisition of new knowledge and ideas

Assignments/Assessments:

- Periodic assessments throughout the year, focusing on accurate translation; grammatical facility with the linguistic rules and syntactic structures of the language; the ability to cite, identify and explain various figures of speech; knowledge of how to scan the various meters employed; the ability to identify and distinguish between characters, to recognize episodes, and to address underlying themes
- PBL unit developed during the 2013-14 school year in order to encourage students to explore independently certain facets within the love poetry of Catullus
- A creative project, one that promotes either a piece of creative writing or that fosters the creation of a work of art

Meeting the Advanced Topics Criteria:

- **Academic rigor and high intellectual press:** The level of literature we'll be reading will certainly make use of the linguistic skills that have been presented throughout the Latin program at Packer. For students to have the opportunity to approach such literature by such authors at the upper level of their study of the language both appropriate and a suitable "step up the ladder" as far as the complexity involved, both of language and of ideas.
- **Authentic, real world work:** Students will be asked to approach the Latin literature within this course as if they were in an English course reading these works. Rather than merely being about translation, students will be asked to formulate their ideas and opinions about the stories and poems, to talk about them, develop and defend cogent theses, etc. They will also be comparing and contrasting both these authors as well as select literature both ancient and modern, something that will certainly aid them in the careful examination of texts within any discipline.
- **Demonstrations of mastery and performance-based learning featuring student-driven design:** culminating papers, projects, projects and performances: Students in this course will demonstrate mastery on periodic assessments that focus on such linguistic skills as accurate translation, knowledge of grammar and familiarity with figures of speech and will be asked to be conversant about certain appropriate, pertinent historical knowledge, as well. The use of project based learning will help deepen and enrich students' experience of the lyric poet, Catullus. Students will also engage in one creative project, whether written or a work of art.
- **Active scholarship and original research; independent thinking:** By simply embarking on this exploration of some of the most enduring and

influential masterworks of world literature, students are necessarily being asked to “step up to the plate” in a scholarly way that is as rigorous as it encourages their growth – both with and, in a transferable way, outside this course.

- Deep understanding: Students will be asked to think deeply, to take ownership of the task they are undertaking, to develop and to share their opinions and ideas about the texts we will be reading.

Engendering Non-Discipline Specific Habits of Mind:

- Work ethic
- Organization
- Attention to detail
- Careful reading of text
- Familiarity with writing styles
- Figures of speech
- Grammar and spelling (in Latin AND in English)

Advanced Topics in Spanish

Course Description:

In this class students will work to expand, refine and put to use their already advanced Spanish language skills through the study of a series of thematic units exploring the issues, ideas and attitudes most compelling to the contemporary Spanish speaker in today's world. Working with an array of authentic texts, audio and other materials, students will study advanced vocabulary and grammar constructs across a variety of registers, using the context to help shape their comprehension. In addition, students will analyze how language affects perception and perspective and be invited to challenge common preconceptions and assumptions from a native Spanish speaker's point of view. While the extensive use of present day source materials (e.g., press reports from print, radio, film, television and Internet sources) certainly brings a contemporary focus to the coursework, selected historical texts (both literary and scholarly in nature) will also be studied to further broaden the context of the concepts being investigated.

Throughout this course, students aim to consolidate and perfect the four skills involved in the mastery of a spoken modern language (reading, writing, speaking and listening). In order to attain an advanced level of proficiency in the four skills, the students continue to review and enhance their mastery of Spanish grammar and syntax. Students focus on the ordinary and idiomatic use of tenses, moods and function words so as to express themselves with increased sophistication. Upon completion of this course students will be able to engage in complex conversations on a variety of topics, employing idiomatic expressions that would enhance their communication with a native speaker. They are prepared to read documents, then summarize, synthesize, compare and reflect on them in spoken and written form. They are also successful in understanding conversations held with and between native speakers representing varied accents and regionalisms of the Hispanic world.

Texts/Resources:

- bbcmundo.com
- elpais.com
- elmundo.es
- United Nations Radio
- Cervantes Institute
- eldiariony.com
- eluniversal.mx
- Radio y Television Española
- Selected material from the books *Conversación y controversia*, *Temas*
- Selected short stories

- Excerpts from the novel *La reina del sur*

Topic Outline:

- I. Friendship
- II. Family and Love
- III. Identity and Authenticity
- IV. Technology and Innovation
- V. The Challenges of Contemporary Life
- VI. Art and Beauty
- VII. Health and Wellbeing
- VIII. Immigration and Communities
- IX. War, Social Conflict and Human Rights

Assignments/Assessments:

- Academic and informal (register) oral presentations
- Quizzes and tests
- Short, focused writing assignments
- Formal written essays (synthesis essays)
- Student-designed projects
- Creative writing assignments
- In-class performances (role-playing, etc.)
- Debates

Meeting the Advanced Topics Criteria:

- **Academic rigor and high intellectual press:** Students will be compelled to execute with a high level of precision in their speech and writing; They will constantly put to use previously- and newly-learned content and skills in order to delve more thoroughly into areas of thought and study; An emphasis on refinement and linguistic sophistication will be at the forefront.
- **Authentic, real world work:** Many primary sources will be used, including current-day newspaper reports, radio and television broadcasts. Other authentic materials, such as advertisements (not facsimiles), marketing material, administrative forms. First hand recordings of important literary and newsworthy figures will be studied as well.
- **Demonstrations of mastery and performance-based learning featuring student-driven design: culminating papers, projects, projects and performances:** Students will regularly share work with one another at various stages of completion and serve as editors and collaborators for each other; Students will present papers, projects and performances to another in formal and informal contexts, soliciting

- feedback, revising and updating based on peer guidance; Many projects' parameters and scope will be determined by the students themselves as they endeavor to conceptualize, outline and carry out assignments, narrowing their focus from a vast array of potentially interesting options; The most salient content- and skills-focused elements of assignments will frequently be identified and prioritized by students before actually developing the specifics of what the exercise or project will look like.
- **Interrogation, analysis, and synthesis of varied texts:** Students will work extensively on writing synthesis essays which incorporate elements from three or more written or auditory sources to inform an original thesis or perspective which is then thoroughly developed in written form; Students will read critically, investigating and questioning historical context, author bias, influences and tone when tackling readings of various types.
 - **Active scholarship and original research; independent thinking:** Students will seek out their own focus when writing or analyzing the writing of others, rather than fall in line with a pre-determined "angle" or thesis; Students are encouraged to use their own voice and investigate topics from a perspective they can connect with and build upon; Projects will be at least in part student-designed, allowing for research to be both shaped and driven by the students, allowing for maximum engagement and commitment from learners
 - **Deep understanding:** Depth not breadth will be paramount in this class. There is no need to cover a predetermined checklist of topics to prepare for an end of year exam, no rush to a prescribed finish line; Students will be putting previously learned tools to use repeatedly in a variety of contexts; Repetition, refinement and revisiting of skills and important content will pervade the curriculum, with an eye towards cementing knowledge for the students.

Engendering Non-Discipline Specific Habits of Mind:

- Precision
- Questioning assumptions
- Inquisitiveness
- Self-motivation
- Collaboration
- Empathy and seeing things through another's eyes
- Persistence
- Joyful exploration