



What is ACE?

Launched in 2015, ACE is an innovative, *competency-based program* at Brookline High School for 48 students who choose to be in a smaller educational setting where they can move at their own pace and engage in project-based and experiential learning. ACE provides a rigorous college-preparation pathway in which students are placed in multi-age classes based on their skill levels, can progress at their own pace and graduate with a Brookline High School diploma when they complete their content and skill competencies. Because the students are in small classes, they benefit from personalized instruction and a tight-knit community of staff and students. Students in ACE are expected to frequently reflect on their personal growth in developing habits of success and actively engage in the ACE community through their participation in their advisory and in community building activities.

How does ACE work?

ACE students take all of their core academic subjects including English, Math, History and Science in the program while still taking their electives, world language, and health and fitness classes in mainstream. They take two six-week academic classes at a time, averaging three courses in each content area in a given school year. When it is time to assess the student, ACE teachers offer a choice of performance-based assessments that, as much as possible, allow students real-world application of the skills. If a student does not meet a minimum level of competency, “basic competency,” in a class, they do not fail. Instead, they repeat it when it is offered next or take an on-line version of the course, if available. A limited number of ACE online classes are also available for students who want to move at a quicker pace.

Even though many ACE students would otherwise take an AP class, they choose not to because they are seeking a more innovative and experiential classroom experience. In addition, 11% of the 2018 ACE senior class took advantage of the dual-enrollment program with Roxbury Community College and successfully completed college classes which provided an authentic college experience. Students may also take college classes at Ben Franklin Institute of Technology.

In ACE, students also have the option of pursuing internships during school hours for academic credit. This gives students the chance to work with a mentor at a workplace of interest where they do a comprehensive project that is needed by that internship site.

In addition to their academic experiences, ACE students participate in community building trips and community service projects which allow students to build a supportive, trusting environment. ACE also works closely with families to be an active partner in their child’s success. Parents or guardians are expected to come in three times a year to participate in a student-run exhibition on their child’s academic progress.

Acceptance into the program follows an admissions process that includes the student, their family, guidance counselor and the ACE Coordinator. Prospective students must first meet with the ACE Program Coordinator to learn about the program and then schedule a time to sit in on classes to see if it is a good fit. They must also write a short essay to describe why they think the program is the right match for them. Finally, they must schedule an intake interview with their family and the ACE Coordinator.

What is Competency-Based Education in ACE?

The primary and the crucial difference between a competency-based system of teaching and assessment and a traditional model, is that students begin a learning pathway based on assessed skill level in each content area, and not on arbitrary courses. After being assessed for their knowledge in each content area, students are placed into two courses at a time that put them at their "learning edge" i.e. challenging, but not overwhelming. Students progress from course to course in each content area, based on their ability to demonstrate mastery in each area, independently and multiple times. Once they meet the assigned benchmarks in each course, they become "competent", and move on to the next course. If they finish a trimester without demonstrating competency in an area, they do not fail. Instead, they repeat that course when it is offered next.

Traditional Model	Competency-Based Model
Students are assigned to a grade (9,10,11, 12) based on their age.	Students are placed in courses based on their demonstrated skill not grade level.
Courses last for 6 months to a year.	Courses are 6 weeks long.
Students are assigned a grade rating (A, B, C, D, F, E) based on cumulative averages.	No one fails. Progression from course to course is based on demonstration of competence.

Other Unique Features of ACE:

Habits of Success: Students are taught and held accountable for tracking their growth in 7 key Habits of Success which include: *Goal Setting, Self-regulation, Collaboration, Self-awareness and Reflection, Perseverance, Curiosity, and Community Mindedness*. These are key skills that schools often assume students will learn on their own. In ACE, we feel they are essential for students to learn while they are in high school to be better prepared for college or other post-graduate plans. They are also critical skills for functioning well in our 21st Century work world.

Advisory: Students are split into small, multi-age advisories which meet twice a week. Advisory is a time for students to have one-on-one academic progress check-ins with their "advisors" (one of the four content teachers), do team-building activities with their peers, and have a "home-base" to talk through any issues of interest and concern from school or in their community.

Student Leadership and Community Building: Student voice is integral to how ACE runs. Students have an opportunity to serve on a student leadership team who facilitates regular community meetings. These meetings are a chance for celebrations/awards ceremonies to hosting outside performers to engaging in discussions on topics of interest. The program also involves students in the planning and carrying out of fun, team-building field trips.

ACE COURSES

It is important that the courses offered in ACE meet the needs of the students in ACE. Each fall, many new students enter ACE to replace those who have graduated. There is no way to anticipate who those students are or what their needs might be. Therefore, it is possible that some new courses not listed here will be created or that listed courses will not be offered.

ACE COURSE OFFERINGS

English:

Humanities Seminar
Genre Reading
Novel Concepts
Creative Writing
Informational Writing
Dramatic Literature
Conflict and Characterization in Literature
Thematic Literary Analysis
Literary Criticism
Personal Narratives
Comparative Writing
Independent Reading
Capstone 2 & 3

Must have a minimum GPA of 2.5 or higher

Dual Enrollment w/ Ben Franklin Inst. of Technology

Must be an 11th or 12th grader who is interested in earning a full year of a 2 year BFIT Associates Degree while in high school. Free tuition, fees and books.

If a student is not sure they want to go to BFIT after BHS, they may still take courses for credit in high school or transferable college credit.

Math:

Statistics Seminar
Algebra I
Algebra 2A
Algebra 2B
Algebra 2C
Pre-Calculus A
Pre-Calculus B
Pre-Calculus C
Calculus A
Calculus B
Calculus C
Math for Economics
Mathematical Logic & Problem Solving
Advanced Algebra with Financial Applications

Dual Enrollment with Roxbury Community College

Must meet prerequisites set by BHS, ACE, and RCC for the particular course of interest



Science:

Cell Biology
Ecosystems
Body Systems
Genetics
Chemical Elements
Population Dynamics
Evolution and Taxonomy
Chemical Reactions
Nutrient Cycles
Advanced Lab in Forensic Science
Biochemistry Lab
Biology of a Pandemic

History:

US/World Cultural Identities
US/World Decolonization
US/World Revolutions
US/World Civics

US/World Political Systems
US/World Social Justice Movements
US/World Human Rights
US/World Slavery & Resistance
Capstone 1

Career & Internship Exploration:

Career & Internship Exploration Seminar (CIES)
• Stage 1: Interest Exploration
• Stage 2: Informational Interview
• Stage 3: Job Shadow
• Stage 4: Internship Exploration

Internships with Comprehensive Academic Projects

6 Week-36 Week Internship with projects that meet needs of internship and address academic content benchmarks. To be determined by supervising ACE teacher and internship mentor.
Must meet prerequisite of CIES Stage 4: Internship Exploration

ACE ENGLISH**EN0720 Humanities Seminar**

What actions should we take to be informed participants in our democratic society? This class is an introduction to the expectations for ACE Humanities courses including metacognition, self-regulation, and competency-based reading, writing, and speaking through the content of media literacy and current events. The course culminates in a presentation and two short responses summarizing each student's individual Theory of Informed Citizenship.

Grade: 10-12

Credit: .33

EN0820 Comparative Writing

In this upper-level writing class, students will select a theme that will give focus to their reading and writing. Each student will read a novel or memoir that explores the class theme. Additionally, students will read shorter, thematically connected works during class sessions. The students will first practice writing techniques that support sophisticated comparison of texts, and to close the course the students will write a thematic analysis of their books and compare the treatment of the theme with that of the class texts.

Grade: 10-12

Prerequisite: Humanities Seminar

Credit: .33

EN0020 Genre Reading

This introductory reading class is designed to support comprehension, analysis, and appreciation of literature across genres. The course will focus most prominently on the genres of short fiction, poetry, and short non-fiction. Class discussions will help students comprehend and analyze texts. Students will practice annotation strategies and will complete one annotation project. In that project, students will create a visual product that depicts their analysis of a short text. Finally, students will complete an end-of-course project that presents a thematic analysis of works from multiple genres.

Grade: 10-12

Prerequisite: Humanities Seminar

Credit: .33



EN0520 Creative Writing

This writing class helps students produce works of short fiction and poetry. In the opening weeks of the course students will study short stories and identify the techniques authors use to tell their stories. Students will examine narrative structures as well as elements of style before putting their understanding to work on their own stories. In the second half of the course students will shift to examining poetry. Each student will write and perform an original poem.

Grade: 10-12

Prerequisite: Humanities Seminar

Credit: .33

EN0620 Informational Writing

In an increasingly technological society, students need to be comfortable navigating and utilizing the vast tools and communities the internet affords us. This class is designed to introduce students to basic research and technology skills, in addition to writing skills, by creating personal blogs focused on student-selected topics. Students will conduct research, taking notes and creating citations for their sources along the way. They will outline and draft posts, utilizing rubrics to self and peer edit. After gaining teacher-approval that the post's content and grammar is of publishable quality, students are taught how to format their writing on their blog's website, using sites such as WordPress, Wix, and Weebly. These basic skills are the foundation of modern independent businesses as well as journalism, giving students an authentic experience in potential career paths while strengthening outlining, drafting, and editing skills.

Grade: 10-12

Prerequisite: Humanities Seminar

Credit: .33

EN0220 Novel Concepts

In Novel Concepts, students will read novels in literature circles. Not only will students learn how key literary elements manifest in a novel-length text, but they will also reflect on their ability to sustain silent reading, using strategies to become aware of their challenges and ultimately improve their reading skills. Students are given time in class to practice reading strategies, but are expected to continue reading outside of class. The class culminates with an analytical paper, group project, or creative project that draws upon the conclusions of the analysis.

Grade: 10-12

Prerequisite: Humanities Seminar

Credit: .33

EN1820 Dramatic Literature

In this course, students will read plays from August Wilson's Century Cycle, which included works such as *Ma Rainey's Black Bottom* and *Jitney*. The class will read the plays together as each student begins to focus on a particular character. Students will write an analytical essay about the character. Then they will select one of that character's monologues, analyze it, memorize it, rehearse it, and perform it publicly. This course will prepare interested students for competition in the school and regional levels of the National August Wilson Monologue Competition.

Grade: 10-12

Prerequisite: Humanities Seminar

Credit: .33

EN0420 Thematic Literary Analysis

In this course, students will analyze works across multiple genres and media. The class will select a theme that will give focus to their reading and analysis. Each student will join a book group and read a novel or memoir that explores the class theme. Additionally, students will read shorter, thematically connected works during class sessions. Throughout the course, students will study podcasting and create their own outline of an ACE Literature Podcast episode. As the students read their books, they will practice podcasting. In the final week of the course each group will record its episode for publishing on the ACE English website.

Grade: 10-12

Prerequisite: Humanities Seminar

Credit: .33

EN0320 Conflict and Characterization in Literature

This upper-level reading class focuses on the elements of conflict and characterization in literature. Each student will join a book group and read a novel. The students will study the conflicts within the novel and write an analytical paper on one of the conflicts. Students will also study how the author uses style to develop characterization. The final assignment will be a creative writing piece that incorporates the elements of style that students study in their book groups.

Grade: 10-12

Prerequisite: Humanities Seminar

Credit: .33



EN1120 Personal Narratives

This course is designed for graduating students to reflect upon their lives and their futures post-high school through creative nonfiction writing. The final product is an essay that can be used for college applications. Students read personal narrative examples ranging from NPR's *This I Believe* essays to previously graduated BHS students' college essays. A core tenant of the class is frequent peer feedback sessions and self-reflective practices. This class gives students space to practice the project-management and independence that they will need for college.

Grade: 10-12

Prerequisite: Humanities Seminar

Credit: .33

EN1520 Literary Criticism

In this course, students will study social justice-oriented literary theories. Each student will join a book group and read a novel or memoir. Students will study the work through the lenses of Feminist Theory, Critical Race Theory, and/or Marxist theory. Additionally, students will read shorter works during class sessions. Throughout the course, students will study podcasting and create their own outline of an ACE Literature Podcast episode. As the students read their books, they will practice podcasting. In the final week of the course each group will record its episode for publishing on the ACE English website.

Grade: 10-12

Prerequisite: Humanities Seminar

Credit: .33

ENXXXX Independent Reading

This online course is designed to support students in furthering their appreciation for reading. The curriculum guides students in identifying the genres, authors, and subjects that interest them the most. Students will make use of the resources of the BHS Library to choose a book to read and analyze on their own. Working with the teacher, students will create a reading calendar and set up weekly meetings with the teacher to discuss the book and progress in the course. Students will complete reading journals to help them track plot, character development, and other literary elements. Students will work with the teacher to create a project in support of a community of readers. Finally, they will write an analytical essay about the book.

Grade: 10-12

Prerequisite: Humanities Seminar

Credit: .33

EN1320 Capstone 2

EN1420 Capstone 3

These are the 2nd and 3rd Capstone courses that all ACE students must complete in order to graduate. In EN1320, students use the extensive research that they completed in their first Capstone class (SO1320) to then outline, draft, and edit a 10-page paper that details their research findings. This paper must take a position on the issue that they chose and write a thorough argument to support their position, citing facts from their research and citing them in a detailed bibliography that follows standard MLA format. Students must submit multiple drafts for teacher and peer feedback to craft a college-level paper. In EN1420, students carry out and document their "legacy" projects such as leading workshops in elementary schools, attending protests against gentrification, volunteering at food banks and soup kitchens, and more. The course then culminates in a public Capstone presentation to their family and peers which includes a powerpoint presentation capturing their major research findings and chronicling their legacy project work.

Grade: 10-12

Prerequisite: Humanities Seminar & Capstone 1

Credit: .33

ACE Mathematics

The ACE Math Course Sequence focuses on the development of competence in algebraic concepts through an exploratory approach that incorporates project-based and student-centered learning. ACE courses are derived from traditional high school math courses: the topics that would be covered in a year-long class are split into three separate modules each of which is worth a third of a credit. Some courses may be taken out of sequence as long as their individual prerequisites are met. Students must demonstrate competence on benchmark skills identified for each course - this competence is the basis of the credit and grade determination.



MA0920 Statistics Seminar

All students entering ACE take a pair of seminar courses which serve to introduce students to competency-based education and the ACE program. The statistics seminar is meant to prepare students to interpret and analyze statistical information in future math and science courses. Topics covered include measures of central tendency, direct and indirect variation, rates, percentages and other foundational measures, as well as probability and distribution.

Grade: 10-12

Credit: .33

MA0420 Algebra 1

An exploration of linear functions focused primarily on algebraic and graphical representations. Students will construct and solve systems of linear equations and linear inequalities and then will explore linear programming and other applications from economics through the central projects in the course.

Grade: 10-12

Prerequisite: Statistics Seminar

Credit: .33

MA0120 Algebra 2A

An exploration of functions in which students develop an analytic framework for making use of structure when working with transformations, combinations, compositions, and inverses of functions. Students also explore rates of change and develop fluency in function notation, literal equations, and the analysis of key features across multiple parent functions.

Grade: 10-12

Prerequisite: Statistics Seminar & Algebra 1

Credit: .33

MA0220 Algebra 2B

An exploration of quadratic functions focused primarily on algebraic and graphical representations. Students will apply algebraic techniques to quadratic expressions to reveal key features of their corresponding graphs. Students will use technology to model phenomena in the real world with quadratic functions through the central projects in the course.

Grade: 10-12

Prerequisite: Statistics Seminar & Algebra 2A

Credit: .33

MA0320 Algebra 2C

An exploration of exponential and logarithmic functions focused primarily on algebraic and graphical representations. Students will apply algebraic techniques to exponential and logarithmic expressions to reveal key features of their corresponding graphs. Students will develop an understanding of the properties of exponents and logarithms and will explore various financial and scientific mechanisms (compound interest, annuities, radiometric dating, population modeling, etc.) through the central projects in the course.

Grade: 10-12 Prerequisite: Statistics Seminar & ~~Algebra 2A~~ & Algebra 2B Credit: .33

MA0820 Precalculus A

An exploration of polynomial and rational functions focused primarily on algebraic and graphical representations. Topics include: synthetic division, the remainder theorem, the rational roots theorem, and the fundamental theorem of algebra. Students will examine the use of polynomials in graphics, animation, and design through the central projects of the course.

Grade: 10-12 Prerequisite: Statistics Seminar & Algebra 2C Credit: .33

MA0520 Precalculus B

An exploration of right-triangle, oblique-triangle, and unit-circle trigonometry. Students will examine the use of triangle-trigonometry in surveying and navigation, and will also apply sinusoidal models to observable phenomena drawn from different fields. Through the central projects in the course, the students will also have the opportunity to develop an understanding of the use of parametric functions.

Grade: 10-12 Prerequisite: Statistics Seminar & PreCalc A Credit: .33

MA0620 Precalculus C

Students will use technology to model datasets and related quantities drawn from various fields; through critique and examination of these models, students will continue to develop their understanding of the behavior of elementary functions. Students will use regression and linearization techniques to develop a framework for calculus and will explore preliminary calculus concepts including: sequences and series, limits, and rates of change.

Grade: 10-12 Prerequisite: Statistics Seminar & PreCalc A & PreCalc B Credit: .33

MA1220 Calculus A

An exploration of continuity, limits, and derivatives. Students will develop methods of differentiation for polynomial, radical, and rational functions. Students will examine the derivatives of exponential and trigonometric functions through experimentation with graphical representations using technology.

Grade: 10-12 Prerequisite: Statistics Seminar & PreCalc C Credit: .33

MA1320 Calculus B

An exploration of integrals. Students will develop methods of integration for polynomial, radical, and rational functions. Students will examine the integrals of exponential and trigonometric functions through experimentation with graphical representations using technology.

Grade: 10-12 Prerequisite: Statistics Seminar & Calc A Credit: .33

MA1420 Calculus C

An exploration of the applications of derivatives and integrals. Students will also develop additional techniques for differentiation and integration of composite functions. Students who complete Calculus A, B, and C will be prepared for success in college Calculus courses.

Grade: 10-12 Prerequisite: Statistics Seminar & Calc B Credit: .33



MA_____ Mathematical Logic & Problem Solving

An exploration of topology that includes a study of knot theory and logic. Students will apply techniques of reasoning both abstractly and quantitatively in order to describe and model physical mathematical phenomena. Through the central projects of the course, students will develop an understanding of the properties of topology, applications of knot theory, polyrhythms in music, and the application of mathematical logic to real world situations.

Grade: 10-12

Prerequisite: Statistics Seminar, Algebra 1

Credit: .33

MA_____ Math for Economics

An application of mathematics to economic case studies in areas such as unemployment, monetary policy (including budgeting and taxation), investment strategies, entrepreneurship and venture capital, and actuarial science.

Grade: 10-12

Prerequisite: Statistics Seminar, Algebra 2C

Credit: .33

MA_____ Advanced Algebra with Financial Applications

An application of mathematics to the analysis of monetary policy (including budgeting and taxation), investment strategies, entrepreneurship and venture capital, actuarial science, and personal finance. Presuming facility with radical, quadratic, exponential and logarithmic equations as well as regression techniques, the central projects of the course require students to critique the strategies or reasoning of others, to apply advanced algebra to real world scenarios using technology, and to represent their thinking both algebraically and graphically.

Grade: 10-12

Prerequisite: Statistics Seminar, Algebra 1, Algebra 2C

Credit: .33

ACE Science

SC0520 Ecosystems

Students will identify biotic and abiotic factors in an ecosystem, and characterize ecosystems into the various biomes represented across the world by researching and presenting a poster on the ecosystems of various locations around the world, taking the class on a “Biome Safari.” In the next unit students relate traditional food and culture to the ecosystem that birthed it by drawing connections between producers, consumers, and decomposers in a food web, and explaining how energy is transferred through photosynthesis and respiration. Students will build a model to show this transfer of energy through the trophic levels of an ecosystem, before analyzing a trophic cascade relating to an invasive or extinct species.

Grade: 10-12

Prerequisite: Humanities Seminar & Statistics Seminar

Credit: .33

SC0720 Population Dynamics

In this course, students will understand how survival of the biotic parts of an ecosystem depends on the abiotic components by explaining the cycling of water in an ecosystem, describing the importance of natural resources for human society and categorizing them as renewable or limited. Students then analyze how humans impact an ecosystem through resource consumption and habitat destruction by doing a case study on an endangered species. Students then use computer modeling to investigate the relationships between population size, carrying capacity, and competition, and then recommend ways to reduce the level of human impact on the environment through a social action oriented sustainability campaign.

Grade: 10-12

Prerequisite: Humanities Seminar & Statistics Seminar

Credit: .33

SC1520 Nutrient Cycles

This class focuses on the importance of natural cycles in environmental sustainability, emphasizing the Carbon Cycle as a source of both problems and solutions to climate change. Students first model the Carbon cycle in a research project focusing on forces and sinks of the Carbon cycle, paying special attention to combustion, respiration, and photosynthesis in terms of their products and reactants. Students then investigate how humans may impact climate change and evaluate ways to reduce the level of human impact using a controlled experiment of the student’s own design. Students employ greenhouse effect chambers and use computers to perform advanced mathematical analysis of a single aspect of climate change, then write a 5-10 page, college-level lab report following scientific journal format.



Grade: 10-12

Prerequisite: Humanities Seminar & Statistics Seminar

Credit: .33

SC0120 Cell Biology

This introductory biology course first asks students to define the characteristics of life and use them to evaluate the presence of life in a mock trial. Students then build physical 3D models or write analogies illustrating how the parts of the cell work together to perform life's functions, before classifying cells as prokaryotic, eukaryotic, plant, animal, bacterial, protistic, or viral. The final unit emphasizes the importance of osmosis, diffusion, and the selective permeability mechanisms of the cell membrane in a lab using dialysis tubing and various solutions.

Grade: 10-12

Prerequisite: Humanities Seminar & Statistics Seminar

Credit: .33

SC0420 Genetics

Students will explain how the subunits of DNA determine its structure and function and model the parts and processes of RNA transcription and translation in a series of quizzes requiring students to build Lego DNA strands. Next students will relate superhero origin stories to explain how mutations in a DNA sequence may occur and classify mutations according to their effect. A unit on the basis of genetic variation debunks race as a genetic construct, and then illustrates how meiosis in sexual reproduction results in genetic variation. Students then research Gregor Mendel's experiments and use punnett squares to predict the possible genotypic and phenotypic ratios resulting from a genetic cross, and compare and contrast complete, incomplete, and codominance, polygenetic traits, and multiple alleles. Finally, students analyze the benefits and risks associated with stem cells, cloning, or genetically modified foods in a research poster project.

Grade: 10-12

Prerequisite: Humanities Seminar & Statistics Seminar

Credit: .33

SC0220 Body Systems

This biology class first requires students to describe the levels of specialization within multicellular organisms, then identify the structure and function of the major human organ systems. Students then investigate homeostasis using a frog dissection, and write a summary or give a presentation explaining how homeostasis maintains an optimal internal environment for the functioning of body systems. Students will then apply knowledge of the reproductive system to sexual health by developing informational pamphlets for teens. The final project asks students to explain how the respiratory and circulatory systems cooperate to exchange oxygen and carbon dioxide and apply knowledge of the muscular, nervous, and skeletal systems to exercise in an integrated research project on the exercise physiology of a particular athletic activity of the student's choice.

Grade: 10-12

Prerequisite: Humanities Seminar & Statistics Seminar

Credit: .33

SC0020 Evolution and Taxonomy

Students learn to identify the characteristics and give examples of the major taxonomic kingdoms and describe how life is classified from broader into more specific categories by illustrating a calendar that proportionally shows all of geologic time. Students then apply the current taxonomic system to classify organisms in a scavenger hunt involving a trip to the Harvard Natural History Museum. Students then use a series of game simulations to learn about evolution, and are able to explain how populations adapt to their environment through natural selection and distinguish between and give examples of natural, artificial, and sexual selection. Finally, students describe pre-Darwinian ideas about the origin and unchanging nature of life on earth and explain how Darwin's observations led to the development of the theory of evolution, evaluating evidence for the theory of evolution in a mock trial where they are lawyers defending Charles Darwin in court.

Grade: 10-12

Prerequisite: Humanities Seminar & Statistics Seminar

Credit: .33



SC1720 Chemical Elements

Students first distinguish between physical and chemical changes of matter in an investigatory lab activity. Students then learn to describe and classify the characteristics of matter by defining and differentiating between elements, compounds and mixtures, and describing the states of matter in terms of energy, particle motion, and physical properties. Students use atomic models to better understand the structure of an atom by describing the development of modern atomic theory, and identifying the major components of the atom and how they interact. Students then analyze trends on the Periodic Table including electron configurations and the placement of families of metals, non-metals, and metalloids by adopting and characterizing an element into a costume or cartoon character. These characters and the properties of the elements they represent are then presented and pitted against each other in role play “battles” versus each other where students develop knowledge of chemical and physical properties into attacks and defenses. Finally, students describe how elements form bonds and compounds, naming chemical formulas and classifying ionic and molecular compounds.

Grade: 10-12 Prerequisite: Humanities Seminar & Statistics Seminar Credit: .33

SC0820 Chemical Reactions

In the first unit, students learn how to represent conservation of mass during chemical changes using chemical equations and appropriate calculations. This unit asks them to apply the law of conservation of mass to balance chemical equations, use the concept of moles to convert mass, moles, and number of particles, and calculate the mass of one part of a chemical equation when given the mass of another part. Students will then classify the different types of chemical reactions including endothermic vs. exothermic, single vs. double displacement, synthesis vs. decomposition, and combustion. The final unit is on solutions. Students first describe the concentration of a solution in terms of molarity, and characterize acid vs. base vs. salt solutions, then use the pH scale to characterize acid and base solutions and apply knowledge of acid-base neutralization to perform a titration of an acid of unknown molarity.

Grade: 10-12 Prerequisite: Humanities Seminar & Statistics Seminar Credit: .33

SC1420 Biochemistry Lab

First, students must explain the structures and function of the digestive system. From there, students identify, illustrate, and summarize the function of the major nutrients, and give examples of foods that contain high amounts of particular nutrients. Once this basic biochemistry is understood, students are ready to describe the relative amounts and combination of nutrients that constitute homeostasis in the human body, and test a common food to quantify the relative and absolute amount of a nutrient that it contains. Each student analyzes a different food available at the school and performs a series of four labs to test its sugar, lipid, starch, and protein content, then must synthesize the nutrient data from other students experiments to recommend constituents of a balanced diet in a ten page lab report.

Grade: 10-12 Prerequisite: Humanities Seminar & Statistics Seminar Credit: .33

SC1620 Advanced Lab in Forensic Science

Students first understand the scientific basis of criminal investigation by relating the parts of the scientific method to the criminal investigation process, and giving examples of types of evidence that may be analyzed. Students then learn to describe and implement methods of identifying victims and suspects of a crime including applying knowledge of fly larvae development to determine time of death, classifying an unknown fingerprint, matching patterns to determine the identity of a DNA sequence, and analyzing blood spatter to infer location and type of weapon used. The final project requires students to synthesize all that they have learned to construct a plausible scenario and sequence of criminal events based on crime scene evidence, and present how they would solve the case using forensic techniques.

Grade: 10-12 Prerequisite: Humanities Seminar & Statistics Seminar Credit: .33

SC _____ Biology of a Pandemic

This course explores the virology, epidemiology, and public health response to the COVID-19 pandemic. First, students explain how the specialized structures of the immune system work together to fight disease with special attention to the immunological mechanism of vaccination. Next, students describe factors pertinent to the virology, epidemiology, and medical interventions being used to combat COVID-19. The last unit asks students to evaluate the effectiveness of public health measures being used to combat the pandemic.



ACE Social Studies**SO1520 US/World Revolutions**

Why do people revolt? What allows a revolution to be successful? Students will explore the context, causes, strategies, and factors (stakeholders, key events, etc...) that lead to the success or failure of a revolution. They will focus on finding the common and divergent factors between the American Revolution and global revolutions (i.e. Russia, Iran, Haiti, France, or Cuba). The class culminates in a project of the student's choice which showcases their individual Theory of Revolution.

Grade: 10-12

Prerequisite: Humanities Seminar & Statistics Seminar

Credit: .33

SO0220 US/World Political Systems

What are the essential preconditions for effective democracy? In this class, students will do a comparative analysis of US and global governmental structures and principles through case studies (i.e. Indonesia, the Philippines, Turkey, Ukraine, South Africa, the United Kingdom, Uruguay, etc...) The class culminates with students designing a government based on their own Theory of Democracy.

Grade: 10-12

Prerequisite: Humanities Seminar & Statistics Seminar

Credit: .33

SO1620 US/World Slavery & Resistance

Are Black People free? This class is an analysis of slavery and freedom through the US Civil War and Reconstruction including the continued repercussions of slavery and resistance to date in the US and around the world (i.e. Mass Incarceration, Black Lives Matter, Effects on West Africa, etc...). The class culminates in an Anti-Racist Action Plan which actualizes a part of each student's Theory of Liberation.

Grade: 10-12

Prerequisite: Humanities Seminar & Statistics Seminar

Credit: .33

SO1220 US/World Decolonization

How do we decolonize our realities? This class is a comparative analysis of methods used to resist European and US Imperialism including the motivation, strategies, impacts, and resistance to imperialism within the specific contexts of the Americas, Africa, and Asia (i.e. British Colonial India, The Opium Wars, Scramble for Africa, French Colonial Indochina, US expansion and intervention in Latin America). The class culminates in an argumentative and document-based essay applying students' individual Theory of Decolonization

Grade: 10-12

Prerequisite: Humanities Seminar & Statistics Seminar

Credit: .33

SO0320 US/World Social Justice Movements

What is the best way for oppressed peoples to leverage their power in order to achieve social and political change? In this class, students will explore historic and contemporary social and political movements for change focusing on the most effective means by which oppressed peoples can challenge the tyranny of an empowered elite (i.e. Civil Rights Movement, Gandhi, Serbian Revolution, etc...) The class will culminate in an argumentative essay detailing each student's Theory of Change.

Grade: 10-12

Prerequisite: Humanities Seminar & Statistics Seminar

Credit: .33

SO1120 US/World Human Rights

How should we respond to genocide? In this class, students will do an analysis of genocide including historical antecedents, international organizations, and US responses based on an understanding of the Holocaust and an application of the ideals in the UN Declaration of Human Rights and the Genocide Convention (i.e. Armenia, Cambodia, Bosnia, Rwanda, and the Sudan). This will include a recommendation both for US and International policy and for individual action. The class will culminate in a formal debate with students crafting a concluding resolution based on their Theory of Response.

Grade: 10-12

Prerequisite: Humanities Seminar & Statistics Seminar

Credit: .33

SO ____ US/World Cultural Identities

How do we recognize and dismantle systems of privilege and oppression? This class is an introduction to recognizing, navigating, and dismantling systems of privilege and power (i.e. color, gender, ethnicity, sexual orientation, ability, and class) using a US Civil Rights Movement (i.e. The US Disability Rights Movement) and two global movements for change as case studies (i.e. Women in India, Colorism in Latin America, Religion in China, etc...). The class will culminate in a mini advocacy project in which students will apply their own Theory of Equity.

Grade: 10-12 Prerequisite: Humanities Seminar & Statistics Seminar Credit: .33

SO ____ US/World Civics

How do we competently and responsibly participate in the American political system? This class is an in-depth exploration of local, national, and international systems of government and how citizens and residents can make change on public policy issues including a study of constitutionalism, the Supreme Court, theory, history and current events. The class culminates in a simulated legislative hearing wherein student groups present a public policy recommendation or opinion on a contemporary issue.

Grade: 10-12 Prerequisite: Humanities Seminar & Statistics Seminar Credit: .33

SO1320 Capstone 1

All students who graduate from ACE must successfully complete the Capstone series of 3 consecutive six-week classes. This first six-week class, SO1320 is Part One of this Action Research Project which culminates in a college level research paper. The class is a practicum on research methodology including both original research and research review (i.e. creating strong research questions, reading scientific articles and studies, creating an annotated bibliography, writing a literature review and an abstract and determining implications of their research).

Grade: 10-12 Prerequisite: Humanities Seminar & Statistics Seminar Credit: .33

ACE Post Graduate Planning

Career and Internship Exploration Seminar (CIES)

Career and Internship Exploration Seminar is a trimester seminar broken down into four stages: 1). Interest Exploration 2). Career Path Informational Interviews 3). Job Shadows 4). Internship. Students may opt to take the seminar for one trimester or more, depending on how many stages of the seminar they hope to complete.

Grade: 10-12 Prerequisite: Humanities Seminar & Statistics Seminar Credit: .33