High School
Course Selection Guide
2018-2019

CLAYTON-BRADLEY
ACADEMY

CLAYTON-BRADLEY ACADEMY

High School Course Catalog

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Purpose:

To ignite the power of learning

Mission:

Clayton-Bradley Academy is dedicated to creating a student-centered, positive, and challenging environment where all students excel through:

- *Critical thinking,*
- *problem-solving,*
- *collaboration,*
- *and the Lifelong Guidelines and LIFESKILLS.*

Vision:

Reimagining Education

Beliefs:

Clayton-Bradley Academy is committed to the following:

- *A clear and shared focus on student learning*
- *A rigorous and integrated curriculum*
- *High expectations for learning*
- *Effective school leadership*
- *Aligned instructional and assessment practices*
- *Focused professional development*
- *Safe and supportive learning environment*
- *Family involvement*
- *Respect for diversity*

Lifelong Guidelines:

Trustworthiness; Truthfulness; Active Listening;
No Put Downs; Personal Best

LIFESKILLS:

CARING; COMMON SENSE; COOPERATION; COURAGE; CURIOSITY; EFFORT; FLEXIBILITY; FRIENDSHIP; INITIATIVE; INTEGRITY; ORGANIZATION; PATIENCE; PERSEVERANCE; PRIDE; PROBLEM SOLVING; RESOURCEFULNESS; RESPONSIBILITY; SENSE OF HUMOR

Welcome to the Clayton-Bradley Academy High School! Students and teachers who learn and work together in grades ninth through twelfth comprise the High School community. Together, teachers and students pursue learning opportunities that develop critical thinking skills and provide opportunities to engage in immersive learning. Students are continuously assessed, in multiple ways, so they can reach their highest potential, regardless of age or grade. Using a mastery based approach, teachers create engaging curriculum tailored to students' needs to produce a learning environment that is experiential, applicable, and rigorous. The following are CBA's core instructional practices:

Project-Based Learning

Key Curricular Content – Project-Based Learning is built around crucial, grade level standards formed across all subject areas.

Essential Questions – Each project is built around an open-ended, driving question that students use to form their explorations and investigations.

Inquiry Focus – Students dive into a process of asking questions, using resources, and developing answers over a specific timeline.

College and Career Readiness – Students build experiences critical to future education and career performance, such as team collaboration, critical thinking skills, innovation, and creativity.

Student Choice – With teacher supervision and guided development, students are allowed to make decisions about their time, their product, and how they work together.

Going Public – Students share new knowledge with those outside of the classroom by presenting their solutions and findings in a public forum or medium.

STEM Education

STEM education emphasizes problem-solving and discovery through individual exploration and classroom collaboration. Supported by a host of studies, STEM-focused education helps prepare students for a large percentage of the fastest growing occupations. STEM education at the CBA Upper School revolves around three core competencies: problem solving, collaboration, and critical thinking.

Integrated Curriculum

Teachers from all disciplines work hard to make the content from their classes overlap and interact with content from different classes. The benefits of integrated curriculum include a holistic view of learning, increased application of learning to real-world ideas, stimulated critical thinking, and increased opportunity for novel and creative expression. Many of the projects initiated in the classroom will involve several content areas. Integration encourages unique relationships, increases the context of learning, and unifies the learning community to foster student and faculty growth.

1:1 Technology

Each student in the upper school is provided with a laptop. The integration of technology into the classroom is purposeful and the goal is to use technology to enhance instruction and learning. Many of the work flow processes at the upper school revolve around specific technology such as the Google tools, learning apps, application programs, blogs, web based tools, and tech-driven organizational tools. Teachers use technology to increase efficiency in communication, and students rely on technology to produce work, submit work, and receive feedback and assessment information.

Technology is not an answer in itself. However, this is the first generation of learners to grow up in a world where personalized technology is available from birth. Many educators refer to this generation of students as "Digital Natives." Learning to utilize technology, understand applications of technology, and navigate a technologically driven world are 21st century skills that our students are learning every day.

Intrinsic Learning

Joyful learning does not require coercion or irrelevant reward (Smith, *Insult to Intelligence*). Learning is its own reward. In fact, observable brain scans show that learning a task produces a burst of neurotransmitters and a "chemical high" that creates immense satisfaction. This spark or burst of joy happens as students' "aha" moments register. The more immediate, intrinsic, and unambiguous the feedback, the faster and more accurate the learning. CBA instruction focuses on this kind of learning as compared to more traditional methods of learning involving rote memorization, fill-in-the-blank-style worksheets, lecture-based teaching, or volume-based practice. These extrinsic methods of learning foster fact-based, regurgitated knowledge that inhibits the innovation, creativity, and mastery-based learning CBA instructors strive to instill.

Graduation Requirements: Class of 2019, 2020

Mathematics - 4 credits required. Students must take a math class every year.

- ❏ Integrated Math 1 integrates Algebra 1 and Geometry standards
- ❏ Integrated Math 2 integrates Geometry and Algebra 1 & 2 standards
- ❏ Integrated Math 3 integrates Algebra 2 and Geometry standards
- ❏ Additional classes chosen from Precalculus, Intro to Calculus, Calculus, Statistics or other math electives

Science - 4 credits required. Students must take a science credit each year.

- ❏ Biology 1
- ❏ Chemistry 1 or Physics 1
- ❏ Additional 3rd & 4th courses chosen from a bank of available options and should be selected with career application in mind

Humanities - Combining 4 required credits in English and 4 required credits in Social Studies.

- ❏ 9th Grade Humanities integrates English 1 with Introduction to Humanities
- ❏ 10th Grade Humanities integrates English 2 with Leadership in Civics and Economics
- ❏ 11th Grade Humanities integrates English 3 with US History
- ❏ 12th Grade Humanities integrates English 4 with World Studies

Related Content - 8 Credits based on state guidelines as well as CBA curricular focus.

- ❏ 2 credits World Language
- ❏ 1 credit Fine Art
- ❏ 1 credit Wellness
- ❏ .5 credit PE
- ❏ .5 credit Personal Finance
- ❏ 1 credit Tech/PBL: Credit awarded to students after learning the technology and project-based principles implemented at CBA. This is not a scheduled course, but integrated into core courses.
- ❏ 1 credit **L**eadership **E**xperience and **E**xploration **P**rogram (LEEP): Students will participate in a research and internship driven experience designed to explore potential career options.
- ❏ 1 credit Senior Capstone Experience comprised of an original research paper, a designed product, a comprehensive portfolio, a culminating presentation, and a senior study trip.

Electives - 3 credits earned through elective offerings in the following areas

- ❏ Fine Arts: credit earned in music, visual, or performance art
- ❏ Technology/Engineering: credit earned in pursuit of technology fields
- ❏ Math/Science: credit earned above and beyond the required math and science credits
- ❏ Humanities: credit earned above and beyond the required humanities credits

27 credits required to graduate

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9th Grade	10th Grade	11th Grade	12th Grade
Mathematics	=	**4 Credits**	
Math 1/2	Math 2/3	Math 3/Precalc	4th Math
Science	=	**4 Credits**	
Biology 1	Chem/Phys 1	3rd Science	4th Science
Humanities	=	**8 Credits**	
SS 1 + English 1	SS 2 + English 2	SS 3 + English 3	SS 4 + English 4
Related Content Requirements	=	**8 Credits**	
WL 1 + Wellness + Fine Arts	WL 2 + PE (.5) + Tech/PBL	LEEP + Finance (.5)	Senior Capstone Experience
Elective Focus	=	**3 Credits**	
Fine Arts	Technology/ Engineering	Math/ Science	Humanities
Total Required to Graduate	=	**27 Credits**	

Graduation Requirements: Class of 2021 and After

Mathematics - 4 credits required. Students must take a Math class every year.

- ❏ Integrated Math 1 integrates Algebra 1 and Geometry standards
- ❏ Integrated Math 2 integrates Geometry and Algebra 1 & 2 standards
- ❏ Integrated Math 3 integrates Algebra 2 and Geometry standards
- ❏ Additional classes chosen from Precalculus, Intro to Calculus, Calculus, Statistics or other math electives

Science - 4 credits required

- ❏ Scientific Reasoning 1 & 2; This two year continuum of courses integrates material from Biology, Chemistry and Physics through the lense of core, scientific practices used in all science disciplines
- ❏ Additional classes chosen from a wide array of science offerings

Humanities - combines 4 required credits in English and 4 required credits in Social Studies.

- ❏ 9th Grade Humanities integrates English 1 with Introduction to Humanities
- ❏ 10th Grade Humanities integrates English 2 with Leadership in Civics
- ❏ 11th Grade Humanities integrates English 3 with US History
- ❏ 12th Grade Humanities integrates English 4 with Economics and World Studies

Related Content - 8 credits earned through a diverse set of experiences

- ❏ 2 credits World Language
- ❏ 1 credit Fine Art
- ❏ 1 credit Wellness
- ❏ .5 credit PE
- ❏ .5 credit Personal Finance
- ❏ .5 credit Project Based Learning: This is not a scheduled course, but integrated into core courses.
- ❏ .5 credit Research Methods: Students will gain skills to conduct independent research and present findings in a variety of forms to a variety of audiences.
- ❏ 1 credit **L**eadership **E**xperience and **E**xploration **P**rogram (LEEP): Students will participate in a research and internship driven experience designed to explore potential career options.
- ❏ 1 credit Senior Capstone Experience comprised of an original research paper, a designed product, a comprehensive portfolio, a culminating presentation, and a senior study trip.

Electives - 3 credits earned through elective offerings in the following areas

- ❏ Fine Arts: credit earned in music, visual, or performance art
- ❏ Technology/Engineering: credit earned in pursuit of technology fields
- ❏ Math/Science: credit earned above and beyond the required math and science credits
- ❏ Humanities: credit earned above and beyond the required humanities credits

27 credits required to graduate

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9th Grade	10th Grade	11th Grade	12th Grade
Mathematics	=	**4 Credits**	
Math 1/2	Math 2/3	Math 3/Precalc	4th Math
Science	=	**4 Credits**	
Sci Reason 1	Sci Reason 2	3rd Science	4th Science
Humanities	=	**8 Credits**	
SS 1 + English 1	SS 2 + English 2	SS 3 + English 3	SS 4 + English 4
Related Content Requirements	=	**8 Credits**	
WL 1 + Wellness (.5) + Fine Arts + Research (.5)	WL 2 + Wellness (.5) + LEEP (.5) + PBL (.5)	LEEP (.5) + PE (.5) + Finance (.5)	Senior Capstone Experience
Electives	=	**3 Credits**	
Fine Arts	Technology/ Engineering	Math/ Science	Humanities
Total Required to Graduate	=	**27 Credits**	

Standards-Based Curriculum and Mastery-Based Assessment

The Upper School uses standards-based curriculum and mastery-based assessment to evaluate the growth of students. In standards-based curriculum, specific standards create the learning targets for a specific course of study. Those standards are evaluated separately and students are assessed according to the level of mastery attained in each standard. If a student does not achieve the level of mastery desired, the opportunity to re-engage learning centering on that standard is always available. Assessing student growth over time is essential. At the end of each course, those individual standard grades are condensed to create a final grade. This final grade is a reflection of what the student has learned based upon continuous assessment and growth over the duration of the course.

Mastery-Based Grading Scale

The Upper School uses a 1-4 grading scale to assess academic growth. In order to assure future success, students are required to achieve at least a level 2 understanding of the course content. The following table defines each level of mastery:

Academic Standards Scoring Interpretation		
4	Expert	Can teach it! Application of knowledge in meaningful ways; can produce, not just reproduce, knowledge/information.
3	Professional	Got it! Understanding of the concepts & information pertaining to the topic/standard with the ability to independently express and apply understanding.
2	Apprentice	Got something. An average understanding but not enough knowledge to apply information or work independently.
1	Novice	A beginner's knowledge with lots of room for growth and learning but little to no evidence that shows understanding.

Conversion of Grades

At the end of each course, individual standard grades are condensed to create a final grade. This final, numeric grade is then converted from the 1-4 mastery scale to a letter-based system. For all high school, credit-bearing classes, an additional step is taken to assign quality points. Quality points and earned credits are the two factors used to calculate a student's GPA (grade point average). More specifics can be learned about this process under the "GPA Calculation" section of this guide. Below is the conversion scale used:

Upper School Grade Scale Conversion		
1-4 Scale Used at CBA	Letter Grade Equivalent	GPA Quality Point Equivalent
3.30 - 4.00	A+	4.0
3.00 - 3.29	A	4.0
2.80 - 2.99	A-	4.0
2.63 - 2.79	B+	3.3
2.45 - 2.62	B	3.0
2.30 - 2.44	B-	3.0
2.15 - 2.29	C+	2.3
2.00 - 2.14	C	2.0
0 - 1.99	Below Expectations	NC

* Honors level classes awarded **.5 Quality Point** bonus (ie: A = 4.5, B = 3.5, C = 2.5)
* AP equivalent classes awarded **1.0 Quality Point** bonus (ie: A = 5.0, B = 4.0, C = 3.0)

GPA Calculation

The high school GPA is a number that colleges use to rate the performance of high school students over the course of their high school career. The formula for determining GPA is as follows:

$$\frac{\text{Quality Points Earned}}{\text{Credits Earned}}$$

As students accumulate credits throughout their high school tenure, they also accumulate quality points based upon the final grade. Clayton-Bradley Academy uses the traditional 4.0 scale when determining GPA. Therefore, an "A" in a 1 credit class yields 4 quality points. An "A" in a .5 credit course yields 2 quality points (see conversion scale in "Conversion of Grades" section of this guide).

Bonus quality points are awarded to students who take rigorous classes. An ***Honors*** designated class will earn an additional .5 quality points per 1 credit earned and an ***AP*** equivalent class will earn an additional 1 quality point per 1 credit earned. A student who earns an "A" in a 1 credit honors class will earn 4.5 quality points and a student who earns an "A" in a 1 credit AP equivalent class will earn 5 quality points.

GPA can be calculated using two methods: weighted and unweighted. The weighted GPA refers to the average that includes bonus quality points earned from honors and AP equivalent courses. For college admissions/scholarship purposes, report the weighted GPA unless the unweighted is specifically requested. The unweighted GPA refers to the average of quality points without the additional bonus points for honors and AP equivalent classes. Tennessee uses the unweighted GPA to determine eligibility for the HOPE and other state sponsored scholarships.

Example: Student X has completed 25 high school credits and has earned 90 quality points. But, 4 of those credits were earned from honors classes and 2 from AP equivalent classes. So, the total quality points earned is 94 (4 x .5 = 2 honors bonus and 2 x 1 = 2 AP bonus). So, the weighted GPA would be 94/25 = 3.76 while the unweighted GPA would be 90/25 = 3.6.

Honors Level and AP Equivalent Classes Offered at CBA		
	Honors (.5 bonus point)	***AP Equivalent (1 bonus point)***
Humanities	❑ English 1 ❑ English 2 ❑ English 3 ❑ English 4 ❑ Introduction to Humanities ❑ Leadership in Civics ❑ US History ❑ Economics and World Studies	❑ English 3 Adv Hon ❑ English 3 Adv Hon ❑ US History Adv Hon
Math	❑ Integrated Math 1 ❑ Integrated Math 2 ❑ Integrated Math 3 ❑ Precalculus (.5 credit) ❑ Intro to Calculus (.5 credit) ❑ Matrix Algebra (.5 credit) ❑ Cryptography (.5 credit)	❑ CalculusAdv Hon ❑ Statistics Adv Hon (may not be offered every year)
Science	❑ Scientific Reasoning 1 ❑ Scientific Reasoning 2 ❑ Genetics (.5 credit) ❑ Human Ecology (.5 credit) ❑ Microbiology (.5 credit) ❑ Botany (.5 credit) ❑ Environmental Science (.5 credit) ❑ Appalachian Ecology (.5 credit) ❑ Thermodynamics (.5 credit) ❑ Astronomy (.5 credit) ❑ Organic Chemistry (.5 credit) ❑ Circuits (.5 credit) ❑ Acoustics (.5 credit) ❑ Nuclear Chemistry (.5 credit) ❑ Advanced Mechanics (.5 credit) ❑ Intro to Material Science (.5 credit)	❑ Human Ecology (.5 credit) ❑ Genetics (.5 credit) *Taken together = AP Biology
World Language	❑ Spanish 3	

Advanced Placement and Dual Enrollment: College Credit Options

AP College Credit

Clayton-Bradley Academy does not provide any courses labeled Advanced Placement for transcript purposes. We do provide AP equivalent courses in a variety of different subjects. The term AP equivalent course refers to a course taught with the goal of preparing students to be successful when sitting for the AP cumulative exam. We are an approved AP testing site and students may sit for as many AP exams as they wish, even if they have not taken the corresponding AP equivalent class.

In order for a student to gain college credit through the AP program, the student must achieve a minimum score on a cumulative exam designed by the College Board. AP exams are scored on a 1-5 scale, and students scoring a 3 or higher could receive college credit. Each college or university awards credit for AP classes according to their own standards. Therefore, the number of credits awarded and how the credit is applied varies depending on the college or university. These two links are helpful in understanding more about AP and college credit:

https://apstudent.collegeboard.org/exploreap
https://apstudent.collegeboard.org/creditandplacement/search-credit-policies

Dual Enrollment College Credit

A student who participates in dual enrollment is simultaneously enrolled in college and high school. Students attend classes at the college of enrollment and are assessed and given credit based upon the grading system of that college. If the student successfully completes the college class, the grade and credit earned are transferred to their high school transcript. The college credit earned is then available for transfer to another college. Acceptance of that credit toward a particular degree path is subject to the guidelines of the receiving college.

In Tennessee, students can receive financial assistance for dual enrollment courses in the junior and senior year providing they meet the minimum qualifications. The state lottery money funds this program and a total of 8 dual enrollment classes can be taken while in high school. The cost of tuition up to $500 for the first 2 dual enrollment courses are covered by the lottery funds set aside for high school programming. Lottery funds pay for $200 of the tuition and fees of a third class. The 4th class is not

covered through the lottery grant. Classes 5-8 are covered up to $100 per credit hour, but these funds are deducted from the student's future, HOPE scholarship funds.

Clayton-Bradley values the experience students receive while being taught within the framework of our core instructional practices. Therefore, in general, dual enrollment opportunities will be limited to courses that Clayton-Bradley does not offer.

In order to register for dual enrollment, all CBA students must meet with their high school counselor and complete the following application steps:

1. Decide what class/classes to pursue for dual enrollment
2. Complete the enrollment application to the college of choice
3. Complete the dual enrollment grant application through TSAC
4. Submit a transcript and standardized test scores to the college of choice
5. Complete required medical forms for the college of choice
6. Register for the the actual class desired.
7. Pay for books

Deadlines for dual enrollment vary depending on the college. However, a good guide is to have the application process completed in April for the following Fall semester and in November for the following Spring semester. Below are helpful links to understand more of the dual enrollment process:

Dual Enrollment State Guidelines
Dual Enrollment Maryville College
Dual Enrollment Pellissippi State

Clayton-Bradley Academy: 2018/2019 High School Course Offerings

Mathematics

Integrated Mathematics 1 1.0 Credit

Prerequisites: None

Grades: 8, 9

Integrated Mathematics 1 formalizes and extends the topics of middle school mathematics. A deep understanding of linear relationships develops through building linear models to fit data, constructing and solving systems of linear equations, and contrasting linear expressions with phenomena that exhibit exponential rates of change. The course then connects algebraic and geometric ideas through algebraic proof of geometric concepts, transitioning into a study of congruence through rigid motions.

Integrated Mathematics 2 1.0 Credit

Prerequisite: Integrated Mathematics 1

Grades: 9,10 (Taking IM2 as a 9th grader is instructor recommendation and assessment based only)

Integrated Mathematics 2 introduces students to the logic and structure of mathematical proof, focusing on the geometry of lines, angles, and polygons. The algebraic focus of the course is on quadratic equations and functions, comparing their characteristics with the linear and exponential models from IM1. This transitions into a study of another geometric concept with links to quadratics: circles.

Integrated Mathematics 3 1.0 Credit

Prerequisite: Integrated Mathematics 2

Grades: 10, 11

Integrated Mathematics 3 is a course that allows students to develop a broader understanding of many algebraic and geometric concepts first encountered in Integrated Math 1 and 2. This includes the study of functions and their inverses, including polynomial, rational and radical functions, and particularly concentrating on the relationship between exponential and logarithmic functions. Emphasis is placed on choosing appropriate mathematics to model and analyze diverse empirical situations. Geometry topics in IM3 include similarity and trigonometry of right triangles, preparing students for a deeper study of trigonometry in Precalculus.

Precalculus 0.5 Credit

Prerequisite: Integrated Mathematics 3

Grade: 11,12

Precalculus focuses on the algebraic and geometrical techniques and functions needed to prepare students for the study of calculus, physics and other sciences and engineering. Strong emphasis is placed on the study of the three basic trigonometric functions, their inverses, equations and identities as well as the trigonometry of right and obtuse triangles. The remainder of the course is an investigation of the function families from the Integrated Math sequence and the types of phenomena they can be used to model.

Introduction to Calculus 0.5 Credit

Prerequisite: Precalculus

Grade: 11,12

Introduction to Calculus is designed for students who intend to take AP Calculus, or enroll in a Calculus course in college. The course combines a deeper study of trigonometric functions from Precalculus, paying attention to the reciprocal trigonometric functions with a rigorous review of the essential algebraic and graphing skills used in calculus. In addition, students are introduced to the three primary topics of calculus: limits, derivatives and integrals. NOTE: This course does NOT cover the content of a full Calculus course. Any student needing credit for Calculus will need to follow this course with AP Calculus or the equivalent.

Calculus (AP Equivalent) 1.0 Credit

Prerequisite: Introduction to Calculus and permission of instructor

Grade: 12

The overall goal of this course is to help students understand and apply the three big ideas of Calculus: limits, derivatives, and integrals. Throughout the course, students employ a variety of mathematical practices: reasoning with definitions and theorems, connecting concepts, implementing algebraic/computational processes, connecting multiple representations, building notational fluency, and communicating mathematics orally and in well-written sentences. Computer software and graphing calculators are important tools that will be frequently employed in the course. Students enrolling in calculus should have procedural fluency in algebra, and strong content knowledge of all function families in the Integrated Math and Precalculus curriculum. The successful student in this course should expect to spend a significant amount of time on out-of-class assignments. Students may take the AP Calculus AB Exam and if successful, can receive credit, advanced placement or both for a college Calculus 1 course.

Statistics (AP Equivalent) 1.0 Credit

Prerequisite: Junior standing or permission of instructor

Grades: 11, 12 (qualified sophomores admitted with instructor permission)

Note: This course may not be offered every academic year.

An introduction to the major concepts and tools for collecting, analyzing and drawing conclusions from data. Students are exposed to four broad conceptual themes: exploring and describing patterns in data; planning and conducting a study or experiment; exploring random phenomena using probability and simulation; and estimating population parameters and testing hypotheses using statistical inference. The successful student in this course should expect to spend a significant amount of time on out-of-class assignments. Students may take the AP Statistics Exam and if successful, can receive credit, advanced placement or both for a one-semester introductory college statistics course.

Matrix Algebra 0.5 Credit

Prerequisite: Integrated Mathematics 1

Grades: 10, 11, 12

Note: This course may not be offered every academic year.

Matrices have been used to solve systems of linear equation since the second century BC. The Babylonians used matrices to determine how many bushels of rice a field would produce. Finally termed "matrix" in 1850, this course will cover topics including the history of matrices, matrix algebra and practical applications regarding systems. Matrices are a useful topic for the ACT and higher level math, such as Linear Algebra. This course may be taken for elective credit by any student (grade 10 or higher). Students who have completed Precalculus in the junior year, may combine two 0.5 credit mathematics electives to satisfy their senior year mathematics requirement.

Cryptography 0.5 Credit

Prerequisite: Integrated Mathematics 1

Grades: 10, 11, 12

Note: This course may not be offered every academic year.

Cryptography is the science of encrypting and decrypting information, and is a constantly evolving field that plays an essential role in keeping digital information safe, from safeguarding private information of individuals and companies to national security. In this course we'll learn about the history and mathematical underpinnings of this fascinating subject, from from classical cryptography in the time of Julius Caesar to modern cryptography and public-key encryption. This course may be taken for elective credit by any student (grade 10 or higher). Students who have completed Precalculus in the junior year, may combine two 0.5 credit mathematics electives to satisfy their senior year mathematics requirement.

Science

Scientific Reasoning 1 1.0 Credit

Grade: 9, 10

Scientific Reasoning 1 introduces students to scientific thought. The overarching theme will be to instruct the students on Scientific Practices such as: using models, collecting data, using math to analyze the data, critiquing scientific explanations, and communicating scientific ideas. The course will work toward developing a scientific discourse through an integrated curriculum of physics, chemistry, and biology. This course will guide students on scientific presentations including posters and papers. Scientific Reasoning is the first step on a scientific journey here at CBA that is designed to integrate all of the sciences.

Scientific Reasoning 2 1.0 Credit

Prerequisites: Scientific Reasoning 1 or Chemistry 1 or Physics 1

Grade: 10, 11

Scientific Reasoning 2 furthers the student's investigations into scientific thought. By expanding upon themes of Scientific Reasoning I students will delve deeper into the physical sciences, discussing and formulating explanations to describe the world that surrounds them each day. Through the Scientific Practices students will expand their own personal body of knowledge and understanding of Science as a whole in pursuit of deeping scientific discourse across specializations and disciplines.

Genetics (AP Biology part 1) 0.5 Credit

Prerequisite: Biology 1 or Scientific Reasoning 1

Requires Instructor Approval

Grades: 10, 11, 12

Genetics is the first of two classes that prepare students to take the AP Biology exam. This class is designed focuses on the inheritance of traits. The class will look at the molecular level (DNA) and scale up the physical characteristics. Probabilities will be used to understand human pedigrees and the Hardy-Weinberg equilibrium law will be used to characterize how populations change.

Human Ecology (AP Biology part 2) 0.5 Credit

Prerequisite: Biology 1 or Scientific Reasoning 1

Requires Instructor Approval

Grades: 10, 11, 12

Human Ecology is the second of two classes that prepares students to take the AP Biology exam. This class is designed to examine how humans body interacts with itself and its environment. Exploration will start with how proteins work and how energy is transferred in the cell. This will be followed with

how cells, tissues, and organs interact. The course will finish with a look at population ecology of humans with an emphasis on epidemiology and how humans interact with the natural world.

Microbiology 0.5 Credit

Prerequisite: Biology 1 or Scientific Reasoning 1

Grades: 10, 11,12

Note: This course may not be offered every academic year.

Microbiology is the study of organisms that you can not see with the naked eye. This course will introduce students to techniques used to study microorganisms with a focus on microscopy and culturing. There will be an emphasis on microorganisms associated with food. Students will have the opportunity to make sourdough bread, sauerkraut, and cheese.

The Seeds of Civilization (Botany) 0.5 Credit

Prerequisite: Biology 1 or Scientific Reasoning 1

Grades: 10, 11,12

Note: This course may not be offered every academic year.

Plant are the main primary producers and therefore the most important component of life on Earth. This class will explore the capture of extraterrestrial energy and examine the requirements for plants to thrive (physiology). The diversity of interactions between man and plants will be a primary focus of the class from the beginnings of civilization to the air we breath. Students will learn to grow and identify plants.

Environmental Science 0.5 Credit

Prerequisite: Biology 1 or Scientific Reasoning 1

Grades: 10, 11,12

Note: This course may not be offered every academic year.

The Environmental Science course provides students with scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world. Students will identify and analyze environmental problems both natural and human-made. Students will evaluate the relative risks associated with these problems, and to examine alternative solutions for resolving and/or preventing them.

Appalachian Ecology 0.5 Credit

Prerequisite: Biology 1 or Scientific Reasoning 1

Grades: 10, 11,12

Note: This course may not be offered every academic year.

The Appalachian mountains are believe to be the oldest mountains in the world. This longevity has allowed for the development of a very diverse ecosystem. Especially in the Southern part of the range, the Great Smoky Mountains. This course will explore the geology, the flora, and the fauna of the Appalachian mountains.

Thermodynamics 0.5 Credit

Prerequisite: Scientific Reasoning 2 or Physics 1 or Chemistry 1 and Integrated Math 2

Grade: 10, 11,12

Note: This course may not be offered every academic year.

Thermodynamics is an introductory project-driven course that explores heat and how it moves though our environment. Topics covered include: The Laws of Thermodynamics; thermodynamic properties of gases, vapors, and gas-vapor mixtures; thermal expansion of materials; phase changes heat capacity and transfer; refrigeration cycles and air-conditioning processes.

Astronomy 0.5 Credit

Prerequisite: Scientific Reasoning 2 or Physics 1 or Chemistry 1

Grade: 11,12

Note: This course may not be offered every academic year.

This course is an introduction to the composition and structure of the universe. Astronomy is the scientific study of the contents of the entire Universe. This course will provide a study of the universe and the conditions, properties, and motions of bodies in space. Possible concepts includes; historical astronomy, astronomical instruments, the celestial sphere, the solar system, the earth as a system in space, the earth/moon system, the sun as a star, and stars.

Organic Chemistry 0.5 Credit

Prerequisite: Scientific Reasoning 2 or Physics 1 or Chemistry 1

Grade: 11,12

Note: This course may not be offered every academic year.

Organic chemistry is a branch of general chemistry that focuses on carbon-based compounds. Starting with the simplest molecules, alkanes (carbon chains bound to hydrogen atoms), then the course expands to examine more complex molecules, including their basic properties, how they can be synthesized, and how they interact with other molecules.

Circuits 0.5 Credit

Prerequisite: Scientific Reasoning 2 or Physics 1 or Chemistry 1

Grade: 11,12

Note: This course may not be offered every academic year.

This course is designed in order to provide students with fundamental concepts in electrical circuits; circuit analysis and network theorems; linearity and superposition; series/parallel combinations of R, L, and C circuits; sinusoidal forcing; complex frequency and Bode plots; mutual inductance and transformers; two port networks.

Acoustics 0.5 Credit

Prerequisite: Scientific Reasoning 2 or Physics 1 or Chemistry 1

Grade: 11,12

Note: This course may not be offered every academic year.

Acoustics deals with the study of all mechanical waves in gases, liquids, and solids, though predominantly this course will deal with sound and the physics behind it. Sound is incredibly important to the world we know. Humans, and other life as well, transmit and receive information about the world around us through the use of sound.

Nuclear Chemistry 0.5 Credit

Prerequisite: Scientific Reasoning 2 or Physics 1 or Chemistry 1

Grade: 11,12

Note: This course may not be offered every academic year.

This course into nuclear chemistry will expand students understanding of chemistry by dealing with radioactivity, nuclear processes, such as nuclear transmutation, and nuclear properties. The two main driving points of this course will be nuclear processes for mechanical reasons, nuclear power and nondestructive analysis, as well as nuclear processes relating to biological life, radiation treatments and health hazard.

Advanced Mechanics 0.5 Credit

Prerequisite: Scientific Reasoning 2 or Physics 1 or Chemistry 1

Grade: 11, 12

Note: This course may not be offered every academic year.

Advanced Mechanics is a course designed for students interesting in pursuing Engineering or Science in college. Designed to be a compliment to CBA's Scientific Reasoning class block this course will give a hands on approach to studying and modeling physical phenomena including; Simple Harmonic Motion, Waves, Sound, Light, and Electronics.

Introduction to Material Science 0.5 Credit

Prerequisite: Scientific Reasoning 2 or Physics 1 or Chemistry 1

Grade: 11, 12

Note: This course may not be offered every academic year.

Materials are so important in the development of civilization that we associate them with Ages in the origin of human life. From Stone to Bronze to Steel, the continued development of new materials that are engineered to perform in a certain way has been one of the underpinnings of the advancement of technology. The science of this development has broadened to include Materials Engineering where a combinations of elemental components and processing result in materials being designed for specific applications. This one-semester course will include:

- Introduction to the different types of materials (metals, semiconductors, ceramics, polymers)
- The relationship between processing, structure and properties of materials
- Current societal / world needs in the realm of advanced materials

Humanities

Intro to Humanities 1.0 Credit

Prerequisites: None

Grade: 9

Intro to Humanities is the 9th grade Social Studies course. It asks students to answer the question: *What does it mean to be human?* A deep understanding of literature, language, history, civics and economics is essential to the development of a successful, engaged citizenry. Intro to Humanities will focus on key techniques to inspire depth of thought in students including: narrative and informative writing, close reading of informative and literary texts, and student-focused discussions using the Harkness Model.

Students will investigate historical and social phenomena closely related to their course of study in English I. Students will read primary and secondary sources that share a strong connection (either thematically or historically) to Literature in English I. Following close reading and annotation, students will receive instruction in the Harkness Model of Discussion. Students will also work on projects that afford them an opportunity to expand their knowledge of their course of study.

English 1 Honors 1.0 Credit

Prerequisites: None

Grade: 9

English 1 Honors situates students into secondary reading and writing. Based on the Common Core standards and integrated with Introduction to Humanities, English 1 focuses on narrative and informative writing with projects based on research and the initial developments of voice. Students explore the question: *What is Truth?* Text selection varies with a 60/40 balance of literary over informative. Past texts have included: *The Alchemist, The Curious Incident of the Dog in the Night-Time, Wonder Woman, Candide, The Tragedy of Romeo & Juliet, Inherit the Wind,* and *1984.* English 1 also serves as the introduction of students to our Harkness pedagogy.

Leadership in Civics 1.0 Credit

Prerequisite: Introduction to Humanities

Grade: 10

Civics is the 10th grade Social Studies course. It asks students to answer the question: *How does the citizen relate to society?* A deep understanding of literature, language, history, civics and economics is essential to the development of a successful, engaged citizenry. For this reason, students in the Humanities program will enjoy an integrated curriculum that combines instruction in both English/Language Arts and Social Studies. Students will focus on reinforcing and expanding material covered in 9th grade and encourage depth of thought using key techniques including: informative and argumentative writing, close reading of informative and literary texts, and a greater emphasis on student discussions using the Harkness Model.

Students will investigate civic phenomena closely related to their course of study in English. Students will read key economic texts including the US Constitution and other founding documents of US government. Thematic connections between Civics and English will be reinforced by both instructors.

English 2 Honors 1.0 Credit

Prerequisite: English 1

Grade: 10

English 2 Honors continues use of the Common Core 9-10 standards with a focus shifting towards analytical, persuasive, and argumentative writing. Students learn to answer the questions: *How does society work?* As students explore aspects of leadership, governments, and civic engagement, English 2 serves to underpin their understanding through thoughtful analysis of various cultural texts to match the students' social studies course. Past texts include: *The Merchant of Venice, Animal Farm, The Grapes of Wrath*, *To Kill a Mockingbird, Brave New World, Mr. Smith Goes to Washington, Lincoln, 12 Angry Men,* Further, the Harkness conversations require greater depth of thought and student participation. This class serves to prepare students for the AP English 3 course.

US History (AP Equivalent Optional) 1.0 Credit

Prerequisite: Leadership in Civics and Economics

Grade: 11

American Studies is the 11th grade level Social Studies course. It inspires students to answer the question: *What does it mean to be American?* Students in the Humanities program will enjoy an integrated curriculum that combines instruction in both English/Language Arts and Social Studies. Both English 3 and US History will focus on key techniques to inspire depth of thought in students including: close reading of informative and literary texts, rhetorical analysis of texts, exemplary participation in Harkness discussions.

In the Social Studies section, students will investigate themes and events that contribute toward an understanding of American culture, history, and identity.

English 3 Honors 1.0 Credit

Prerequisite: English 2 Honors

Grade: 11

The English 3 Honors course requires students to become skilled readers of prose written in a variety of rhetorical contexts and skilled writers who compose for a variety of purposes. Both their reading and their writing should make students aware of interactions among a writer's purposes, reader expectations, and an author's propositional content, as well as the genre conventions and the resources of language that contribute to the effectiveness in writing.

At the heart of a language and composition course is the reading of various texts. Reading facilitates informed citizenship and thus increases students' capacity to enter into consequential conversations with others about the meaningful issues. Students seek to answer: *What does it mean to be American?* Also contributing to students' informed citizenship is their ability to gather source materials representing particular conversations and then make their own reasonable and informed contributions to those conversations. Students' ability to engage with outside sources in their reading, writing, and research is an important measure of their intellectual growth. Past texts include *The Crucible, The Jungle, The Great Gatsby, Between the World and Me,* and *The Narrative of Frederick Douglass.*

English 3 (AP Equivalent) 1.0 Credit

Prerequisite: English 2 Honors

Grade: 11

Students enrolled at the advanced honors level will study language, rhetoric, and argumentation in much the same way as those in the honors class (see course description above), but at a faster pace and in more depth, with more challenging reading and writing assignments. In addition, advanced honors students will hone skills specific to the AP English Language and Composition Exam (such as timed writing and multiple choice strategies) to prepare them to sit for the test in May.

Economics and World Studies 1.0 Credit

Prerequisite: American Studies

Grade: 12

Economics and World Studies is the 12th grade level Humanities course. Students in the Humanities program engage in an integrated curriculum that combines instruction in both ELA and Social Studies. Both ELA and SS sections of Economics and World studies will focus on key techniques to inspire

depth of thought in students including: deep understanding of literary and informative texts, literary and informative analysis of texts, and exemplary participation and leadership in Harkness discussions.

In the Social Studies section, students will investigate the economic and historical themes and events that contribute toward literature in a given time period. As students read a text in their ELA section, Social Studies students will investigate primary and secondary sources in order to understand the context in which the literary work was developed.

English 4 Honors 1.0 Credit

Prerequisite: English 3 Honors

Grade: 12

This English literature and composition course engages students in the careful reading and critical analysis of imaginative world literature. Through the close examination of selected texts, students will deepen their understanding of the ways writers use language to provide both meaning and pleasure for their readers. As they read, students will consider a work's structure, style and themes, as well as such smaller-scale elements as the use of figurative language, imagery, symbolism, and tone. In this course students consider the question: *What does it mean to be alive?* Past texts include *Hamlet, Rosencrantz & Guildenstern Are Dead, Ceremony, The House on Mango Street, Great Expectations,* and *A Death in the Family.*

English 4 (AP Equivalent) 1.0 Credit

Prerequisite: English 2 Honors

Grade: 12

Students enrolled at the advanced honors level will study literature and composition in much the same way as those in the honors class (see course description above), but at a faster pace and in more depth, with more challenging reading and writing assignments. In addition, advanced honors students will hone skills specific to the AP English Literature and Composition Exam (such as timed writing and multiple choice strategies) to prepare them to sit for the test in May.

Speech & Debate 1.0 Credit

Prerequisites: None

Grades: 9, 10, 11, 12

Speech and Debate I

This course explores a wide variety and range of public speaking skills, including: Extemporaneous Speaking, Declamation, Original Oratory, and Storytelling at the novice level. Additionally, students are introduced to basic researching, argumentation, questioning, and rebuttal skills through a variety and

range of debate disciplines, including: Congressional Debate, and Public Forum Debate. Skill focus includes the development of techniques in diction, articulation, enunciation and projection. Students begin to analyze pieces of literature, create and deliver orations, write arguments, and evaluate performances. Students have the opportunity to participate in local and state level Speech and Debate (Forensic) competitions.

Advanced Speech and Debate 1.0 Credit

Prerequisites: Membership on Speech & Debate Team

Grades: 9, 10, 11, 12

This course further develops skills in communication, logic, and reasoning learned in Speech and Debate I. Students continue to refine diction, articulation, enunciation and projection skills while applying more advanced techniques of public speaking. Students also continue to refine researching, argumentation, questioning, and rebuttal skills. Students exhibit personal responsibility through independent learning as they specialize in at least one area of focus (event). Additionally, students exhibit team/collaborative responsibility and develop skills of evaluation and analysis of performances through the participation in required, in-class assignments. Students are expected to participate in local, state, and national level Speech and Debate (Forensic) competitions.

http://www.speechanddebate.org/ http://thssdl.org/ Curriculum

New Media 1.0 Credit

Prerequisites: None

Grades: 9, 10, 11, 12

This course will produce student-created media products for the school. This will include a yearbook and student videos. Students will learn the basics of layout and photography. Returning students gain a deeper understanding of media principles and serve as editors for the various media productions.

Personal Finance 0.5 Credit

Prerequisite: None

Grades: 11

In this class (which is a requirement to graduate) students learn the basics of financial responsibility and determine their personal financial needs and goals for the future. During this course, students will explore college and career options, research funding methods for higher education, learn how to budget their income, discover saving and investing strategies, and find out how to use credit wisely.

Questions in Philosophy 0.5 Credit

Prerequisite: Intro to Humanities/ English I

Grades: 10, 11, 12

Questions in Philosophy is an elective course in the Humanities Program. The course is focused on reading, discussing, and writing about the overarching philosophical questions that have puzzled humans for millennia. Students will be responsible for closely reading philosophical and historical texts and discussing them using the Harkness Method. Previous instruction in writing is required (at least English I).

Creative Writing 0.5 Credit

Grades: 9, 10, 11, 12

In this elective course, students will have an opportunity to experiment with writing in various genres, such as the short story, personal narrative, and poetry. Throughout the semester, we will read exemplary texts to spark our own imaginations, learn the literary elements of engaging writing (such as imagery, dialog, and character development), and invent our own works of fiction. By semester's end, each student will have a portfolio of polished creative works as well as many ideas for future projects.

World Languages

Chinese 1 1.0 Credit

Prerequisites: None

Grades: 9, 10, 11

This course is designed for students who have had no prior exposure to Chinese language. This class emphasizes building vocabulary and sentence patterns in communicative contexts as well as building a solid foundation in pronunciation. The topics covered in this class are related to students' immediate environment (friends, family, school, and work). This course also helps students to understand and appreciate Chinese culture.

Chinese 2 1.0 Credit

Prerequisites: Chinese 1

Grades: 10, 11, 12

This course is designed for students who have completed Chinese 1 or equivalent course. It helps students to develop further communicative skills in Chinese language. Good pronunciation is still emphasized. Students will expand their ability to carry out simple conversations in Chinese on a limited range of topics. Reading and writing (using simplified form) will be developed in conjunction with speaking and listening skills. This course will also develop a further understanding of Chinese culture and society.

Spanish 1 1.0 Credit

Prerequisites: None

Grades: 9, 10, 11

This introductory course is designed for students with little or no previous study of Spanish. Some students in class might have studied Spanish in middle school, but have not grasped some of the important structures of the language. This course teaches basic grammar structures and vocabulary with a focus on all four communicative skills: listening, speaking, reading, and writing. Continuous practice and comprehensible input are components which are more central to this initial course than to advanced courses. History and culture are explored through readings, presentations, and student research projects. Students may also be assessed by means of written tests, quizzes, and possibly by means of oral activities.

Spanish 2 1.0 Credit

Prerequisite: Spanish 1

Grades: 9, 10, 11

This course builds up on the Spanish competence/knowledge that was acquired in Spanish 1. The focus is also on all communicative skills, listening, speaking, reading, and writing, but there is an increased emphasis on grammatical accuracy. Students are exposed to the Spanish language more frequently than in level 1, both in written and spoken formats, and they are expected to use Spanish as the principal means of communication during class. History and culture are explored through readings, presentations, and student research projects which are presented in the target language when possible. In addition, students are assessed by means of written tests, quizzes, and possibly by means of oral activities.

Spanish 3 1.0 Credit

Prerequisites: Spanish 1 & 2

Grade: 11

Note: This course may not be offered every academic year.

The curriculum for Spanish 3 is intended to engage students in spoken and written communication in Spanish by also using the resources of the other two language skills, listening and reading. . Through the study of thematic vocabulary and more advanced grammatical structures, students are able to gain a more advanced knowledge of the target language, identify and imitate appropriate body language, intonation, and common idiomatic expressions through social interaction. History and culture are explored not only through readings, presentations, and student research projects presented in the target language, but also through concrete experiences. In addition, students are assessed by means of written tests, quizzes, and possibly by means of oral activities.

Integrated/Independent Studies

Leadership Experience and Exploration Program (L.E.E.P) 1.0 Credit

Prerequisites: None

Grade: 10 and 11

As high school students, making the leap into the first chapter of adult life becomes a fast approaching reality. In this course, students participate in activities designed to create a bridge between the classroom and the awaiting real world. Career and college exploration, further training in academic research, and a mandatory internship experience in a local, professional setting are all components of this course. This class also serves as preparation for the senior capstone experience.

Senior Capstone Experience 1.0 Credit

Prerequisites: LEEP

Grade: 12

This class serves as a platform for seniors to culminate their K-12 educational experience. The Senior Capstone Experience is comprised of a series of interrelated components including an original research paper, a designed or earned (through certification) product, a comprehensive portfolio, a culminating presentation, and a senior study trip. Seniors further their academic prowess through extensive research on a topic of interest connected to future aspirations and passionate investigation. They then parlay this research into the production of a product to serve as a tangible outcome of their project. Products can include but are not limited to certifications from further trainings/internships, research prototypes, or physical items. Each student maintains a digital portfolio that serves as a culminating record of meaningful experiences. As part of this class, students are invited to wrestle with questions concerning world view, global citizenship, and service learning which take shape through the senior study trip. Finally, students wrap up their capstone project with a culmination presentation.

Fine Arts

Singers 1.0 Credit

Prerequisite: Interview with instructor as well as a Minimum 1 year of choral experience at CBA or previous school.

Grades: 9, 10, 11, 12

Singers is a primarily a cappella vocal ensemble highly motivated to excel in vocal performance. Students rehearse and perform a variety of musical styles including madrigals from the medieval, Renaissance, and Baroque periods to contemporary, pop, and classical selections. Students will learn to manage technical demands, apply artistic expression, and polish performance techniques. Emphasis is on developing musicianship and ensemble singing skills with the goal of understanding these musical styles and experiencing the joy of public performance.

Strings 1.0 Credit

Prerequisites: minimum 2 years of strings experience at CBA or previous school

Grades: 9, 10, 11, 12

This class is designed for students to learn or advance learning one of several stringed instruments including violin, viola, and cello. Students are taught the basics of music notation as well as skills related to performance, group dynamics, and ensemble artistry. Some experience with a stringed instrument is required.

Intro to Studio Art 1.0 Credit

Prerequisites: None

Grades: 9, 10, 11, 12

This is a beginning art course, and is a prerequisite for Advanced Studio Art. Open to students in grades 9 through 12, the course offers an opportunity for self-expression utilizing two dimensions: height and width - a flat surface. A variety of dry and wet media - along with drawing, painting, and printing techniques - are introduced. The artworks and styles of different peoples, time periods and cultures are explored, and an understanding of the Elements of Art and Principles of Design is emphasized.

Advanced Studio Art 1.0 Credit

Prerequisites: Intro to Studio Art

Grades: 10, 11, 12

This course is a continuation of Intro to Studio Art. This course is not media specific, and students will be responsible for exploring in-depth specific media. For example, students will make a cogent body of work using a selected media or themed topic. Open to students in grades 10 through 12, the course offers

an opportunity for self-expression utilizing two dimensions: height and width - a flat surface. The artworks and styles of different peoples, time periods and cultures are explored, and an understanding of the Elements of Art and Principles of Design is emphasized.

Theatre Arts 0.5 Credit

Prerequisites: None

Grades: 9, 10, 11, 12

This course is an overview of theatre arts. Students learn the basic acting techniques, theatre terminology, playwriting, improvisation, skills in developing a character, scene performance and monologues. Emphasis is placed on confidence building as well as team building through improvisation and acting. This is a semester-long course.

Theatre: Improv Techniques 0.5 Credit

Prerequisites: None

Grades: 9, 10, 11, 12

In this course we will focus on improvisation techniques through games and exercises. Students will learn some basics about crafting interesting long form improv as well as creating memorable short improv sketches and characters. This is a semester-long course.

Theatre For Social Action 0.5 Credit

Prerequisites: None

Grades: 9, 10, 11, 12

Theatre can be an extremely useful tool for educating ourselves and others regarding complex, social issues. We will be using the creative tools of expression in theater to examine the issue of homelessness in Blount County. Time will be spent devising theatrical Social Action Projects around this issue. This is a semester-long course.

PE/Wellness

Wellness 1.0 Credit

Prerequisites: None

Grades: 9,10, 11, 12

Wellness is a lifelong process of positive lifestyle. Health is the quality of one's life. Good health is a product of many factors. Health/Wellness is designed to teach students the skills needed to make responsible decisions regarding their health. Health and Wellness students participate in classroom and gym instruction. Classroom instruction includes substance abuse, personal fitness, nutrition, first aid and safety, mental health, disease prevention, and family life.

Physical Education 0.5 Credit

Prerequisites: None

Grades: 9,10, 11, 12

At CBA, students have the opportunity to earn .5 credit by participating in a full, competitive season of a qualifying sports program or completing 60 hours of personal training that can be verified by a coach, fitness instructor, or personal trainer. In order to finalize the .5 credit in PE, students must submit the accompanying paperwork to the school counselor.

Technology

STEM Lab 1.0 Credit

Prerequisites: None

Grades: 9, 10, 11, 12

Science, technology, engineering and math affect all areas of our lives. Following the engineering design process, students will work in partners or groups to complete projects that address real-world issues, no matter how great or small. The course will travel through all areas of science, showing the range of engineering impact and integration with other subjects. Students will learn skills needed to complete projects. Examples of skills taught include hand and power tool use, circuitry, modeling, incorporation of technology and more.

Creative Engineering and Design 0.5 Credit

Prerequisites: None

Grades: 10, 11, 12

This project-based maker's lab provides an innovative outlet for creative minds. A variety of workstations will be available to meet diverse preferences including woodworking, electronics, scientific experimentation, sewing and SCRATCH coding. Students must be able to work independently, use the engineering design process or scientific method and assist in finding resources as necessary to complete projects.

Forensic Investigation 0.5 Credit

Prerequisites: None

Grades: 10, 11, 12

This course teaches students to apply the scientific process to forensic analysis and crime scene investigation. Various procedures will be explored through theory and experimentation. Classes will include case studies, virtual experiments, and hands-on labs. Students will be challenged to solve fictional crimes as well as review historical cases.

Electromechanical Concepts 0.5 Credit

Prerequisites: None

Grades: 9, 10, 11,12

The Electromechanical Concepts course is an elective in the engineering curriculum. This course will use a micro-controller platform called Arduino which will allow more complex projects to be completed more easily than would be possible with discrete components. Many aspects of electromechanical engineering will be covered including the mechanics of motors, servos, torque, and gear ratios; creation of electrical circuits including, breadboards, conductors, switches, LEDs, resistors, diodes, and

microcontrollers; procedural programming including variables, constants, loops, and functions; the use of sensors including touch, light, sound, and proximity. Working in teams of 2-3, students will approach problems following the engineering design process - Ask, Imagine, Plan, Create, Analyze & Improve.

***FIRST* Tech Challenge : Robotics/Coding/Engineering Design** 1.0 Credit

Prerequisites: None

Grades 9,10,11,12

It's way more than building robots! *FIRST* Tech Challenge teams are challenged to design, build, program, and operate robots to compete in a head-to-head challenge designed by *FIRST*. Participants call it "the hardest fun you'll ever have!" *FIRST* Tech Challenge *welcomes every student, with or without special skills.*Students are encouraged to bring any skills they already have, like programming, electronics, metalworking, graphic design, web creation, public speaking, videography, and many more. Teams also must raise funds, design and market their team brand, and do community outreach for which they can win awards.

Project Based Engineering 0.5 Credit

Prerequisites: None

Grades 9,10,11,12

Engineering and engineers have an enormous impact on every aspect of our modern lives. As the world's addiction and reliance on technology grows and as our society continues to face new pressures due to changes in population demographics, climate, resources, etc. , the importance of the engineer will follow suit. The cornerstone of the engineering endeavor is the ability to solve open-ended problems following the engineering design process - Ask, Imagine, Plan, Create, Analyze & Improve. This two-quarter class will focus on finding engineering solutions to solve real-world problems. Depending on class size, students will work in teams of 3-4. Each team will be encouraged to be self-organized, self-directed and responsible for their own learning outcome. Skill-based curriculum (CAD, Electronics, Machining, Tooling, Coding, etc.) will be included on an as-needed basis.

Courses Organized by Elective Areas		
Fine Arts	Technology	Humanities
❏ Singers ❏ Strings ❏ Intro to Studio Art ❏ Advanced Studio Art ❏ Theatre Arts (.5 credit) ❏ Theatre Arts: Improv (.5 credit) ❏ Theatre for Social Action (.5 credit)	❏ STEM Lab ❏ FIRST Tech Challenge ❏ Creative Engineering and Design (.5 credit) ❏ Forensic Investigation (.5 credit) ❏ Electromechanical Concepts (.5 credit) ❏ Project Based Engineering (.5 credit)	❏ New Media ❏ Speech and Debate ❏ Advanced Speech and Debate ❏ Creative Writing (.5 credit) ❏ Questions in Philosophy (.5 credit) ❏ Any world language beyond the 2nd level