



808 VELOCIPEDS

Biography

Position

Cover and Credits

No. 96208

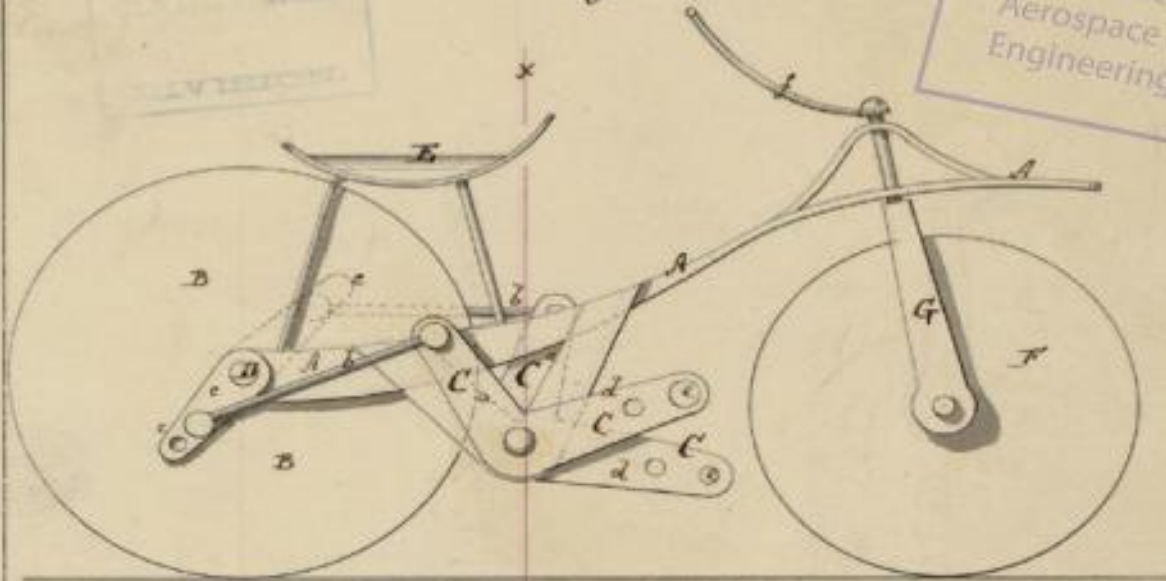
Class 6

84-117

Program of Studies

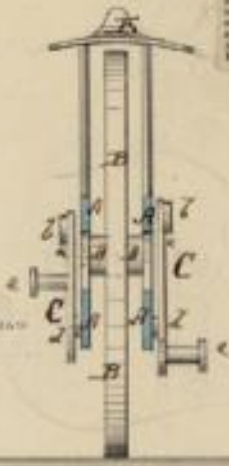
C.E. Dayton's Velocipede.

Fig. 1



The Academy of
Aerospace and
Engineering

Fig. 2



PATENTED
OCT 26 1869

NOTE.—Velocipede of Charles E. Dayton, Meriden, Conn.
I claim the velocipede herein shown, provided with the adjustable foot-rests *a*, pivoted at their angles to the sides of the seats *A*, and at their upper ends connected to the seat-rails by the rods *b*, all arranged in such a manner, that both seats, *a* & *b*, of the foot-rests, swing round the pivot, whereby the foot-rests are adapted to operate with an up-and-down movement, as herein described, for the purpose specified.

C. E. Dayton's Velocipede. Patented Oct. 26, 1869.
(National Archives Identifier: 2049227)
Series: Utility Patent Drawings, 1837-1871.
Records of the Patent and Trademark Office.
Record Group 24, National Archives

Witnesses:

Chas. Nida
Winchman

Inventor:

C. E. Dayton
PER Munn & Co.
Attorneys.

2023-24

W. G. Wright the Elder

Table of Contents

Table of Contents

General Course Information

Course Selection, Faculty Advisement, & Course Placement

UConn Early College Experience (UConn ECE)/Advanced Placement

Capstone Credit Requirement

Grade Level Promotion

Valedictorian and Salutatorian Honors

Graduation Requirements

Grade Point Average

College Planning

Course Descriptions

Cluster 1: Science, Technology, Engineering and Math (STEM)

INTEGRATED SCIENCE

BIOLOGY

CHEMISTRY

EARTH, SPACE AND ENVIRONMENTAL SCIENCE

INTERDISCIPLINARY SCIENCES

PHYSICS

COMPUTER SCIENCE

ENGINEERING

MATHEMATICS

Cluster 2: Humanities

LANGUAGE ARTS

SOCIAL STUDIES

FINE ART AND DESIGN

Cluster 3: World Language

Cluster 4: Fitness, Health, Safety

Cluster 5: Capstone



General Course Information

Course Selection, Faculty Advisement, & Course Placement

The scheduling process at the Academy of Aerospace and Engineering requires a cooperative effort among students, families, and the school to select the most appropriate program for each individual from the diversity of courses offered. This course catalog provides a listing of every course offered at AAE; however some courses may not be offered every year.

Shortly after the second semester begins, faculty will, in consultation with students, recommend courses for the next academic year. Recommendations will then be made available through PowerSchool for families to review. If there is disagreement on the recommendation, families are encouraged to initiate conversations with their child's current team of teachers.

Students at AAE are encouraged to take the most rigorous course available. It is a school-wide goal that all classes are accessible to all students. It should be noted however, that as rigor increases so do the expectations on the student. Faculty and staff will work with students to support them in their classes.

Students who enroll at AAE after their ninth grade year will be placed in courses after a thorough review of previous transcripts and in consultation with families when possible.

UConn Early College Experience (UConn ECE)/Advanced Placement

UConn Early College Experience (UConn ECE): UConn Early College Experience (UConn ECE) provides academically motivated students with the opportunity to take university courses while in high school. These challenging courses allow students to preview college work, build confidence in their readiness for college, and earn college credits that provide both an academic and a financial head start on a college degree and other postsecondary opportunities. UConn ECE Instructors are high school teachers certified by the University. UConn ECE Instructors foster independent learning, creativity, and critical thinking - all important for success in college and careers. The Academy of Aerospace and Engineering offers UConn ECE courses in Spanish, Environmental Science, Physics, English, Biology, and Sociology, and Music. To support rigorous learning, University of Connecticut academic resources, including library and online classroom access, are available to all UConn ECE Students.

Advanced Placement: Advanced Placement courses are designed to prepare students for the College Board AP exams in May. They are college level courses and the AP exam is required in order to gain AP credit. There is a cost associated with the exam, please speak with your School Counselor for more information regarding this. These courses are very rigorous and require a level of commitment and time that generally greatly exceeds that of College Preparatory or Honors classes.

AP Exam Policy:

Advanced Placement courses are designed to prepare students for the College Board AP exams in May. The AP exam is required in order to gain AP credit through the College Board. All students at



AAE who enroll in AP courses are encouraged to take the AP exam in May. Students who qualify for financial assistance can request a fee waiver from their school counselor.

If a student wishes to take more than three AP courses in an academic year, the request will be reviewed by the administrative team and the student's counselor due to the increased demands of the workload.

AAE will do our best to honor any request to take an AP Exam. If a student is not registered for the course for which they would like to take the exam, they must consult with the AP Coordinator to determine if the school can support the administration of an exam outside of our course offerings.

AP and ECE Course Offerings

Science		Humanities	
AP/ECE Biology	AP/ECE Physics 1	AP U.S. History	ECE Spanish
AP Psychology	AP Physics 2	AP World History	ECE Sociology
AP/ ECE Environmental Science	AP/ECE Physics C: Classical Mechanics	ECE Introduction to Academic Writing	AP English Literature & Composition
ECE Earth's Dynamic Environment	AP Physics C: Electricity & Magnetism	AP/ECE English Language & Composition	
Mathematics	Visual Art	Ed to updateComputer Science	
AP Statistics	AP Studio Art	AP Computer Science A	
AP Calculus AB	AP 2D Studio Art	AP Computer Science Principles	
	AP 3D Studio Art		

Capstone Credit Requirement

Successful student completion of Capstone is necessary for graduation from a CREC Magnet School. Students will receive 1 credit for completing the required outcomes outlined in the Capstone course. A grade of *Pass with Distinction*, *Pass* or *Fail* will be recorded on students' high school transcript but will not count toward GPA.

Grade Level Promotion

Promotion to the next grade is based on the total credits earned by the student. In order for students to move to the next grade they must meet the following criteria:

- Students who have accrued 6.0 or more credits are promoted to the 10th grade.
- Students who have accrued 13.0 or more credits are promoted to the 11th grade.
- Students who have accrued 20.0 or more credits are promoted to the 12th grade.

Valedictorian and Salutatorian Honors

CREC high school students who entered a CREC high school beginning in grade nine, and continue through grade 12, may be eligible for valedictorian and salutatorian honors*.

- Only classes taken on our campus and/or graded by our faculty will be counted towards Valedictorian or Salutatorian honors.
- All classes taken on our campus and/or graded by our faculty will be counted towards Valedictorian or Salutatorian honors.
- **The valedictorian and salutatorian will be determined by the cumulative grade point average taken at the end of the first semester, grade 12.**

* ONLY students who have spent their entire high school career with CREC will be eligible for valedictorian and salutatorian honors.

Graduation Requirements

Cluster 1: Humanities		
English	4 credits	Total: 9 credits
Social Studies	3 credits <ul style="list-style-type: none">.5 Civics required1 U.S. History1 African-American/Black & Puerto Rican/LatinX studies	
Fine Art	1 credit	
Humanities Elective	1 credit	
Cluster 2: Science, Technology, Engineering, and Mathematics (STEM)		
Mathematics	4 credits	Total: 10 credits
Laboratory Sciences	4 credits	
STEM Elective	2 credit	
Cluster 3: Fitness, Health, and Safety		
Physical Education & Wellness	1 credit	Total: 2 credits
Health & Safety Education	1 credit	
Cluster 4: World Language		
Foreign Language	2 credits	Total: 2 credits
Cluster 5: Capstone		
Capstone	1 credit	Total: 1 credit
Open Electives	2 credits	Total: 2 credits
Total Credits		26 Credits

**Consideration of reduction of credits will be determined on a case by case basis with the Principal and in conjunction with the Superintendent of Schools. Requests of this nature are rare and will be considered in extreme circumstances.*



Grade Point Average

Letter Grade	Numeric Value	GPA	Honors Weight	AP/ECE Weight
A+	100	4.5	4.75	5.0
A+	96-99	4.4	4.65	4.9
A	93-95	4	4.25	4.5
A-	90-92	3.7	3.95	4.2
B+	86-89	3.4	3.65	3.9
B	83-85	3	3.25	3.5
B-	80-82	2.7	2.95	2.9
C+	76-79	2.4	2.65	2.9
C	73-75	2	2.25	2.5
C-	70-72	1.7	1.95	2.2
D+	66-69	1.4	1.65	1.9
D	63-65	1	1.25	1.5
D-	60-62	.7	.95	1.2
F	0-59	0	0	0

A student's GPA will only include classes that have been taken within a CREC high school program. This would also include credit recovery taken during the summer, if applicable.

High School Honor Roll Protocol

- Students who earn a quarterly GPA average of 3.0 or higher with no Ds or Fs shall earn "Honor Roll" for that academic quarter.
- Students who earn a quarterly GPA average of 3.5 or higher with no Cs, Ds or Fs shall earn "High Honors" for that academic quarter.
- Students who earn a quarterly GPA of 4.0 or higher and earned only grades in the "A" range shall earn "Honors with Distinction" for that academic quarter.

College Planning

Admission requirements for colleges vary greatly, but general guidelines like those below can be very helpful for students planning their high school program. Be sure to consult with counselors on a regular basis and to read the college, university, and trade school catalog to be sure that you are taking the number and types of courses that will meet their specific requirements for admission. Below are some general requirements for types of colleges based on selectivity. Please also keep in mind that you must meet AAE's credit requirement (both total credits and category credits) and AAE's credit requirements may be higher.

	Most Selective	Highly Competitive	Very Competitive	Competitive
English	4 credits			
Math	4 credits	3-4 credits	3 credits	
Science	4 credits	3 credits	3 credits	
Social Studies	4 credits	3 credits	2 credits	
World Language	3-4 years of the same language	3 years of the same language		2 years of the same language
Fine Arts	1 credit recommended			
Extracurricular	Leadership and initiative activities			
Rank in class	Top 10-20%	Top 20-35%	Top 35-50%	Top 50-65%
SAT/ACT scores	1310-1600 or ACT minimum of 29	SAT 1240-1308 ACT 27-28	SAT 1146-1238 ACT 24-26	SAT 1000-1144 ACT 21-23
SAT Subject Tests	Expected		Optional	
GPA	A to B+	B+ to B	B to B-	B- to C+
AP/ECE Expectations	Expected		Recommended	Optional
Computer Literacy	Recommended			
Example Schools	MIT, Yale, Harvard, Stanford	UConn (Storrs), RIT, Quinnipiac, RPI	CCSU, UConn (regional campus)	UHart, Becker,

Course Descriptions

Cluster 1: Science, Technology, Engineering and Math (STEM)

SCIENCE

	Required Courses (H)	AP/ECE	Electives
Grade 9	Integrated Science	--	--
Grade 10	Biology	--	Physics
Grade 11 & 12	Chemistry (Grade 11)	AP Biology/ECE Biology AP Environmental Science ECE Earth's Dynamic Environment	Advanced Aerospace Systems Advanced Astronomy A & B Advanced Science & Engineering Research Advanced Topics in Earth Science Anatomy & Physiology A & B Biotechnology & Bioengineering Digital Electronics Environmental Science Evolutionary Biology Forensics Interdisciplinary Science Seminar Molecular & Cellular Biology-Capstone Nuclear Physics Physics Zoology

INTEGRATED SCIENCE

SC3202 Integrated Science

1 Credit
Honors

The freshman Integrated Science course is designed to provide students with a fundamental background in earth science, chemistry, and physics while developing a deeper understanding of scientific inquiry and science literacy. Students will gain a comprehensive understanding of the fundamentals of Earth's dynamic processes and the role the human population plays in impacting and responding to natural events on Earth. Students will explore the topics of planetary evolution, geologic history, plate tectonics, internal and external forces, along with water and carbon cycles. These topics will allow students to explore data and research into understanding how these processes work and how we impact them as a species. Students will also explore current news and research into ways we are mitigating the effects of climate change and pollution on the environment and society.

BIOLOGY

SC3132 Biology

1 Credit

Honors

This course is designed to develop a comprehensive understanding of fundamental concepts and principles in the life sciences. Students will explore real-world scientific phenomena in order to demonstrate mastery of the Performance Expectations (PE) as part of the Next Generation Science Standards (NGSS).

SC3294 Molecular and Cellular Biology

1 Credit

Honors

Prerequisite: Biology

Molecular and Cell biology integrates multiple scientific disciplines. Students will experience significant growth in an area of personal interest within the biological sciences. A strong emphasis will be placed on students to develop individual or group projects that solve problems or answer questions of personal interest. Students will collaborate, problem solve and analyze their data. Students are expected to develop projects that allow them to participate in various science competitions, like the Connecticut Science and Engineering Fair and the Connecticut Junior Science and Humanities Symposium. The major products include a research project proposal presented during Shark Tank, literature review, Research Poster for the Capstone Exhibition at the end of the year along with a final research paper and reflection and a portfolio documenting the student work, growth and project development and data analysis of research findings.

SC3104 AP Biology/UConn ECE Biology

1 Credit

Advanced Placement/ECE

Prerequisite: Biology

This course will cover the advanced placement curriculum in biology from atoms to zoology. Students will study general chemistry as it relates to macromolecules and apply this to an understanding of structural features and metabolism in cells. With this as a foundation to build on, they will explore genetics and biotechnology, anatomy and physiology in organs and organ systems, the phylogeny and evolution of organisms, and interactions between organisms and their environment.

SC3307 Evolutionary Biology

1 Credit

Honors

Prerequisite: Biology

The process Darwin discovered natural selection, is still the best scientific explanation for the emergence of the most complex of biological structures. In the century and a half that has passed since Darwin, it has become clear that other mechanisms are also involved in explaining such processes as speciation and sex differences. Evolutionary biology offers a scientific approach for addressing some of the most pressing



questions of our time from why we get sick to how we behave. Students in this course will learn how our primate family and eventually our species evolved from within the mammals. We'll look at other humans and human-like species that have all since gone extinct and compare our species with them to see how similar they were to us. We end the first semester exploring the origin of civilization and discussing the future of our species in the age of globalization. In the second semester we will focus on various features of our anatomy, physiology and psychology that influence our health and can best be understood by examination through an evolutionary lens (e.g. sex differences, why we age, why we think, feel and behave in the ways we do, why pregnant women suffer from morning sickness, and much, much more!).

SC3604 Biotechnology and Bioengineering

0.5 Credit
Honors

This course will introduce students to the theoretical aspects of Biotechnology & Bioengineering and societal issues and ethics arising from various technologies. Students will review primary research literature to explore new aspects of biotechnology and bioengineering. Students will develop a project based on personal interest which may be done individually or in groups. Hands on laboratory activities will reinforce theoretical information and teach laboratory safety, data analysis, the scientific method, and related computer and engineering skills.

SC3304A Anatomy and Physiology A

0.5 Credit
Honors

Prerequisite: Biology

Offered in opposite year as Anatomy and Physiology B

This course is designed for students interested in biomedical research or the medical field. Students will learn about the structural organization of the human body and the underlying physiological processes that are essential for maintaining homeostasis. In the first part of this course, students will learn the organization of the human body and histology and review basic biology and biochemistry. Organ systems will be covered in depth, with the first semester focusing on the nervous, muscular, skeletal and integumentary systems. Throughout the course, we will consider not only the normal structures and function of the body, but also what happens when the body's normal mechanisms fail and disease results. Students will have in- depth discussions, diagnose case studies, and complete presentations on medical conditions and diseases. Laboratory experiments will include dissection of preserved organs and/or animals.

SC3304B Anatomy and Physiology B

0.5 Credit
Honors

Prerequisite: Biology

Offered in opposite year as Anatomy and Physiology A

This course will be a continuation of Anatomy and Physiology A. This course is designed for students interested in biomedical research or the medical field. Students will learn about the structural organization of the human body and the underlying physiological processes that are essential for maintaining homeostasis. In the first semester of this course, students will learn the organization of the human body and histology and review basic biology and biochemistry. Organ systems will be covered in depth, with the first semester focusing on the nervous, muscular, skeletal and integumentary systems. Systems to be covered in the second semester will include the cardiovascular system, respiratory system, digestive system, urinary system, endocrine system, and lymphatic (immune) system. Throughout the course, we will consider not only the normal structures and function of the body, but also what happens when the body's normal mechanisms fail and



disease results. Students will have in-depth discussions, diagnose case studies, and complete presentations on medical conditions and diseases. Laboratory experiments will involve osmoregulation (kidney function), blood pressure, electrocardiogram (EKG), blood circulation, and will also include dissection of preserved organs and/or animals.

SC2302 Zoology

1 credit
Honors

Prerequisite: Biology

Zoology is the scientific study of animals. As humans, we are intricately tied to animal life – we’ve depended on many of them for food, work, companionship, and other services throughout our evolution and history. This course provides a survey of invertebrates and vertebrates, as well as animal taxonomy. The focus of this course will include the classification, anatomy, physiology, ecology, and behavior of each of the major animal groups. Dissections, handling of specimens and field studies are required.

CHEMISTRY

SC3212 Chemistry

1 Credit
Honors

Chemistry explores the fundamental concepts, laws, and theories of chemistry; using real-world applications throughout the course. With the implementation of the Next General Science Standards (NGSS); the Disciplinary Core Ideas (DCIs, the chemistry content) will be interwoven with the Science and Engineering Practices (SEPs, the way scientists think about and do science) and the Cross-Cutting Concepts (CCCs, the way different domains of science are linked). Students will be presented with various phenomena throughout the course and will use DCIs, SEPs, and CCCs to describe matter and the changes it undergoes. Chemical principles such as states of matter, atomic structure, electron structure, periodicity, nomenclature, stoichiometry, aqueous reactions, nuclear chemistry, and bonding theory will be covered using NGSS. Additional topics may include thermochemistry and acid-base theory. Inquiry-based laboratory activities involving state of the art technology and equipment will be included with all NGSS bundles of study.

EARTH, SPACE AND ENVIRONMENTAL SCIENCE

SC3344 Advanced Astronomy A: Cosmology and Planetary Science

0.5 Credit
Honors

Explore the history of the universe and what makes it function. This course will provide an overview of the field of cosmology: the study of Cosmic Microwave Background radiation, galaxies, other related phenomena, the history of the universe, and a study of planetary sciences, where we’ll take a look at the planetary formations and properties of planets in our Solar System. Part of the course will involve research on current explorations and studies of extrasolar planets and development on research in understanding the depths of our universe.



SC3354 Advanced Astronomy B: Astrophysics and Stellar Evolution

0.5 Credit

Honors

This course will provide a broad introduction to the field of astrophysics and the study of stars and interstellar medium, how stars evolve and change with time, and how we study the cosmos. Topics will include: history and development of the field of astronomy, star formation, stellar evolution, supernovae, neutron stars, black holes, and spectroscopy. Students will participate in multiple research opportunities for exploring current research into the field and studying telescopes and the tools used for exploration and current missions. Astronomy B can be taken without having taken Astronomy A.

SC3012 Advanced Topics in Earth Science

1 Credit

Honors

Full year course that discusses the different professions and research being done in fields that fall under the category of Earth Science. This course will provide the opportunity to choose an Earth Science field of interest and design an independent research project along with an outline for learning about that specific field and research area. Students will have the opportunity to work with peers in class or independently. The first semester will involve learning about the field; the second semester will involve developing a project and presentation on a current research topic. There will be opportunities to reach out to professionals in the chosen field and to work with live data and information. Subject areas can be, but are not limited to: Meteorology, Climatology, Oceanography, Glaciology, Geology, Mineralogy, Volcanology, Seismology, Paleontology, Cartography, and Geophysics.

SC3014 Earth's Dynamic Environment/UCONN ECE

1 Credit

Honors/ECE

Full year course that provides an in-depth tour of Planet Earth. This course will discuss Earth in four different aspects: *Earth as a Planet*, *Earth as a System*, *Earth as a Story*, and *Earth as a Home*. *Earth as a Planet* will cover the formation process of Earth and the Moon. *Earth as a System* will dive into the internal and external processes that shape our planet, discussing the role of geothermal and solar energy and how they shape and change our planet. *Earth as a Story* covers how scientists determine the history of an area based on geological evidence and discusses topics around evolution and fossils, climate change and life's adaptations to it, plate tectonic movements and how they shaped the planet, and surface processes to create the different climates and environments around the globe. *Earth as a Home* discusses human interactions with the planet and how we use the planet as a resource, our impacts, and current events and planning. Students will investigate Earth's processes through exploration and research of current events and relevant experiences while learning about the current field of geoscience.

SC2233 AP Environmental Science

1 Credit

Advanced Placement/ECE

Prerequisite: Biology and Integrated Science

The goal of the ECE/AP Environmental Science course is to provide students with the scientific principles, concepts and methodologies required to understand the interrelationships of the natural world, to identify and analyze environmental problems both natural and human-made, to evaluate the relative risks associated with these problems and to examine alternative solutions for resolving or preventing them. Topics include: human population, biodiversity, energy resources, pollution, climate change, agriculture, land and water use, and human health.



INTERDISCIPLINARY SCIENCES

SC3244 Forensic Science

0.5 Credit
Honors

Prerequisite: Biology

This half-year elective course provides an introduction to the topics of criminology within the field of forensic science. Study includes the applications of concepts from the areas of Biology, Chemistry, Physics, Entomology, Earth Science, and Anatomy and Physiology to analyze and investigate evidence that may be discovered in a criminal investigation. Major topics include processing a crime scene, collecting and preserving evidence, identifying types of physical evidence, organic and inorganic analysis of evidence, hair, fibers, and paint, toxicology, arson and explosion investigations, serology, DNA, fingerprints, firearms, and document analysis. The main focus of this course will be to emphasize the evidential value of crime scene and related evidence and the services of what has become known as the crime laboratory. This course combines basic theory and real laboratory experiments, creating an experiment based situation for the better understanding of the students. The experiments used reinforce previously learned scientific principles rooted in Biology, Chemistry and Physics. Classroom activities include experiments, projects, case studies and the incorporation of technology.

SC3003 Interdisciplinary Science Seminar (Science of Superheroes & Super Villains)

0.5 Credit
Honors

This course is intended for students who wish to extend their knowledge of special topics within Biology, Chemistry, Physics and Psychology with readings, discussions and projects. We utilize productive talk to explore the “science of” various superheroes/villains and characters in various science fiction, including Star Wars, Star Trek, Harry Potter, Dr. Who, and others based on student interest.

PHYSICS

SC3314 Physics

1 Credit
Honors

Physics is a course designed to develop a comprehensive understanding of the fundamental concepts and principles in the field of engineering physics. Students will explore the theories and applications of topics such as motion, energy, waves, electricity, magnetism, and light. A strong connection to algebra and geometry will be emphasized throughout the course. This course will have a strong laboratory base where students will learn the fundamentals of science instrumentation and research techniques. Engineering applications of physical principles are emphasized, including electrical circuits, motors, forces, energy, and optics.

SC3013 Advanced Science and Engineering Research

1.0 Credit
Honors

Prerequisites: Physics

Students dig deep into the engineering design process, applying math, science, and engineering skills to hands-on projects. They work both individually and in teams to design solutions to a variety of problems



that both engage and challenge the student. Students develop advanced skills in problem solving, research, and design while learning strategies for design process documentation, collaboration, and presentation. A strong emphasis will be placed on student developed laboratory research projects based on personal interests within an area of Science or Engineering. Students are expected to develop projects that allow them to participate in science and engineering competitions. Students will build a working prototype, present a poster of their design and testing results, and complete a final research paper.

SC3524 Science of Alternative Energy Sources

0.5 Credit
College Prep

Through this course, students will explore the science behind alternative energy sources and their real world application. The course will examine the advantages and disadvantages of solar, wind, hydrogen fuel cell, nuclear, and hydropower. Energy sources will be evaluated using fundamental physics concepts such as mechanics, thermodynamics and electricity and magnetism. Throughout this course, students will communicate their work with oral presentations and written technical reports.

SC3374 Digital Electronics

0.5 Credit
Honors

Digital Electronics is a project based course that starts with the basic concepts of electricity and advances into the theory, practical use and application of analog and digital solid-state components. Students will have hands-on experience using the latest electronic diagnostic equipment such as multimeters, function generators, digital logic probes and oscilloscopes. In the first half of this course, the students will learn how digital components are combined to make computers and in the second half, they will actually use and program microcontrollers to read sensors, light LEDs, display alphanumeric information, make music, control motors and interface with other devices.

SC3324 Nuclear Physics

0.5 Credit
Honors

Prerequisites: Physics

Nuclear science is a physics course that is an introduction to understanding the nucleus of the atom. This course, designed for students who already have taken introductory physics, will go into areas and depth not normally addressed in high school classes. Topics will include: radiation detection; nuclear stability; unstable nuclei and radioactive decay; environmental radiation; radiation absorption and interactions with matter; nuclear reactions; and nuclear power and energy. This course will also include a review of latest advances in particle physics.

SC1231 AP/ECE Physics 1

1 Credit
Advanced Placement/ECE

Co-requisite: Algebra 2

AP Physics 1 is the equivalent to the first semester of a college introductory, algebra-based physics course. AP Physics 1 addresses the topics of kinematics; Newton's Laws of motion; torque; rotational motion and angular momentum; gravitation and circular motion; work, energy, and power; linear momentum; oscillations, mechanical waves and sound; fluid mechanics and thermal physics; and an introduction to electrical circuits. This course includes a hands-on laboratory component comparable to a semester-long introductory



college-level physics laboratory. Students ask questions, make observations and predictions, design experiments, analyze data, and construct arguments in a collaborative setting, where they direct and monitor their progress. Participation in the AP Physics 1 Advanced Placement Exam is an expectation for this full year course. Four transferable UCONN credits may be available for students who earn a grade of C or higher as part of the UCONN Early College Experience (ECE) Program (course number 1201Q). To be eligible for the UCONN credits, AP Physics 2 must have been completed after completion of AP Physics 1.

COMPUTER SCIENCE

	CP	AP
Grade 9	Exploring Computer Science	
Grade 10	--	AP Computer Science Principles
Grade 11		AP Computer Science A
Grade 12	Data Structures & Algorithms	

TE00106 Exploring Computer Science

1 Credit
College Prep

Exploring Computer Science is a year-long foundational course developed around a framework of both computer science content and computational practice. Throughout the course, emphasis is placed on how computing enables innovation in a variety of fields and the impacts that those innovations have on society. Assignments and instruction are contextualized to be socially relevant and meaningful for diverse students. Topics in ethical and social issues in computing and careers in computing are woven throughout the six units. Units utilize a variety of tools/platforms, and culminate with final projects around the following topics: Human Computer Interaction, Problem Solving, Web Design, Programming, Computing and Data Analysis and Robotics

SC3373 AP Computer Science A

1 Credit
Advanced Placement

This course will cover the AP Computer Science curriculum. It is focused on the JAVA programming language. The course starts with an early introduction to objects and GUI. The course introduces basic data types, user-defined data types, control structures, and basic input and output (both console and graphical interfaces). The course will introduce the analysis and implementation of simple data structures (Arrays and ArrayLists), searching and sorting, recursion, inheritance and polymorphism. Inquiry-based laboratory activities are used to enhance the understanding of core concepts.

TE1043 AP Computer Science Principles

1 Credit
Advanced Placement

The AP Computer Science Principles course is designed to be equivalent to a first-semester introductory college computing course. In this course, students will develop computational thinking vital for success across all disciplines, such as using computational tools to analyze and study data and working with large data sets to analyze, visualize, and draw conclusions from trends. The course is unique in its focus on fostering student creativity. Students are encouraged to apply creative processes when developing computational artifacts and to think creatively while using computer software and other technology to explore questions that interest them. They will also develop effective communication and collaboration skills, working individually and collaboratively to solve problems, and discussing and writing about the importance of these problems and the impacts to their community, society, and the world.



Prerequisite: AP Computer Science A

This year-long project-based course will cover Exceptions, Searching and Sorting, Recursion, Collections, Linked Structures, Maps, Queues, Stacks, Trees and Hash Tables. The course starts with a review of algorithms and basic object oriented programming concepts covered in AP CS A. Students will have a chance to explore problems from a large pool of computer programming contest problems. Students in this class will participate in the American Computer Science League (www.acsl.org) and the High School Capture The Flag (<https://hsctf.com/>) contests.

ENGINEERING

	CP
Grade 9	Introduction to Engineering
Grade 10	Principles of Engineering
Grade 11	Aerospace Engineering Mechanical Engineering
Grade 12	Advanced Aerospace Engineering Mechanical Engineering

EG1910 Introduction to Engineering Design/ PLTW

1 Credit
College Prep

Introduction to Engineering Design is largely a project-based course that provides students with an introduction to the field of product design and development. Students will learn how to use the CAD software Onshape. Through the year this course will cover the design process, sketching, geometric relationships, 3-D modeling of parts and assemblies, creating work drawings, and product marketing and manufacturing.

EG1911 Principles of Engineering/ PLTW

1 Credit
College Prep

Principles Of Engineering (POE) is a high school-level survey course of engineering. The course exposes students to some of the major concepts that they will encounter in a post-secondary engineering course of study. Students have an opportunity to investigate engineering and high tech careers. POE gives students the opportunity to develop skills and understanding of course concepts through activity, project and problem-based (APPB) learning. Used in combination with a teaming approach, APPB learning challenges students to continually hone their interpersonal skills, creative abilities, and problem solving skills based upon engineering concepts. It also allows students to develop strategies to enable and direct their own learning, which is the ultimate goal of education. Principles Of Engineering is the second of two foundation courses in the Project Lead The Way high school engineering program. The course applies and concurrently develops secondary level knowledge and skills in mathematics, science, and technology.

SC1135 Aerospace Engineering

1 Credit
College Prep

Aerospace Engineering is a project based course which introduces students to the fundamentals of atmospheric and space flight. Students in this course will learn the fundamental principles governing aerospace systems through a mixture of problem solving, laboratory work, and design challenges. Projects will require students to effectively manage the physical concepts at work as they complete design challenges ranging from the construction of various aircraft to planning cross country flights. Throughout this hands-on course, students will communicate their work with oral presentations and written technical reports.



TE2261 Mechanical Engineering

1 Credit
College Prep

The course includes discussion and experimentation in design, communications, production and manufacturing, and transportation systems and aerodynamics. Topics and units may include alternative energy vehicles, communication, electrical and electronic circuits used in transportation, and polymer and metal manufacturing processes. Students will build an Electrathon America Car to compete at Lime Rock Raceway in May. Students will learn to fabricate and weld assemblies to create the EV racer for the challenge. [Visit out website for more information.](#)

SC1131 Advanced Aerospace Systems

1 Credit
Honors

Prerequisites: Algebra II

Advanced Aerospace Systems is a project based course that begins with the basic principles of flight and advances into the disciplines of aerodynamics, propulsion, structures, stability and control, and performance. Through this course, students will learn the design and operation of important aerospace systems by means of problem solving, laboratory work, and design challenges. Students will apply concepts from classical mechanics, fluid dynamics, electronics, and robotics and utilize computer aided engineering and rapid prototyping techniques. Throughout this hands-on course, students will communicate their work with oral presentations and written technical reports.



MATHEMATICS

Grade Level	Honors	AP	Electives
Grade 9	Algebra 1 Geometry Pre-Calculus	--	--
Grade 10	Geometry Algebra 2 Pre-Calculus	--	--
Grade 11	Algebra 2 Pre-Calculus Introduction to Data Science	AP Calculus AB AP Calculus BC	Financial Algebra
Grade 12	Pre-Calculus Introduction to Data Science	AP Calculus AB AP Calculus BC AP Statistics	AP Statistics Financial Algebra

MA2014 Algebra I

1 Credit
Honors

Based on a discovery approach (learn by doing), this course is designed so that students will discover important algebraic principles blended with geometry, data analysis, discrete mathematics and statistics. This investigative approach, driven by a strong emphasis on conceptual understanding and mathematical relationships, reflects national and state standards. Within the context of real-world data and cooperative learning groups, students will create an algebraic vocabulary; continue to develop oral and written expression; explore graphs and statistical methods to represent and interpret data; extend work with proportions and percents to rates and variation; graph and write linear equations; connect linear equations to parallel and perpendicular lines; solve systems of linear equations; investigate exponential growth and properties of exponents; describe functions and function notation; and model quadratics and find their roots. Active learning will be enhanced with technology-rich instruction including computer software applications, graphing calculator exploration and use of the Geometer's Sketchpad. A TI-83 or TI-84 graphing calculator is required.

MA2102 Geometry

1 Credit
Honors

Proof Based Geometry emphasizes advanced geometry including axiomatic foundations of the deductive process. The course integrates different elements of three-dimensional figures and algebraic/graphical representation of geometric principles. Problem solving will include the use of graphing calculators. This course develops a structured mathematical system employing both deductive and inductive reasoning. It includes plane, coordinate, and transformational geometry. Proof is developed and the concepts of congruence and similarity are investigated and applied. Algebraic methods are employed to solve problems involving geometric principles. While Euclidean geometry is the basis of most of the course some non-Euclidean geometries are investigated. When appropriate, portions of MATH 121 will be applied to Foundations in Science courses.



MA2202 Algebra II

1 Credit
Honors

Prerequisites: Algebra I and Geometry

Building on the skills, concepts, and vocabulary of Algebra I, this course extends what has been previously learned and introduces students to more advanced topics in algebra. The course is designed to satisfy the Common Core State Standards and to prepare students to compete with peers nationally as well as globally. Students will gain experience with the concepts of functions and inverse functions and investigate polynomial functions, rational expressions and functions, trigonometric functions, exponential and logarithmic functions, and inferential statistics. Use of technology in working with different mathematical models of real world problems is employed to enhance the learning experience. Successful completion of this course provides a foundation for further study in Mathematics as well as providing prerequisite knowledge for courses in other disciplines.

MA2243 Pre-Calculus

1 Credit
Honors

This course is a rigorous study of functions and their properties. Trigonometric, polynomial, rational, radical, and exponential mathematical functions are studied in detail as well as sequences and series, vectors, parametric, and polar coordinates. Development of integrated mathematical tools for applications to science will include more advanced levels of mathematical modeling. This course provides a strong foundation in functions and equations as they apply to both mathematical functions and models of science while preparing students to pursue calculus.

MA1009 Introduction to Data Science

1 Credit
Honors

Data science is one of the hottest industries in the US where professionals analyze “big data”. You will use a variety of technological tools to understand, ask questions of, and represent data through project-based units. You will be a data explorer and develop your understanding of data analysis, sampling, correlation/causation, bias and uncertainty, modeling with data, making and evaluating data-based arguments, and the importance of data in society. This will provide you with opportunities to understand the data science process of asking questions, gathering and organizing data, modeling, analyzing and synthesizing, and communicating.

MA2352 Advanced Placement Statistics

1 Credit
Advanced Placement

This course provides an in-depth study of applied statistics. The focus is on four major areas of statistical analysis:

1. Exploratory data analysis;
2. Planning a statistical study (including experimental design and sampling theory);
3. Probability modeling and simulation;
4. Statistical inference.

This course should be particularly valuable to students with interests in mathematics, engineering, life sciences, environmental science, and medicine. As part of the coursework, each student will plan and conduct a substantial statistical study in an area of his or her interest. Students who successfully complete the course will be prepared to take the AP Statistics exam in May.



MA4052 Financial Algebra

1 Credit
Honors

Prerequisites: Algebra 2

Financial Algebra is a comprehensive learning program aligned to the Common Core State Standards. It is an applications-rich, algebra-based, technology-oriented program that incorporates mathematical skills in real-world contexts. Topics include: Banking, Investing, Credit, Employment and Income Taxes, Automobile Ownership, and Household Budgeting. The course allows students to experience the interrelatedness of mathematical topics, find patterns, make conjectures, and extrapolate from known situations to unknown situations. The mathematics topics contained in this course are introduced, developed, and applied in an as-needed format in the financial settings covered. Students are encouraged to use a variety of problem-solving skills and strategies in real-world contexts, and to question outcomes using mathematical analysis and data to support their findings.

MA2304 Advanced Placement Calculus AB

1 Credit
Advanced Placement

Prerequisite: Pre-Calculus

This calculus course will provide students with all of the elements required for pursuing further collegiate study of calculus. The course is designed to prepare students for successful performance on the advanced placement exam at the AB level. Concepts presented will include use of graphical, numerical and symbolic representations and other materials usually required for the completion of at least one semester of college level calculus. Applications from biology, chemistry, physics as well as engineering are studied in the context of calculus. Technology is used where appropriate throughout the course. Students completing this course are prepared for successful completion of the calculus Advanced Placement exam (level AB).



Cluster 2: Humanities

LANGUAGE ARTS

	CP	Honors	AP	ECE	Electives
Grade 9	--	English I	--	--	--
Grade 10	--	English II	--	--	--
Grade 11	English III	--	AP Language & Composition	Introduction to Academic Writing	Journalism SAT Success
Grade 12	English IV	--	AP Language & Composition AP Literature	Introduction to Academic Writing	Journalism

EN1372 English Language Arts I

1 Credit
Honors

Students enrolled in this course will study American Literature through a variety of themes. It will encourage the students to think critically about literature, connect to their personal experiences and make connections across disciplines. Students in American Literature will work closely with the American History curriculum to complement the content of the course. The American Literature course will also involve the students in a variety of writing experiences to demonstrate their knowledge of the content and their ability to develop their skills in this area. Technology will be integrated to enhance the students' knowledge of American Literature and culture.

EN2402 English Language Arts II

1 Credit
Honors

The emergence of voice is integral in understanding the power, authority, and social advancements within societies. Power is gained, maintained, and often restricted through language and the expression of individual and collective voices. Along with the power of voice comes responsibility: the obligation to act justly and the spirit to better the world around. When used properly, strong voices have given rise to leadership, activism, empowerment, and liberation. Unfortunately, the responsibilities of voice are not always fulfilled. Often, voice and the associated power are corrupted, leading to oppression and injustice. In "The Power of Voice," students will study voices from around the globe and across America. Reading classical texts, modern works, current periodicals, and diverse genres will add to student knowledge of global voices. In addition, students will write and create their own works to help discover and develop their own voices and unleash the inherent power to better the world around them. The ultimate goal of the course is to heighten the students' understanding of the powers, dangers, and endless possibilities of voice.



EN3401 English Language Arts III

1 Credit
Honors

World Literature provides students with the opportunity to explore literature from many cultures within its historical context. The course will examine how cultural and literary archetypes exist in a multicultural and historical context. Students will learn how literature passes on cultural values and explains natural events. Students will continue to develop their effective communication skills in the areas of reading, writing, listening, speaking, and viewing. Technology will be integrated to enhance the students' knowledge of world literature and culture. This course will encourage students to think critically about literature, make connections across disciplines, and connect to their personal experiences in order to succeed in their academic studies and their future careers. SAT Verbal skill practice will be integrated into the course.

EN1004/ENGL 1004 Introduction to Academic Writing

1 Credit
UConn ECE

Prerequisite: English I and English II

This is a UCONN ECE elective credit course. It serves as an intense introduction to the foundations of various types of writing formats. It focuses on the development of the reading and writing skills essential to university work. It is recommended that students successfully pass this course before electing to take AP Language/ENGL 1010 or AP Literature. Students can earn 4 credits from UCONN.

EN3103 AP English Language and Composition / UConn ECE ENGL 1008*

1 Credit
Advanced Placement/ECE

Prerequisite: English I & II (recommended ENGL1004)

This course engages students in becoming skilled readers of prose written in a variety of rhetorical contexts, and in becoming skilled writers who compose for a variety of purposes. Both their writing and their reading should make students aware of the interactions among a writer's purposes, audience expectations, and subjects, as well as the way genre conventions and the resources of language contribute to effectiveness in writing. The overarching objective is to enable students to write effectively and confidently in their college courses across the curriculum and in their professional and personal lives. AP English Language and Composition provides students with opportunities to write about a variety of subjects from a variety of disciplines and to demonstrate an awareness of audience and purpose. It emphasizes the expository, analytical and argumentative writing that forms the basis of academic and professional communication, as well as the personal and reflective writing that fosters the development of writing facility in any context. In addition, it teaches students that the expository, analytical and argumentative writing they must do in college is based on reading as well as on personal experience and observation. Therefore, it teaches students to read primary and secondary sources carefully, to synthesize material from these texts in their own compositions, and to cite sources using conventions recommended by professional organizations.

Instruction in academic writing through interdisciplinary reading. Assignments emphasize interpretation, argumentation, and reflection, revision of formal assignments and instruction on grammar, mechanics, and style. Four UConn credits upon successful completion of the course.

***Students cannot take ECE 1004 after taking this course if they want the ECE credit.**

EN4052 English Language Arts IV

1 Credit
Honors

This course is designed to assist students in the development of their creative, as well as their college writing abilities. By reading and discussing the work of selected authors, students will add to their knowledge of characterization, plot, setting and point of view. Students will apply this knowledge while experimenting with different writing genres and discovering their own unique writing styles. Students will also learn and practice college level writing skills, beginning with the college application essay in order to be better prepared for the rigors of college writing. An assortment of mini-lessons will be aimed at improving grammar and mechanics. An emphasis will be placed on peer-revision as students work together to hone both their creative and academic writing skills. In addition to completing numerous written assignments and individual portfolios, each student will contribute to a class anthology and be encouraged to prepare at least one piece for submission to a publishing outlet or writing contest.

EN1326 AP English Literature and Composition

1 Credit
Advanced Placement

Prerequisite: Senior Standing

Advanced Placement English Literature and Composition engages students in the careful reading and critical analysis of imaginative literature. Through the close reading of selected texts, students deepen their understanding of the ways writers use language to provide both meaning and pleasure for their readers. As they read, students consider a work's structure, setting, characterization, language, and themes. The course includes intensive study of representative works from various genres and periods in both prose and poetic form. The pieces chosen invite and reward rereading and do not, like ephemeral works in such popular genres as detective or romance fiction, yield all (or nearly all) of their pleasures of thought and feeling the first time through. Skills such as close reading, discussion, and both analytical and creative writing will be emphasized in this course.

SOCIAL STUDIES

	Honors	AP/ ECE	Electives
Grade 9	US History	--	--
Grade 10	Black/Latinx Studies	--	--
Grade 11	Civics OR AP Government	AP World History AP US History ECE Sociology AP Psychology	Sociology - CP Human Rights Studies - CP Economics - CP Intro. to Criminal Justice - CP
Grade 12	<i>(see elective list)</i>	AP World History AP US History ECE Sociology AP Psychology	Black/LatinX Studies Sociology - CP Human Rights Studies - CP Economics - CP Intro. to Criminal Justice - CP

SS4022 United States History

1 Credit
Honors

American History is a course designed to take students on an exploratory journey of the history of North America from post-Civil War to present. Students will investigate history in chronological order through various themes such as expansion, race relations, geography, government, education, immigration, arts & entertainment, transportation and economics. Students will have an opportunity to look at history from the vantage point of an everyday citizen alongside a more traditional approach of studying significant historical figures and events. Students in American History will work closely with the American Literature curriculum as it complements the content of the course.

SS4132 Civics

.5 Credit
Honors

Civics is a required course for graduation. The focus of this course is to prepare students to exercise their political responsibilities as thoughtful and informed citizens. Civics provides a basis for understanding the rights and responsibilities of being an American citizen and a framework for competent and responsible participation in American government. Emphasis is placed on the historical development of government and political systems, and the importance of the rule of law; the United States Constitution; Federal, State and local government structure; and rights and responsibilities of citizenship. Students will actively investigate local, state and national issues, read and participate in discussions, and develop informed opinions using a variety of writing forms. This course prepares students for college level analytical writing by teaching key writing skills throughout the curriculum.

SS4563 AP United States Government and Politics

.5 Credit
Advanced Placement

AP U.S. Government and Politics is an introductory college-level course in U.S. government and politics. Students cultivate their understanding of U.S. government and politics through analysis of data and text-based sources as they explore topics like constitutionalism, liberty and order, civic participation in a representative democracy, competing policy-making interests, and methods of political analysis.

SS4243 AP World History: Modern

1 Credit
Advanced Placement

The purpose of the AP World History: Modern course is to develop historical thinking skills that allow students to analyze global historical narratives from approximately 600 CE to present, with particular emphasis on 1200 CE to present. Students will master selective historical facts but the emphasis of the course is on developing analytical reading and writing skills. The course highlights changes in global frameworks and their causes and consequences, as well as comparisons among major societies. Specific themes provide further organization to the course, along with consistent attention to contacts among societies that form the core of world history as a field of study.

1302 Sociology

.5 Credit
College Prep

Sociology is the systematic study of social behavior and human groups. The course will examine the patterns of human behavior by studying the primary institutions found in all human societies by identifying the membership groups various people belong to. The concepts of social norms, values, status, class ranking, racial, ethnic, gender, and religious elements will form the core basis of the course. The class will also explore the ever changing societal issues of crime, aging, poverty, deviant and anti-social group activities, urbanization, drugs, and alienation. It is the desire of the course to assist the student in developing problem solving skills and a rational approach to the world in which they inhabit.

SS4071/ECE SOCI 1001 Sociology/Introduction to Sociology

1 Credit
UConn ECE

Prerequisite: Completion or concurrent enrollment in ECE English 1004

Modern society and its social organization, institutions, communities, groups, and social roles: the socialization of individuals, family, gender, race and ethnicity, religion, social class, crime and deviance, population, cities, political economy, and social change. As a UConn ECE course this curriculum will provide an additional college-level experience with credit-earning opportunities. This will help prepare students as they transition to college, while also providing a challenging new course for students who have a greater interest in the subject matter. Three UConn credits awarded upon successful completion of the course.

SS4223 AP Psychology

1 Credit
Advanced Placement

Prerequisites: Biology

This course will cover the advanced placement curriculum in psychology. Students will learn about the history of psychology as a way to both explain the range of human behavior that is considered normal and to establish criteria for identifying that which is abnormal. Many approaches have come into fashion and faded away during this history and we'll learn about what influenced them and what benefits some of these approaches brought to the field. One of the most important advancements came when psychologists began to explore the methods being independently developed and employed by scientists studying behavior in animals. From this historical foundation, students will evaluate the modern study of behavior and mental processes in human beings and other animals and how this knowledge is applied in the various major subfields in psychology. Students will also learn about the ethics and methods psychologists use in their science and practice.

SS4353 AP United States History

1 Credit
Advanced Placement

The AP U.S. History course is designed to provide students with the analytic skills and factual knowledge necessary to deal critically with the problems and materials in U.S. history. The program prepares students for intermediate and advanced college courses by making demands upon them equivalent to those made by full-year introductory college courses. Students should learn to assess historical materials—their relevance to a given interpretive problem, reliability, and importance—and to weigh the evidence and interpretations presented in historical scholarship. An AP U.S. History course should thus develop the skills necessary to arrive at conclusions on the basis of an informed judgment and to present reasons and evidence clearly and persuasively in essay format.

SS2001 African American, Black, Latinx, and Puerto Rican Studies

1 Credit
Honors

The African American, Black, Latino, and Puerto Rican Course of Studies is a one credit, year-long elective in which students will consider the scope of African American, Black, Latino, and Puerto Rican contributions to U.S. history, society, economy, and culture. The course is an opportunity for students to explore accomplishments, struggles, intersections, perspectives, and collaborations of African American, Black, Latino, and Puerto Rican people in the United States. Students will examine how historical movements, legislation, and wars affected the citizenship rights of these groups and how they, both separately and together, worked to build U.S. cultural and economic wealth and create more just societies in local, national, and international contexts. Coursework will provide students with tools to identify historic and contemporary tensions around race and difference; map economic and racial disparities over time; strengthen their own identity development; and address bias in their communities. This course will contribute to the critical consciousness and civic-mindedness competencies of a twenty-first century graduate. It is available to students enrolled in their junior or senior year.

SSXXXX Economics

.5 Credit
College Prep

This course is an introduction to topics in both macro and micro economics. Students will study key topics including supply and demand, economic performance, economic growth and business development. They will also study a broader picture of economics including government policy, debt management, and fiscal policy. Students will study historical economic events and trends, but will also learn to analyze current events and understand modern discussions of economics in the news.

SS4245 Introduction to Criminal Justice

.5 Credit
College Prep

An overview of the criminal justice system, surveying the basics of law enforcement, the courts, and corrections. Students will develop a working knowledge of the language of the criminal justice system and discuss problems and improvements of the system.

SS4311 Human Rights and Global Problem Solving

.5 credit
College Prep

Exploration of central human rights institutions, selected human rights themes and political controversies, and key political challenges of contemporary human rights advocacy.



FINE ART AND DESIGN

	CP
Grade 9 (Foundational Courses)	Band Designing Minds Innovation 101 Studio Art (will not run during 2023-2024 SY)
Grade 10 - 12 (Electives)	3D Art Advanced Studio Art Band Computer Aided Design Digital Design Green Building Design Industrial Design Music Technology Paint, Materials, & Contingencies Digital Photography Sound Reinforcement & Recording Technology (Woodworking) Visual Thinking

AR0308 - Innovation 101 - General 9th Grade Art Foundation Course

.5 Credit
College Prep

Innovation is a 9th grade only course for general art. The ability to visualize ideas both rapidly and convincingly on any platform (analog or digital) begins with the development of strong hand-drawing skills. In fact, hand drawing is one of the most valuable skills needed in design work; it is critical for expressing design ideas to oneself, one's colleagues and one's clients. Accordingly, this course explores a wide range of tools, materials, processes, and techniques that help hone drawing and visual communication skills, from very simple working sketches to full-color professional presentation renderings. Topics covered include rapid visualization drawing, ideation, basic and advanced perspective, blocking out shapes, an appropriate point of view, composition, tonal contrast, light and shadow, textures and details, and presentation. Students receive instruction in the use of assorted media, including graphite, markers, pastels, paint, and a variety of drawing papers.

AR6271 Designing Minds - Design 9th Grade Foundation Course

.5 Credit
College Prep

Designing Minds is a 9th grade only course that challenges students to design projects that combine meaning with image-making for a product that is intended for mass production. Typical design formats include product/company branding development, product illustrations, game design, architectural design, websites & interactive design. Students learn to articulate concepts through graphic design and industrial design skills. Strong craft and presentation skills are emphasized throughout. Students achieve the highest level of design excellence through critiques and peer reviews. The ability to communicate ideas both rapidly and convincingly will be through Adobe's Illustrator and Photoshop programs as well as Fusion 360 for 3D printing. [Visit out website for more information.](#)

AR6020 Studio Art – Fine Art 9th Grade Foundation Course (will not run during 2023-2024 SY)

.5 Credit
College Prep

Studio Art is a 9th grade only Art immersion course focusing on drawing, painting, printmaking, and sculpting. Tailored for the Arts focused high school student, the instructional goals of the Studio Art program are to:

1. Encourage creative as well as systematic investigation of formal and conceptual issues through advanced and in-depth technical explorations.
2. Emphasize making art as an ongoing process that involves the student in informed and critical decision-making.
3. Develop advanced technical skills and expand student's understanding of the functions and impact of the visual elements.
4. Encourage students to become independent thinkers who will contribute inventively and critically to their culture through the making of art.

AR6022 Advanced Studio Art

.5 Credit
College Prep

Studio Art is a semester-long foundation course for students who are interested in building on the skills they developed in previous Art courses. Students will also get to explore 2-dimensional art materials like digital painting, graphic design and mixed media collage. The focus of this course is an exploration of different techniques found in the visual arts. Regardless of a student's perceived level of artistic ability, they will find success.

EG1004 Computer Aided Design: Engineering Graphics (runs in odd start school years)

.5 Credit
College Prep

Engineers and Architects have a working knowledge of mechanical parts as well as computer-aided design (CAD) software, such as AutoCAD and Fusion 360. We will work on architecture, mechanical, electrical, and electronic technical drawings used by managers, engineers, and clients to understand the needs and requirements for a new product or system. We will work with digital drawings that directly communicate with CNC and 3D printing machines to make products during the class. Industrial standards for Haas CNC, presentation, formatting, dimensioning, and detailing will be covered in the class. [Visit our website for more information.](#)

AR0307 Industrial Design (runs in odd start school years)

.5 Credit
College Prep

This multidisciplinary field involves applying 2D and 3D fabrication processes to produce objects, commercial products, and systems that entertain, enable, and inspire, and transform the way people live. Today's product designer is multifaceted, with the ability to create, integrate, and communicate ideas across product areas, such as furniture or shoe design, fashion accessories, home, and office décor, consumer products, and packaging. We will be using Autodesk Fusion 360 for our main software for this course. [Visit our website for more information.](#)



AR6401 Digital Design

.5 Credit
College Prep

Investigate creative and effective 2D visual design systems through the use of visual images. This course works with digital media to create illustrations, collages, paintings, murals, books and paintings and prints with the use of the Adobe Suite which includes Photoshop, Illustrator, and InDesign.

TE8001 Technology

1 Credit
College Prep

This is an introduction to the basics of woodworking. The course is designed to initiate and develop the student's hands-on ability to intelligently design and construct useful products. Construction principles, procedures, machines, materials and hand tools will be covered. Units the students will experience include safety, fasteners, joinery, and material science. Safe working procedures, proper design and pride in craftsmanship will be emphasized. Students will be creating individual and class projects throughout the year.

[Visit our website for more information.](#)

AR0306 Paint, Materials, & Contingencies

.5 Credit
College Prep

Hands-on investigation of technical and formal issues in painting, focusing on the development of technical abilities in collusion with concepts and exploration of different methods of achieving visual "dexterity." This painting course integrates intellectual and technical ability with historical, contemporary, and personal strategies. Emphasis is on the exposure to and analysis of contemporary painting through visual presentations, lectures, and the practical application of painting as a medium, both in technique and material.

AR0305 Visual Thinking (runs in even start school years)

.5 Credit
College Prep

Explore traditional and contemporary printmaking techniques for transferring images photographically to intaglio, lithograph and screenprint. This course encourages exploration of and technical experimentation in using drawings, photographs and computer-generated visual information as components of a print. Furthermore, students master the darkroom and printmaking skills necessary to bring their ideas from conception to printed edition. As a result, each student completes a final portfolio of prints ranging from black-and-white etchings to four-color separation screenprints. [Visit our website for more information.](#)

TE3301 Green Building Design (runs in even start school years)

1 Credit
College Prep

In this architectural design course, students will become familiar with the basic concepts of sustainable building by examining the concepts of green building. We will design, draw out, and create models of residential and public buildings while looking at specific characteristics like how to increase heating and cooling efficiency of a home while reducing dependence on nonrenewable sources of energy. New technologies for specific structures like the heat trapping characteristics of roofs and how the sun's heat increases the urban "heat island" effect will be the focus of units like substantial heating of neighborhoods in the urban market. We culminate in making actual size wall structures and sheds for a client.

Green Building Design works to develop students' design and technical skills; understanding of spatial relationships, human scale, and materiality; critical reading, writing, and research capabilities; and awareness of the design industry and professional practice, all of which are required to succeed in college. This course



prepares you for the Roger Williams portfolio needed to join the Architecture department in college. [Visit out website for more information.](#)

AR6202 Digital Photography

.5 Credit
College Prep

In this course we will explore digital photography with our Canon Rebel DSLRs. Students will be given assigned experiences, projects, techniques to learn about the finer points of the art of photography. All will be asked to produce artwork and participate in class discussion to better understand the characteristics of capturing images as it pertains to art and art making through critiques. Emphasis will be placed on the students' development of an understanding the fine art of photography and the technical ability to achieve this level of photography. The semester culminates in a one-person show of 10 photographic works on a theme of your choice. [Visit out website for more information.](#)

AR6021 3D Art

.5 Credit
College Prep

This course will introduce basic three-dimensional processes and materials as well as develop the student's ability to analyze and create form and spatial relationships. 3D design involves purposeful decision making about using the elements and principles of art in an integrative way to create sculpture. Students will create using both additive and reductive process of sculpture. [Visit out website for more information.](#)

MU1103 Music Technology

.5 Credit
College Prep

This course will study the techniques of modern computer-based music. Topics will include drum machine and synthesizer sequencing, musical form, the design and creation of electronic instruments (incorporating techniques such as touch pads and sonar), film scoring, and the Foley effect.

MU2103 Sound Reinforcement & Recording

.5 Credit
College Prep

The Sound Reinforcement & Recording course is intended to give students a basic understanding of two major applications of technology in music: live sound reinforcement and analog and digital recording. Students will be able to design and implement amplification systems for live shows. Students will produce and record a short album. Units include the study of acoustics, the science of sound, microphones, audio effects, live sound reinforcement, and recording techniques.

MU1822: Band

1 Credit
College Prep

This performance-based instrumental music group is for students interested in continuing to play a band instrument and perform in public. Students are required to purchase/rent an instrument. Students will participate in pep band and concert band performances. A wide variety of music for winds and percussion will be studied and performed throughout the year. Attending all full band performances is a course requirement.



Cluster 3: World Language

	Honors	ECE
Grade 9	Spanish 1 Spanish 2 Spanish for Heritage Speakers 1	--
Grade 10	Spanish 2 Spanish 3 Spanish for Heritage Speakers 1 Spanish for Heritage Speakers 2	--
Grade 11	Spanish 3 Spanish 4 Spanish for Heritage Speakers 1 Spanish for Heritage Speakers 2	ECE Spanish
Grade 12	Spanish 4 Spanish 5 Spanish for Heritage Speakers 1 Spanish for Heritage Speakers 2	ECE Spanish

SP5012 Spanish I

1 Credit
Honors

Students enrolled in this beginning course of study participate in thematic units that promote effective communication and improved oral and written proficiencies through a variety of instructional strategies and authentic assessments. Students become effective communicators in the present tense through purposeful listening, speaking, reading, or writing activities. Students participate in authentic exchanges of information for a real purpose between people, such as discussing pastimes, personality traits, school life, ordering food in a restaurant, and stating the locations of people, places, and objects. Students experience the history, geography, and cultural perspectives of Spain, Central and South America.

SP5112 Spanish II

1 Credit
Honors

Prerequisites: Spanish I or teacher recommendation

Students enrolled in this course of study continue to participate in thematic units that promote effective communication and improved oral and written proficiencies through a variety of instructional activities and authentic assessments. Students continue to build upon their effective communication skills through purposeful listening, speaking, reading and writing activities. Students participate in authentic exchanges of information for a real purpose between people, such as describing classroom objects, extracurricular activities, and special events, and inquiring and giving directions. Additional authentic thematic units include discussing emergencies and injuries. Students communicate in the past and present tenses, and they experience the history, geography, and cultural perspectives of Spain. Literature in the form of poetry, fables and short stories is introduced.

SP5212 Spanish III

1 Credit
Honors

Prerequisites: Spanish II

The Spanish III course is designed to provide a review of the fundamentals covered in Spanish I and II followed by further development of their reading, writing, listening and speaking abilities through a variety of activities. Much of the class is conducted in Spanish and students are expected to take many risks with the language. The focus of the class shifts from vocabulary expansion and the basics of grammar to building a more in depth understanding of how these tools are used in everyday communication and actually putting them into practice in real life situations. Students are introduced to advanced aspects of the language such as command forms, distinguishing between the preterite and imperfect, the future tense and situational use of the subjunctive. Students are exposed to many of these aspects in Spanish I and II, however this course works to give students more practice using these skills in parallel with one another to produce fluid language. Students will practice and develop their skills by reading short stories, articles and dialogues; writing stories, compositions, and longer dialogues which employ learned grammatical concepts and vocabulary; reciting dialogues, speeches, stories, and poetry. They will continue to explore Spanish culture in an increasingly thoughtful manner looking at the relationships of Spanish speaking countries with the United States as well as understand the history behind these relationships.

SP5312 Spanish IV

1 Credit
Honors

Prerequisites: Spanish III

Spanish IV is for students who want to become proficient in the language. The class is taught exclusively in Spanish and participation is a necessity. The course will review tenses previously taught in levels 1-3: present, preterite, commands, imperfect, future, conditional and subjunctive. This class will deepen the understanding of all tenses as well expand higher level vocabulary needed to express thoughts, emotions and ideas in a meaningful manner. Students will speak exclusively in Spanish, review and refine grammatical skills in Spanish through reading and writing, read and discuss original work in Spanish (short stories, novels, newspapers, etc.) and continue to deepen the appreciation of the Spanish speaking culture and people outside of and within the United States.

SP5401 Spanish V

1 Credit
College Prep

Prerequisites: Spanish IV

Students enrolled in this advanced course of study will continue to participate in the thematic units that promote communication and improved oral and written proficiencies through a variety of instructional activities and authentic assessments. Students continue to refine their effective communication skills through powerful listening, speaking, reading and writing activities. Students participate in advanced, authentic exchanges of information for a real purpose between people, helping them to connect their learning to the community in which they live and to see the relationship between language, community, and career. Through selected literary pieces from various countries based on themes such as heroism, friendship, myths and humanistic perspectives, students augment and refine their proficient skills in vocabulary and grammatical accuracy as they communicate. Cultural perspectives from a variety of Spanish-speaking countries are thematically woven into the units of study. The course is conducted in Spanish.



SP5524 UConn ECE Spanish

1 Credit
UConn ECE

SPAN 3178: Intermediate Spanish Composition (3 UConn credits, Fall)

This course provides a thorough review of grammar and methodical practice in composition leading to command of practical idioms and vocabulary. Eligibility Guidelines: Successful completion of three or more years of high school Spanish or instructor consent is recommended.

1 Credit
UConn ECE

SPAN 3179: Spanish Conversation: Cultural Topics (3 UConn credits, Spring)

In-depth development of speaking skills through cultural readings, group discussions and oral presentations on selected topics concerning the Spanish-speaking world. Eligibility Guidelines: Successful completion of three or more years of high school Spanish, successful completion of SPAN 3178, or instructor consent is recommended.

WL3503 Spanish for Heritage Speakers I

1 Credit
Honors

This course is designed to continue to develop and challenge students' ability in speaking, reading, writing, listening, and cultural understanding in Spanish. Spanish-speaking students are able to study Spanish formally in an academic and creative setting in the same way native English-speaking students study English language arts. Students will gain confidence using Spanish to express their own thoughts on social and academic themes, interact with other speakers of the language, understand oral and written messages, make oral and written presentations, and reflect on language variation. Students will be able to understand the material presented on a variety of topics related to contemporary events and issues in Hispanic communities.

WL3504 Spanish for Heritage Speakers II

1 Credit
Honors

This course is the continuation of Spanish for Heritage Speakers I. Students will build upon their current language skills to develop language and cultural literacy, as well as their own creative expression following a language arts approach. This course will continue to guide students in developing a deeper appreciation for their own cultural heritage while recognizing the diversity within the Latino community. Reading, both as a class and independently, is a core component of the course, including newspaper articles, short stories, and novels. Students work to further develop their Spanish literacy and academic language skills, to learn more about their language and cultural heritage, and to critically view and evaluate media resources and websites.

Cluster 4: Fitness, Health, Safety

	Required - CP	Electives
Grade 9	Exercise & Personal Wellness 1	--
Grade 10	Health 1	--
Grade 11	Health 2	Obstacles and Adventures
Grade 12	Exercise & Personal Wellness 2	

*Courses are recommended in this sequence, but starting in the sophomore year courses can be taken in any sequence and may also be doubled up.

PE9001 Exercise and Personal Wellness I

.5 Credit
College Prep

Through this course of study students will be empowered to make choices, meet challenges, and develop positive behaviors in fitness, wellness and movement activity for a lifetime. Topics that will be covered include: adventure education, lifetime activity, fitness and wellness, skill development, and rhythm, movement, and dance.

PE9101 Exercise and Personal Wellness II

.5 Credit
College Prep

Through this course of study students will be empowered to make choices, meet challenges, and develop positive behaviors in fitness, wellness and movement activity for a lifetime. Topics that will be covered include: adventure education, lifetime activity, fitness and wellness, skill development, and rhythm, movement, and dance.

HE9211 Health I

.5 Credit
College Prep

Health is designed to enable students to be responsible, respectful, informed and capable when making decisions which would impact the well-being of themselves and others. Topics that will be covered include: nutrition, diseases and disorders, mental and emotional health, drugs, alcohol, tobacco, growth and development, and healthy and safe relationships.

HEXXXX Health II

.5 Credit
College Prep

New health based course to satisfy new state graduation requirements for Class of 2023+

PE3001 Obstacles and Adventure

.5 Credit
College Prep

Students who take this course will partake in adventures that generate excitement and motivation to be physically active for life. Activities will include obstacle courses, climbing walls, self-defense training, outdoor



sports and fitness programs that support participation in these types of activities. Students will set personal best goals, improve their confidence in their physical abilities while contributing to a positive social experience.

Cluster 5: Capstone

CP4331 Capstone

1 Credit
College Prep

The Capstone Project portion of this course is designed to be a cumulative experience of a student's high school years that demonstrates in-depth learning in a variety of ways. Students have the opportunity to use their personal interests, abilities, skills and special talents to create and present authentic projects. These projects are research-based and offer students the chance to demonstrate their knowledge and understanding of their chosen topic and to demonstrate the essential skills for a student graduating from high school. The Capstone Project involves each student choosing a research topic and research question, writing a proposal, extensive research of the chosen topic, designing and bringing the topic to fruition and publicly and formally presenting the findings to a panel of faculty, community members and students.