

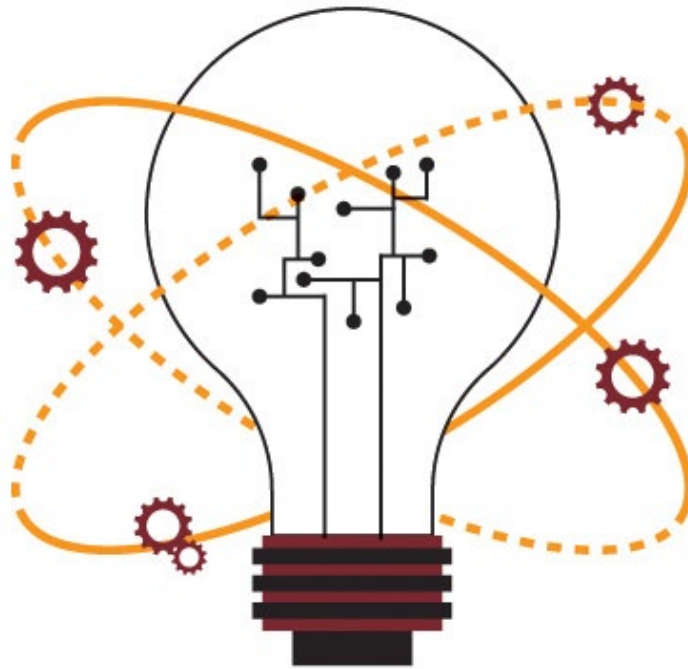


CREC

Schools of Excellence

Academy of Science and Innovation

Program of Studies



Curriculum and Course
Description Catalog
2025-2026



ACADEMY OF SCIENCE AND INNOVATION

Karen Mooney
Principal

Dear Students and Families:

This Academy of Science and Innovation faculty has carefully prepared the Program of Studies to assist students and parents in the course selection process. The booklet provides useful information you need to make choices for next year's classes, as well as for planning the remainder of your high school years.

Your teachers and school counselors will be happy to assist you in the course selection. They will be able to explain the options and make appropriate recommendations. We realize choosing your classes is an important matter, so we urge you to consult with your parents, teachers, and counselors.

Since we are a Science and Innovation school, we encourage you to pursue the math, science and technology classes that we offer students. The most important way to prepare for a Science and Innovation program is to make the most of your science, math, engineering, and computer courses. Students interested in pursuing biotechnology and environmental studies in college should take every theme related course available. Not only will such courses provide you with a solid scientific background, but they will also prepare you for the rigorous requirements of intense college degree programs.

Good luck in your course work; the entire staff wishes you well in your educational pursuits.

Karen Mooney
Principal



Academy of Science and Innovation

600 Slater Road
New Britain, CT 06053
www.crecschools.org

Telephone (860) 223-0726 Fax (860) 223-0742

Administration Office of Academy of Science and Innovation

Mrs. Karen Mooney, Principal

Mr. Royston Jordan, Assistant Principal
Ms. Kerry Ann Rhoden, Dean of Students

Dr. Antonio Ramos, Assistant Principal
Mrs. Kimberly Winfield, Dean of Students

Instructional Coaching Staff

Mr. Michael Robbins, Math Coach
Ms. Jennifer Yanke, Theme Coach

Mrs. Michelle Serwatowski, Instructional Coach

School Counselors

Counselor	Grade						
	6	7	8	9	10	11	12
Ms. Jennifer Asmar (Counseling Team Leader)				ALL			
Mr. Justin Escobales			ALL		*A - E	*A - E	*A- B
Mrs. Katie Mangione					*F - Z	*F - Z	*C - I
Ms. Erin Strazzulla	ALL	ALL					
Mrs. Elizabeth Woods							*J - Z

* Letters represent a split by last name for grades 10-12

Administrative Assistants

Mrs. Alicia Perez, Receptionist – Main Office
Ms. Chayan Colon, Family/ Lottery Coordinator
Ms. Evelyn DelaCruz, Administrative Assistant to Principal Mooney
Ms. Rachel Sclare, Administrative Assistant – Counseling Office 6th – 12th
Mrs. Julie Soule, Administrative Assistant – Main Office

Academy of Science and Innovation

Vision, Mission, and Belief Statement

School Vision:

The Academy of Science and Innovation Magnet School is a solutions-oriented, technology-based science and engineering community. Students are inspired and prepared to meet the challenges of the 21st century through a robust academic program where collaboration, innovation, and critical thinking skills ensure college and career readiness. Students are respectful, self-disciplined, and productive global citizens in a diverse, multicultural environment.

Mission:

The mission of the Academy of Science and Innovation Magnet School is to empower learning, unleash talent, and lead a culture of creativity to find solutions to global problems.

Innovative Solutions to Global Problems:

- Promote farming practices to combat global famine (Hydroponics, Aquaponics)
- Conserve and rebuild habitats (Engineering)
- Investigate our microscopic world (Forensics, Cellular Biology)
- Improve production and techniques for automation in industry (Robotics, Drones, Coding)

We believe...

- We believe our science, technology, and environmental themes are key components to developing 21st century learners who are college and career ready.
- We believe a diverse school community enriches learning and promotes a collaborative and productive culture where students are valued, empowered, challenged, and recognized.
- We believe in cultivating environmentally and socially conscious students, citizens, and future leaders.
- We believe success is dependent upon partnerships among students, staff, families, and the community.
- We believe in an educational community where everyone chooses to bring energy, passion, and a positive attitude.
- We believe in an education tailored to meet the individual needs of each student.
- We believe teacher growth and effectiveness fosters student achievement.

The CREC Difference

CREC Magnet Schools cultivate the mind, body and heart of each student. We have a shared vision and coordinated plan for promoting, enhancing and sustaining a positive school climate. Each member of the faculty and staff understand their individual role while applying a systematic approach to developing an environment that fosters optimal academic engagement for all students.

CREC Magnet School *parents and staff* work together to:

- Promote a positive and successful educational experience for every child
- Embrace diversity
- Ensure students are college and career ready
- Foster self-confidence and self-discipline in our students
- Connect success in school to future successes in life
- Develop global awareness
- Guide students through conflicts, encourage them to restore trust and rebuild relationships
- Value and support students through disciplinary issues

CREC Magnet School *students* will:

- Demonstrate honor, respect and responsibility in their actions and decisions
- Embrace diversity
- Develop self-confidence and self-discipline
- Connect success in school to future successes in life
- Develop global awareness
- Reflect on conflict and seek ways to restore trust
- Work with teachers, administrators and parents when school rules are violated to restore environment and relationships

CREC District Goals:

- Inspire all students to achieve at high levels through an innovative, student-centered approach to teaching and learning that prioritizes the mastery of core content and the development of essential skills.
- Mobilize a positive, collaborative and productive culture where students are at the center of their learning.
- Engage families and the community as active partners in the education of our students.
- Maximize professional capital and cultivate innovation by supporting and empowering a diverse group of talented educators.

Academy of Science and Innovation

Code of Responsibilities

The Administration, Faculty, and Staff of Academy of Science and Innovation will:

- Create an emotionally and physically safe and healthy learning environment for all students
- Respect the dignity of each family, its culture, customs, and beliefs
- Promote, respond, and maintain appropriate communications with the family, staff and administration
- Consider the family's concerns and perspectives on issues involving its children
- Encourage participation of the family in the educational process
- Recognize, respect and uphold the dignity and worth of students as individual human beings
- Engage students in the pursuit of truth, knowledge and wisdom and provide access to all points of view
- Foster in students the full understanding, application, and preservation of democratic principles and processes
- Assist students in the formulation of worthy, positive goals
- Promote the right and freedom of students to learn, explore ideas, develop critical thinking, problem solve, and acquire the knowledge needed to achieve their full potential
- Maintain the confidentiality of information concerning students

Parent will be involved in the education of our children by the following:

- See that my children get to school regularly and on time
- Let my children know that I value education by providing a home environment that encourages my child to learn
- Ensure that all homework assignments are completed by setting up a routine for homework
- Support positive school-home relationships by communicating regularly with my child's teachers
- Support the school in developing positive behaviors through reinforcement and communication
- Talk with my child about his/her school activities on a daily basis
- Encourage my child to read and write at home and to monitor his/her TV viewing and video-game playing
- Volunteer time at my child's school and attend activities when possible
- Show respect and support for my child, the teacher and the school

Students will share the responsibility for learning by the following:

- Follow RISE
- Attend school regularly and be on time for class
- Always try to do my best in my work and in my behavior
- Work cooperatively with my classmates and teachers
- Show respect for myself, my school, and other people through what I say and do
- Obey the school and bus rules
- Take pride in my school
- Complete and return my homework and come to school prepared to learn every day
- Believe that I can and will learn
- Believe that others in the school can and will learn
- Be honest in everything I say and do

Technological Awareness

In a society geared to continual technological development, we realize our obligation to prepare students to be literate in new and widening fields of technological study. Academy of Science and Innovation provides an atmosphere and curriculum designed to help students adapt to the technological challenges of the future.

Personal/Academic Integrity

Academics and technology do not exist in a vacuum at Academy of Science and Innovation. We seek to instill a sense of personal integrity in all areas of life by fostering sound moral values in a climate of mutual respect. As a community, we strive to provide a physically safe and emotionally healthy environment. By combining the resources of school and community, Academy of Science and Innovation makes available professional guidance and special programs to help students help each other and themselves.

Non-Discrimination/Equal Employment

Equal Education Opportunity

In compliance with regulations of the Office of Civil Rights and with Equal Opportunity practices as determined by state and federal legislation, the Academy of Science and Innovation Board of Education, as a matter of Policy, does not knowingly condone discrimination in employment, assignment, program or services, on the basis of race, gender, color, religion, national origin, age, sexual orientation, disability, or related abilities to perform the duties of the position.

The right of a student to participate fully in classroom instruction and extracurricular activities shall not be abridged or impaired because of race, gender, color, religion, national origin, age, sexual orientation, pregnancy, parenthood, marriage, or for any other reason not related to his/her individual capabilities.

Harassment/Bullying

Innovation prohibits all forms of harassment, discrimination and hate crimes based on race, color, religion, national origin, ethnicity, sex, sexual orientation, age or disability. The civil rights of all community members are guaranteed by law and the protection of those rights is of utmost importance to our school. This document is written in compliance with regulations of Title IX of the Education Amends of 1972, Section 504 of the Rehabilitation Act of 1973, Title VI of the Civil Rights of 1964 and 1987, and Title 11 of the Americans with Disabilities Act of 1991.

Please be aware that violation of Title IX may be a criminal matter and require police intervention. In addition, violations of Title IX may be considered a violation of child abuse legislation and warrant Department of Children and Families (DCD) intervention.

Commission on Human Rights and Opportunities
21 Grand Street
Hartford, CT 06106
Telephone: 860-541-3400
Toll Free (CT) 1-800-477-5737
Connecticut, Maine, Massachusetts,

New Hampshire, Rhode Island, Vermont
Offices for Civil Rights/Boston
US Dept. of Education
33 Arch Street, Suite 900
Boston, MA 02110 Tel: 617-289-0111
Fax: 617-289-0150

Course Selection and Schedule Changes

A student's previous record, natural ability, aptitudes, special talents, teacher recommendations, and ambitions will determine curriculum choices. We urge students to consider their course selections in the spring for the following year, utilizing input from school counselors and teachers. We will make every effort to provide a program that meets each student's needs and interests. Schedule changes will occur only for scheduling errors, teacher recommendations, or extenuating circumstances, such as significant illness, during the add/drop window in the first two weeks of each semester.

Remember, we do not offer every course listed in the Program of Studies every year. Some courses run every other year and have designated years for availability. We may not schedule certain courses because of insufficient enrollment, scheduling conflicts, or limited staff availability. Students should consider their interests, career paths, and post-secondary plans when making choices and demonstrate serious commitment to the coursework.

A key exception involves Advanced Placement and Early College Experience courses. Because these classes require specialized staffing and materials, students may not drop AP/ECE classes without teacher and administrative approval. Seniors who change schedules after requesting to send their academic credentials to colleges must notify the colleges of the program change. It is wise for seniors to consult with prospective colleges before making a schedule change.

Academic Levels

Advanced Placement / Early College Experience (AP/ECE)

We offer several advanced placement courses to recommended students. These courses are college level courses that require an exceptional amount of study on the part of students and allow them the opportunity to take the Advanced Placement Examination. A passing grade (usually 3 or better on a scale of 1 to 5) *may* earn college credit depending on the requirements of the individual colleges and universities which students plan to attend. Students in the UConn Early College Experience take university courses while still in high school. ECE instructors are ASI teachers certified as adjunct professors by UConn. Please note: Students in ECE must successfully complete the courses with a grade of C or better in order to receive university credit. University credits are highly transferable to other universities. Students enrolling in AP courses must take the AP exam in order to receive AP recognition on their transcript and AP credit weighting toward class rank.

Special Education Services

The Special Services Department provides a full range of support and related services to students requiring special education assistance during the school day. The Planning and Placement Team (PPT) of which the student's parent is a member, determines whether a student is eligible to receive special education and related services. At the PPT meeting, we will develop an Individual Education Program (IEP) if the student is eligible to address their specific educational needs. For students who need additional support, we can also offer co-taught English classes.

Academy of Science and Innovation

Graduation Requirements

To graduate from the Academy of Science and Innovation students in the Class of 2023 and beyond must satisfactorily earned a minimum of 25 credits and must have met all of the credit distribution requirements. The graduation requirements also reflect the school's magnet theme of Science and Innovation.

Graduation from our CREC public schools implies (1) that students have satisfactorily completed the prescribed courses of study for the several grade levels in accordance with their respective abilities to achieve; (2) that they have satisfactorily passed any examinations and/or standards established by the faculty and approved by the CREC Council; (3) that they have fulfilled the legally mandated number and distribution of credits, and (4) that they have successfully completed their IEP as determined by the Planning and Placement Team. Graduation shall not be held until 180 days of actual schoolwork are completed. The adopted school calendar shall indicate a graduation date which is no earlier than the 180th day. This may be modified after April 1 in any school year in conformity with applicable statute.

Required Courses for Graduation Classes 2023 and Beyond	Credits for Graduation
Humanities	
English	4.0
Social Studies including: • United States History (1 credit) • Civics (.5 credits)/AP Government (1 credit)	3.0
Fine Arts (Art, Music)	1.0
Humanities Elective	1.0
Science, Technology, Engineering, and Mathematics (STEM)	
Mathematics	4.0
Laboratory Sciences	3.0
Technology, Engineering or STEM Pathway Electives	2.0
Fitness, Health and Safety	
Including: • Physical Education and Wellness (1 credit) • Health and Safety Education (1 credits)	2.0
World Languages	2.0
Capstone	1.0
Electives	2.0
Total Credits for Graduation	25

Academy of Science and Innovation

Suggested Course Sequence 2025-2026

Grade 9	Credits	Grade 10	Credits
English Language Arts I	1	English Language Arts II	1
Algebra I or Algebra II	1	Algebra II	1
Physics	1	Biology	1
US History	1	African American/Black and Puerto Rican /Latinx Studies	1
Spanish I/Spanish II/Heritage 1	1	Spanish II/Spanish III/Heritage 2	1
Environmental 1 and 2	1	ECE Environmental Studies	1
Health 9 and PE	1	Health 10 and PE	1
Elective	1	Theme Electives	1
Total	8	Total	8
Grade 11		Grade 12	
English Language Arts III or ECE Intro to Academic Writing	1	English Language Arts IV or ECE Academic Writing & Multimodal Comp.	1.0
Algebra II or Pre-Calculus or Intro to Data Science	1	AP Stats/Financial Algebra/AP Calculus/Pre-Calculus/Intro to Data Science	1.0
Chemistry	1	Physics or Anatomy & Physiology	1.0
Civics / Financial Literacy	1	Success 101 / Psychology or Sociology	1.0
Spanish III or Humanities Elective	1	Study Hall	1.0
Cellular Biology and Genetics	1	Electives	3.0
Capstone / ECE Health Education & Urban Communities	1		
Theme Elective	1		
Total	8	Total	8

Grade Promotion Class of 2023 and beyond

- To be a Senior, you must have 19 credits
- To be a Junior, you must have 13 credits
- To be a Sophomore, you must have 6 credits

Policy on Course Failures – Summer Credit Recovery

Students who fail a course may make up the course during the summer by doing the following:

Students may make up a failure in a course through the CREC Summer School Program by re-taking the course and successfully passing the final exam for the summer school class. The student will receive credit for the class and the course will be added to their transcript under Summer Credit Recovery along with the grade earned. **Not all classes will be available for summer credit recovery.**

NCAA INITIAL ELIGIBILITY REQUIREMENTS

DIVISION I Requirements

Graduate from high school;

Complete these 16 core courses:

- 4 years of English
- 3 years of math (algebra 1 or higher)
- 2 years of natural or physical science (including one year of lab science if offered by your high school)
- 1 extra year of English, math or natural or physical science
- 2 years of social science
- 4 years of extra core courses (from any category above, or foreign language, non-doctrinal religion or philosophy);

Earn a minimum required grade-point average in your core courses of 2.3; **and**

Earn a combined SAT or ACT sum score that matches your core course grade-point average and test score sliding scale (for example, a 2.400 core-course grade-point average needs an 860 SAT).

DIVISION II Requirements

Graduate from high school;

Complete these 16 core courses:

- 3 years of English
- 2 years of math (algebra 1 or higher)
- 2 years of natural or physical science (including one year of lab science if offered by your high school)
- 23 extra years of English, math or natural or physical science
- 2 years of social science
- 34 years of extra core courses (from any category above, or foreign language, non-doctrinal religion or philosophy)

Earn a 2.2 grade-point average or better in your core courses; **and**

Earn a combined SAT or ACT Score matching your core-course GPA on the Division II Sliding Scale.

For up-to-date eligibility requirements visit:

<http://www.ncaa.org/student-athletes/play-division-i-sports>

DIVISION III Requirements: Division III does not use the NCAA Eligibility Center.

Contact your Division III College regarding its policies on admission, financial aid, practice and competition.

NCAA DIVISION I SLIDING SCALE CORE GRADE-POINT AVERAGE/TEST-SCORE

Core GPA	SAT	ACT	Core GPA	SAT	ACT	Core GPA	SAT	ACT	Core GPA	SAT	ACT
3.550 +	400	37	3.150	630	48	2.750	810	59	2.350	960	73
3.525	410	38	3.125	650	49	2.725	820	60	2.325	970	74
3.500	430	39	3.100	660	49	2.700	830	61	2.300	980	75
3.475	440	40	3.075	680	50	2.675	840	61	2.275	990	76
3.450	460	41	3.050	690	50	2.650	850	62	2.250	1000	77
3.425	470	41	3.025	710	51	2.625	860	63	2.225	1010	78
3.400	490	42	3.000	720	52	2.600	860	64	2.200	1020	79
3.375	500	42	2.975	730	52	2.575	870	65	2.175	1030	80
3.350	520	43	2.950	740	53	2.550	880	66	2.150	1040	81
3.325	530	44	2.925	750	53	2.525	890	67	2.125	1050	82
3.300	550	44	2.900	750	54	2.500	900	68	2.100	1060	83
3.275	560	45	2.875	760	55	2.475	910	69	2.075	1070	84
3.250	580	46	2.850	770	56	2.450	920	70	2.050	1080	85
3.225	590	46	2.825	780	56	2.425	930	70	2.025	1090	86
3.200	600	47	2.800	790	57	2.400	940	71	2.000	1100	86
3.175	620	47	2.775	800	58	2.375	950	72			

These are minimum NCAA requirements. Most institutions have more stringent requirements for acceptance.

University of Connecticut Early College Experience

Academy of Science and Innovation has established an ECE program for our students. UConn Early College Experience (ECE) provides academically motivated students the opportunity to take university courses while still 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.

University departments certify highly qualified high school teachers as UConn ECE Instructors. Those teachers create a classroom environment fostering independent learning, creativity, and critical thinking - all pivotal for success in college. Academy of Science and Innovation currently offers ECE courses in Biology, Environmental Science, Biotechnology, English Language and Composition, and English Literature. To support rigorous learning, University of Connecticut library resources are also available to students.

ECE students must successfully complete the courses with a grade of C or better in order to receive university credit. University credits are highly transferable to other universities.

UConn ECE charges \$125 for a 3-credit course and \$160 for a 4-credit course along with a \$25 enrollment fee. However, Innovation waives fees if a student meets specified income guidelines. Please note that fees may be different from those listed at the time of this printing and are subject to change; Innovation will inform students of the fees. For additional information or questions regarding UConn ECE please contact Royston Jordan at rjordan@crec.org.

ECE courses carry an additional weight of 0.5 points when calculating GPA. This means that students who take these courses, which cover more advanced material, have the opportunity to earn higher grades that, reflect the extra challenge involved.

Advanced Placement (AP) Offerings

Academy of Science and Innovation has established Advanced Placement course offerings in numerous disciplines. These courses follow strict curriculum guidelines as prescribed by the College Board. The rigor and quality of AP courses is similar to those of college level courses. The skills students acquire in AP courses allow them to stand out in college admission, earn college credit, and develop the habits of mind and content knowledge that position students to pursue even deeper, richer studies at a university. We encourage students to take an AP exam in each course they register for. These exams are in May. Any questions regarding Advanced Placement please contact Royston Jordan at rjordan@crec.org. The cost to take an AP exam will be determined each year.

AP courses carry an additional weight of 0.5 points when calculating GPA. This means that students who take these courses, which cover more advanced material, have the opportunity to earn higher grades that, reflect the extra challenge involved.

Summer Assignments

Advanced Placement (AP) level courses require the completion of special summer reading assignments, which students are to obtain from the instructor of the AP course in which they are enrolling. Students who are unable to contact the course instructor should contact their assigned school counselor.

Innovation Middle School Courses

Our middle school program offers each child a wide range of courses to explore STEM and other electives. All students in grades 6, 7, and 8 will enroll in Math, Language Arts – Reading, Language Arts – Writing, Science, STEM, and Social Studies. Additionally, grades 6 and 7 have two different elective periods that rotate through five terms a year, known as wheel periods. Grade 8 has one elective period in the wheel and a full-year Spanish 8 course. Each term lasts approximately 7-8 weeks and elective courses may change based on teacher availability.

GRADE 6 Core Courses

0600 – Language Arts 6 – Reading

EN0611 – Language Arts 6 – Writing

The reading and writing community empowers student to be responsible, self-directed learners. In addition, students will add to their academic vocabulary, as well as improving their ability to communicate effectively through oral and written language.

Based on the Common Core State Standards for English Language Arts, students in grade 6 reading will recognize and understand how key ideas and details contribute to a larger idea in a variety of texts, determine analyze, and explain how craft and structure works in a text, compare and contrast the experiences of reading, viewing, and listening to different types of texts, and read a range of texts.

Based on the Common Core State Standard for English Language Arts, students in grade 6 writing will write a variety of text types for different purposes and audiences produce and publish writing through a process, and research to build and present knowledge.

SS0501 – World Regional Studies 6

Students in 6th grade begin Social Studies by examining the diversity in culture, history, and geography of the world. Sixth graders examine geography and themes related to the study of the earth. Working thematically through case studies of different countries and continents, students investigate the essential question, how does where you live affect how you live. In 6th grade students focus on Asia's Economic Powerhouses: India and China; The European Union: The Division and Unification of Modern Europe; South America: Developing Economies and Emerging Democracies; South Africa: Economics, Resources, and Government. Additionally, students will develop skills necessary for success including critical thinking, analytical reading, persuasive writing, and communication.

6520 – Mathematics 6

Grade 6 mathematics students will focus primarily on the following areas described in the Connecticut Core Standards of Mathematics. Students will be able to

- Applying ratio and rate to solve problems,
- Understand fraction division,
- Extend and apply the numbers to include all fractional (rational) numbers and negative numbers (integers),
- Write, interpret, and use numerical and algebraic expressions and equations, and
- Justify conclusions using basic statistics.

6130 – Science 6

In 6th grade science, students embark on an engaging inquiry-based exploration of physical and biological sciences through a series of dynamic units. The curriculum starts with Unit 6.1, where students investigate the properties of light and matter by creating a two-way mirror, developing models to understand how waves interact with different materials. In Unit 6.2, students focus on thermal energy by designing cups to analyze the relationship between energy transfer and temperature changes in substances. The course progresses to Unit 6.3, which covers weather, climate, and water cycling, where students model water cycles driven by solar energy, and examine weather patterns from air mass interactions. Unit 6.4 delves into plate tectonics and rock cycling, allowing students to explore Earth's geological history and the processes that shape its surface. In Unit 6.5, students learn about natural hazards, specifically tsunamis, analyzing data to forecast potential events and explore technologies to mitigate their effects. The year concludes with Unit 6.6, centered on cells and systems, where students investigate the structure and function of cells, understanding how they contribute to the overall functioning of living organisms. Throughout the course, students engage in hands-on experiments, collaborative projects, and critical discussions, fostering a deep understanding of scientific principles and real-world applications.

SC0701 STEM 6

Students in this course will apply the design process to solve problems and generate proposals for improving organization systems and for improving civil engineering problems. Students will also learn how to apply science concepts and the engineering design process to build and test new products. The course is structured into engineering design challenges, each designed to require student to learn and apply different elements of engineering practice. Student projects progress from highly constrained to more open-ended and complex problems culminating in a final project in which a student demonstrates the ability to apply engineering practice to a complex real-world problem identified and defined by the student.

GRADE 7 Core Courses

0701 – Language Arts 7 – Reading

EN0711 – Language Arts 7 – Writing

Reading & Writing: Students will further develop their skills as readers and writers through experiences with more demanding texts. Students will continue to develop skills in speaking & listening, vocabulary, and language. Based on the Common Core State Standards for English Language Arts, students in grade 7 reading will recognize and understand how key ideas and details contribute to a larger idea in a variety of texts of increasing complexity, determine, analyze, and explain how craft and structure works in a text to create meaning, compare and contrast the experiences of reading, viewing, and listening to different types of texts, and read a range of texts of increasing complexity.

Based on the Common Core State Standard for English Language Arts, students in grade 7 writing will write a variety of text types for different purposes and audiences, produce and publish writing through a process, and research to build and present knowledge.

SS0511 – World Regional Studies 7

Students in 7th grade continue their Social Studies curriculum engaged in the diversity of culture, history, and geography of the world. Working thematically through case studies of different countries and continents, students investigate the essential question, how does where you live affect how you live. In 7th grade students focus on North America: Modern Immigration; Russia: Past and present; Soviet-Russia's transition; Middle East; Foreign involvement in Afghanistan and Iraq; and Southeast Asia: Post imperialism and Post-Cold War Vietnam, North Korea and South Korea. Additionally, students will develop skills necessary for success including critical thinking, analytical reading, persuasive writing, and communication.

MA200 – Mathematics 7

Grade 7 mathematics students will focus primarily on the following areas described in the Connecticut Core Standards of Mathematics. Students will be able to

- Apply proportional relationships
- Understand operations with fractional (rational) numbers and work with them in expressions and linear equations
- Solve geometry problems involving area, surface area, volume, scale, geometric shapes, and figures.
- Draw inferences about populations based on sample data.

7530 – Science 7

In 7th grade science, students engage in a dynamic exploration of chemical and biological processes that shape the world around them through inquiry-based learning. The curriculum begins with Unit 7.1, where students investigate chemical reactions by creating bath bombs, analyzing properties before and after reactions to understand mass conservation and atomic composition. In Unit 7.2, students design devices that either release or absorb thermal energy through chemical processes. They then study metabolic reactions in Unit 7.3, exploring how the body functions as an interconnected system and how food undergoes chemical transformations to provide energy for growth. Unit 7.4 focuses on photosynthesis and matter cycling within ecosystems, while Unit 7.5 examines ecosystem dynamics and biodiversity, prompting students to analyze resource availability and its effects on populations. Finally, in Unit 7.6, students look at Earth's resources and the human impact on the environment, investigating changes like droughts and floods and developing arguments about resource consumption. Throughout the year, students participate in hands-on experiments, collaborative projects, and critical discussions, emphasizing scientific inquiry, modeling, and evidence-based reasoning, and laying a strong foundation for future science studies.

SC0011 STEM 7

Students will continue to utilize the design process to solve problems and improve systems. Students will begin a more in-depth exploration of energy transformations, Earth science and design basic applications. Students will use the science behind mechanical systems and energy transfer to explore real world problems, overcome obstacles, and design challenges.

GRADE 8 Core Courses

0801 – Language Arts 8 – Reading

Reading & Writing: Students will hone their analytical, interpretive skills in reading and writing in grade 8. They will be preparing for the academic work of high school as the year progresses. Based on the Common Core State Standards for English Language Arts, students in grade 8 reading will recognize and understand how key ideas and details contribute to a larger idea in a variety of texts on the higher end of the range, determine, analyze, and explain how craft and structure works in a text and how crafting choices can change meaning, compare and contrast the experiences of reading, viewing, and listening to different types of texts, and read a range of texts on the higher end of the range.

Based on the Common Core State Standard for English Language Arts, students in grade 8 writing will write a variety of text types for different purposes and audiences, produce and publish writing through a process, and research to build and present knowledge

SS0521 – US History 8

Students will explore United States History from initial discovery up to, and including, the Civil War. Working their way chronologically through our country's history students pose the question, how does when you live effect how you live? There are four units of study beginning with Initial Discovery & European Migration, followed by The American Revolution. The third unit of study reveals the aftermath of the Revolutionary War as students examine The New Nation. Finally, students focus on Two American Identities: North and South as they analyze and relive the Civil War and its effects on the United States as a country.

MA204 – Mathematics 8

Grade 8 mathematics students will focus primarily on the following areas described in the Connecticut Core Standards of Mathematics. Students will be able to:

- Formulate and reason using algebra including graphing and solving equations, linear equations, systems of linear equations, and bivariate data.
- Understand the concept of a function and how to use it to describe relationships.
- Analyze figures using distance, angles, similarity, congruence, and the Pythagorean theorem.

8530 – Science 8

In 8th grade science, students engage in a rigorous and exciting exploration of physical and life sciences through a series of interconnected units designed to develop their understanding of fundamental scientific principles. The curriculum begins with Unit 8.1, where students investigate contact forces by designing protective cell phone cases, applying Newton's Third Law to understand motion and collisions. Unit 8.2 covers sound waves, prompting students to explore how sound can move objects and illustrating the relationship between wave amplitude and energy. In Unit 8.3, students delve into forces at a distance, focusing on magnetic and electric forces, and conducting investigations to understand how these forces operate even without direct contact. The course transitions to Unit 8.4, Earth in Space, where students study the night sky and model the Earth-sun-moon system, exploring gravitational interactions and celestial patterns. In Unit 8.5, students examine genetics through the perspective of muscle function, using models to explore cell structures,

mutations, and the impact of environmental factors on growth and reproduction. Finally, Unit 8.6 addresses natural selection and common ancestry, with students analyzing patterns in the fossil record and understanding the mechanisms of evolution. Throughout the year, hands-on experiments, collaborative projects, and critical discussions foster a deep appreciation for scientific inquiry, evidence-based reasoning, and the interconnectedness of scientific concepts, preparing students for advanced studies in high school science.

SC0051 STEM 8

Students focus their study on the application of engineering and technology within the fields of physical science, biology and earth science. Within the biotechnology pathway, students will explore cellular and bio molecular processes and how these processes can be used in technologies that impact and improve our lives. Modern biotechnology provides breakthrough products and technologies to combat debilitating and rare diseases, reduce our environmental footprint, feed the hungry, use less and cleaner energy, and have safer, cleaner and more efficient industrial manufacturing processes.

MIDDLE SCHOOL WORLD LANGUAGE

SP6038 - Spanish 8

Exploratory Spanish is an exploratory Spanish course that begins the development of the basic language skills: listening, reading, writing and speaking. This is accomplished using oral drills, vocabulary building, simple composition, reading assignments, dialogue, and creative writing. The course also stresses cultural awareness and understanding of the Spanish-speaking world and its impact on the United States. Students may take this course prior to taking the High School Spanish 1 Course.

MIDDLE SCHOOL PHYSICAL EDUCATION AND HEALTH

8009 - Health 8

Health is a half-year course designed to provide students with resources to assist them in making healthy lifestyle choices. Students will learn about the importance of eating healthy, nutritious foods and how exercise contributes to maintaining the body in optimal condition. Students will learn how to make decisions and be responsible, respectful and well-informed consumers. Topics include nutrition, diseases and disorders, mental and emotional health, the effects of drugs on the body, alcohol, tobacco, growth and development and healthy and safe relationships.

PE 0731 Adventure Education 6 and 7

Adventure education is a physical class that involves a variety of teambuilding and problem-solving challenges and activities to increase community, communication and cooperation in our student.

PE Physical Education 8

Physical Education 8 helps students develop the knowledge, skills, and confidence to make healthy choices, stay active, and engage in movement activities for a lifetime. The course focuses on adventure education, lifetime activities, fitness and wellness, and skill development, while emphasizing teamwork, personal growth, and the benefits of an active lifestyle.

MIDDLE SCHOOL THEMED ELECTIVES

8010—Middle School Hydroponics

Students in this hands-on, inquiry-based course will learn all about various methods of sustainable agriculture. Students will work in groups to design and construct their own hydroponic systems, collect, and analyze data to determine if their system is working efficiently and effectively at producing crops.

0541—Middle School Robotics 1 and 2

In this introductory robotics course, students will develop skills and knowledge related to the engineering design process in order to design and develop robotic devices. Topics covered in the course will include structural design, sensors, motor controls, computer basics, and programmable logic controllers.

8370 - Middle School Game Coding, Design and Theory

Game Theory & Design is a half-year elective course designed to introduce students to computer science through game design. Students will start with game logic, exploring common board games: What are the rules and can you win. Next, students explore to computer coding and game design exploring several classic game types. Students will design, code, produce and present a mastery game project at the end of the course.

TE0421 - Middle School Computer Science

In this introductory coding course, students will learn how to write computer code and develop computer programs through a fundamental understanding of basic computer science principles.

COMPAPL1D - Computer Applications

In this course, students explore to cloud-based technologies such as Google apps-Google drive, Google docs, Google hangout, Google slides, Schoology, and other Internet based data storage sites. Students will develop the skills necessary to work with their Google Chromebook laptops in the classroom.

TE7010 - MS Artificial Intelligence

This course combines Python programming with miniature autonomous cars equipped with sensors and cameras. Students explore fundamental A.I. concepts tied to the real-world application of self-driving cars.

EG1101 - MS Intro to Engineering

In this hands-on inquiry-based course, students will explore the fundamentals of the Engineering Design Process and learn what it means to be an engineer. Topics discussed include Engineering Communications, Systems and Optimization, History of Engineering, Teamwork and Concurrent Measurement, Introduction to 3D Solid Modeling, Material Science, Basic Electricity, Problem Solving, Design and Modeling and Traditional Engineering Disciplines.

MIDDLE SCHOOL ART and MUSIC (GRADES 6, 7 & 8)

6361 –Art 6

The Visual Art classes at ASI are introductory studio and STEM integration courses. Students learn the basics of studio art in a hands-on course that provides a vehicle for students to create, perform, and participate in the arts. Students learn the basic elements of art including drawing, painting, 3-D construction, and mixed media. At the end of the course, students should be able to demonstrate capabilities in different artistic media.

7361 – Art 7

Students work with a variety of media, including pencil, watercolor, paper mâché, and ceramics. They learn how to create a sense of depth in a two-dimensional drawing, how symbols are used in art and some basic color theory. They explore the discipline of art illustration. In addition, they develop and implement an art-teaching lesson for children in and in-house pre-k program.

8361 – Art 8

Students learn about positive and negative space, optical illusions, elements of design, geometric pattern, and perspective drawing. They create a painting that integrates a lesson or story into their work after learning about Australian Aboriginal art. They study artist M.C. Escher and his inspiration from Islamic tile pattern design. Using geometric and organic shapes, they develop a block print that repeats to create a more complex pattern, as well as developing their own tessellations. Students explore various art techniques including drawing, painting, and printmaking.

A6114 - Middle School Arts and Ideas

Students will learn to use computers and software as platforms for creative expression. Following a series of intensive coding workshops, students will learn to execute projects involving animations, drawings, and screen-based artworks. Students will work primarily with the online creative coding applications.

8013 – Music 6

During this term-long class, students will learn about:

Fundamentals of Music: All incoming 6th grade students will review, in depth, the elements of music genres, rhythm, pitch, melody, form, tempo and dynamics.

African Drumming: Students will learn how to play a variety of rhythm patterns and textures through performing in a traditional African Drum Circle. Lessons will emphasize collaborative music making, listening, balancing sounds and staying on beat as well as long-standing cultural traditions found in African Music.

Introduction to Modern Drumming: Accompanied by real-time scrolling music notation, provided by MODERN BAND, students have the opportunity to learn and apply the basics of rhythm and proper stick/mallet technique on drum sets.

8113 – Music 7

During this trimester class, students will learn about:

Piano Keyboards: Accompanied by real-time scrolling music notation, provided by MODERN BAND, students will experience what it is like to play simple melodies, scales and chords on the Piano Keyboard. Concepts such as half-steps, whole-steps, melodic scales, chordal harmony, and practicing for mastery will be covered. Students perform short songs on their electric piano, as well as on their conceptual understanding of melodic reading, rhythmic skills, and chord playing.

Ukulele: Accompanied by real-time scrolling music notation, provided by MODERN BAND, students will experience what it is like to play simple chords and melodies on the ukulele. Students will learn to perform short songs on their ukulele, as well as gain conceptual understanding of melodic reading, rhythmic strumming, and chord playing.

African-American Music Styles: African American musical creativity has generated a vast array of musical styles, from folk and blues, to classical and spiritual, to jazz and hip-hop, and more. These musical creations are a soundtrack to stories of African American history, culture, and community. In this unit, students will listen to, analyze, and make historical connections to many of the creative musical contributions of African American people, performers, and composers. Student expectations will include active/attentive music listening, reading and research, as well as writing personal responses to these different styles of music and/or their historical context.

8213 – Music 8

During this term-long class, students will learn about:

Science of Sound: Woven into their study of guitar and piano, all 8th grade students will study music from a scientific perspective. Acoustics is the science of sound. The manner in which musical sounds are produced, travel in sound waves at a molecular level, change in pitch or volume, how those changes are measured electronically, and how they are reproduced in audio engineering studios are at the center of this unit.

Guitar & Bass: Accompanied by real-time scrolling music notation, provided by MODERN BAND, students will experience what it is like to play chords and simple bass lines on a 6-string guitar. Students perform chord progressions found in short songs on their guitar, as well as on their conceptual understanding of reading iconic notation to help them learn rhythmic strumming and chord playing.

African American Music History: Musical creativity has generated a vast array of musical styles, from folk and blues, to classical in addition, spiritual, to jazz and hip-hop, and more. These musical creations are a soundtrack to stories of African American history, culture, and community. In this class, students will listen to, analyze, and make historical connections to the creative musical contributions of African American people, performers, and composers from 1950 to present day. Student expectations will include active/attentive music listening, reading and research, writing responses, and creating original music incorporating some elements of African American musical style.

MU1103 – Music Technology

This course introduces students to the ever-evolving world of music technology by providing an opportunity to explore a variety of the latest software and hardware used in today's music industry. Studies will focus on applying the fundamentals of music in a systematic process of creating, recording, and editing musical compositions. Students will work on individual and group projects and present them to the class for feedback, revision and evaluation.

MU0037 – Band 1 MS

During this yearlong class, this music elective class provides seventh and eighth grades students with opportunities to study ensemble/solo activities designed to develop musicianship including tone production, technical skills, music reading, and analysis of music and the study of significant styles of band literature. MS Band is a Project-Based/Performance-Based class.

MU0035 – Chorus 1 MS

During this yearlong class, this music elective class provides seventh and eighth grades students with opportunities for large group & solo singing. Students will develop their singing technique, learn how to read music, and enhance their tonal memory. MS Chorus is a Project-Based/Performance-Based class. Students should take this class for multiple years.

Innovation High School Courses

ENGLISH

EN1372 – English/ Language Arts I – H (1.0)

The study of American Literature is an essential experience for a high school student. In this course, students will read some of the most revered authors in American Literature while looking at their works through the lens of what it means to be American. Students examine several issues in American society (race, identity, war and gender) through an exploration of literature written about or through those issues. Students will revisit the theme of what it means to be American throughout this entire course and will evaluate how the literature they have read has helped them answer this question for themselves.

EN2402 –English/ Language Arts II – H (1.0)

The emergence of voice plays an integral role in understanding power, authority, and social advancements within societies. Individuals gain, maintain, and often restrict power through language and the expression of their individual and collective voices. With the power of voice comes responsibility: the obligation to act justly and the spirit to improve the world around us. When people use their strong voices properly, they create leadership, activism, empowerment, and liberation. Unfortunately, individuals do not always fulfill the responsibilities that come with their voices. Often, people corrupt voice and the associated power, leading to oppression and injustice. In this course, students will explore voices from around the globe and across America. By reading classical texts, modern works, current periodicals, and diverse genres, students will expand their knowledge of global voices. Additionally, students will create their own works to discover and develop their own voices and unleash the inherent power to improve the world around them. The ultimate goal of the “Voices” course is to deepen students’ understanding of the powers, dangers, and endless possibilities of voice.

EN3402 – English/ Language Arts III – H (1.0)

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 the 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.

EN4052 – English/ Language Arts IV – H (1.0)

Students entering grade 12 are prepared for deeper considerations of written expression, ready to tackle social issues through a variety of lenses and to situate their own identities and voices in the larger world of text. Students will analyze, critique, and compose written expression as a vehicle for identity formation, challenging norms, impacting change, and possibly transforming the world in which we live. This course focuses on characters’, authors’, and students’ responses to social constructs and the establishment of

identity through writing. Consideration is given to the real or imagined societies in which individuals exist and how these worlds define, create, and demand space for reaction and response. Students in this course are asked to consider themselves as individuals within larger societies whose abilities to think critically and impact change make their stories and arguments worthy of being heard.

EN117 – Creative Writing (0.5) ** Will not be offered 2025-2026

This semester-long course introduces students to the art of creative writing and publishing, focusing on expressive writing across various genres. The purpose of this class is to encourage students to develop the habits, attitudes, and flexibility of professional writers in a writing community. Students will write and revise pieces in a number of categories, such as personal essays, short stories, and poetry. The central focus of the class is on the various processes for creating, using mentor texts as inspiration and learning by providing and listening to feedback. Most important, however, will be learning to interact in an encouraging creative community that supports individual curiosity and artistic risk taking.

EN3462 – Contemporary Literature (0.5) ** Will not be offered 2025-2026

This half-year course for juniors or seniors who need additional English credit or are interested in reading modern young adult novels. Students must take the course concurrently with either English III or English IV. The course allows students to explore current topics related to identity and society through modern literature. It aims to advance students' reading, writing, thinking, and speaking skills through the study of contemporary literature. We will focus on understanding how modern literature has evolved and how it can be useful and enjoyable, simple yet challenging, and familiar but new. In addition to reading a variety of authors, we will practice writing in different formats. Although many writing assignments prepare students for college-level work, all tasks are beneficial and relevant for every student.

EN1004– ECE Introduction to Academic Writing (1.0) UConn ECE – ENGL 1004

This course focuses on developing the reading and writing skills essential for university work. Students placed in ENGL 1004 must pass this course before enrolling in ENGL 1007. ENGL 1004 prepares students who are not yet ready for the ENGL 1007 and would benefit from a preparatory course while still earning college credit.

EN3000 ECE Academic Writing and Multimodal Comp (1.0) UConn ECE – ENGL 1007

College composition through multiple forms of literacy, including rhetorical, digital, and information literacies necessary for twenty-first-century contexts. The development of creatively intellectual inquiries through sustained engagement with texts, ideas, and problems. Emphasis on transfer of writing and rhetorical skills to academic and daily life. Students design a digital portfolio that curates creations and skills-based micro-credentials they earn in coursework.

Eligibility Guidelines: Successful completion of two years of high school English is required. Students must pass ENGL 1004 before enrolling in ENGL 1007.

MATHEMATICS

MA1010 – Math Problem Solving 1 (0.5)

MA1011 – Math Problem Solving 2 (0.5)

This preparatory course is for first-year algebra students who struggle with mathematics and are two or more years below their grade level in math. The approach of this course is more concrete than abstract and focuses on increasing the understanding of basic concepts, gaining fluency in handling mathematical symbolism, and increasing problem solving techniques. Successful completion will lead to placement in Algebra I.

MA2014 – Algebra I – H (1.0)

Algebra I units of study deepen and extend understanding of linear and exponential relationships by contrasting them with each other and applying linear models to data that exhibit a linear trend. Students engage in methods of analyzing, solving, and using quadratic functions. Students will extend their knowledge of the number system to include irrational numbers. Students will use technology and models to investigate and explore mathematical ideas and relationships to develop multiple strategies for analyzing complex situations verbally, numerically, graphically, and symbolically. The Mathematical Practice Standards apply throughout the course, and along with the Connecticut Core content standards, ensure that students will apply mathematical skills and make meaningful connections to life's experiences. Students will engage in active learning enhanced with technology-rich instruction including computer applications, and the use of graphing or the Demos calculators.

MA2102 – Geometry – H (1.0)

Prerequisite: Algebra I

Geometry units enable students to develop analytic and spatial reasoning skills and move towards formal mathematical arguments and constructions. Students study probability and statistics so they can create arguments and justify conclusions by applying their statistical reasoning. Student also will apply what they know about two-dimensional figures to three-dimensional figures in real-world contexts, build spatial visualization skills, and deepen their understanding of shape and shape relationships. Students develop deductive reasoning skills for both mathematical and real-world problem contexts. The Mathematical Practice Standards apply throughout the course, and along with the Connecticut Core content standards, ensure that students will apply mathematical skills and make meaningful connections to life's experiences. Students will engage in active learning enhanced with technology-rich instruction including computer applications, and the use of graphing or the Demos calculators as well as Geogebra geometry applications.

MA4052 - Financial Algebra – H

Financial Algebra introduces students to the world of personal finance. This course will cover the following topics: careers, loans (including college loans), banking, taxes, budgeting, investing, and insurance. This course will use case studies, projects, and mathematical modeling so students can learn about these relevant topics as they work to solve real career and financial problems.

MA2202 – Algebra II – H (1.0)

Prerequisite: Algebra I.

After completion of this course, students should enroll in Pre-Calculus, Financial Algebra or AP Statistics with recommendation.

Algebra II extends and applies the concepts of Algebra I and Geometry. The curriculum includes the study of functions including polynomial, radical, rational, exponential, logarithmic and trigonometric. Students will use technology and models to investigate and explore mathematical ideas and relationships to develop multiple strategies for analyzing complex situations verbally, numerically, graphically, and symbolically. The Mathematical Practice Standards apply throughout the course, and along with the Connecticut Core content standards, ensure that students will apply mathematical skills and make meaningful connections to life's experiences. Students will engage in active learning enhanced with technology-rich instruction including computer applications, and the use of graphing or the Demos calculators.

MA2243 – Pre-Calculus – H (1.0)

Prerequisite: Successful completion of Algebra I, Geometry, and Algebra 2

After completion of this course, students should enroll in AP Calculus and/or AP Statistics.

Pre-calculus extends and applies the concepts of all their previous courses. The curriculum includes a study of trigonometric relationships, matrices and systems, vectors, conics and limits. Students will use technology and models to investigate and explore mathematical ideas and relationships to develop multiple strategies for analyzing complex situations verbally, numerically, graphically, and symbolically. The Mathematical Practice Standards apply throughout the course, and along with the Connecticut Core content standards, ensure that students will apply mathematical skills and make meaningful connections to life's experiences. Students will engage in active learning enhanced with technology-rich instruction including computer applications, and the use of graphing or the Demos calculators.

MA1009 – Intro to Data Science – H (1.0)

After completing this course, students should take either AP Statistics or Algebra 2.

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 databased 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 – AP Statistics (1.0)

Prerequisite: Successful completion of Algebra 1, Geometry, Algebra II or Intro to Data Science.

The AP Statistics course is equivalent to a one-semester, introductory, non-calculus-based college course in statistics. The course introduces students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. There are four themes in the AP Statistics course: exploring data, sampling and experimentation, anticipating patterns, and statistical inference. Students use technology, investigations, problem solving, and writing as they build conceptual understanding.

MA2304 – AP Calculus AB (1.0)

Prerequisite: Successful completion of Algebra 1, Geometry, Algebra II, Pre-Calculus

College Board designed the curriculum for AP Calculus. Their description of the course is as follows: “AP Calculus AB is roughly equivalent to a first semester college calculus course devoted to topics in differential and integral calculus. The AP course covers topics in these areas, including concepts and skills of limits, derivatives, definite integrals, and the Fundamental Theorem of Calculus. The course teaches students to approach calculus concepts and problems when represented graphically, numerically, analytically, and verbally, and to make connections amongst these representations. Students learn how to use technology to help solve problems, experiment, interpret results, and support conclusions.

SCIENCE**SC3132 – Biology (1.0) – H**

Throughout Biology, students explore phenomena in the life sciences. Students figure out big ideas related to energy flow in ecosystems, carrying capacity and interactions including group behavior. Next, students focus on the flow of energy and matter through the carbon cycle considering the mechanisms of cellular respiration and photosynthesis at various scales. Students build on their understanding of DNA and chromosomes and investigate how variation leads to differences between individuals at cellular and system levels. To follow, students investigate evolution by natural selection and apply these ideas to populations. Students then use their understanding of evolution through natural selection to explore the evidence for common ancestry and figure out how Earth’s systems and life co-evolved. Throughout the course, students also build an understanding of human influence on biological systems, including the importance of biodiversity and how human interactions affect natural systems and how humans can develop solutions to reduce their impact. The course emphasizes scientific inquiry and discovery to develop conceptual understanding. Students will be able to think and communicate effectively as scientists by the end of the course. Biology is required for graduation and fully aligns to the Next Generation Science Standards.

SC3212 – Chemistry (1.0) – H

Prerequisite: Algebra II concurrent or completed

Through natural phenomena, this course provides an overview of chemical principles and concepts. Students investigate the particulate nature of matter and figure out how energy transfers on the molecular level as well as on the Earth-systems level through radiation, convection, and conduction. Students build an understanding of atoms, molecules, and substances to describe their properties, including patterns of bonding and periodic table trends. Students explore equilibrium in chemical reactions, to explain how chemical processes interact on Earth. Through exploration of endothermic and exothermic processes, students apply chemical understandings to meet societal energy needs. Inquiry based learning and required hands-on lab activities are integrated into the students’ course work. Chemistry is required for graduation and fully aligns to the Next Generation Science Standards.

SC3314 – Physics (1.0) – H

Through natural and designed phenomena, this course provides an overview of principles of physics. Students explore how humans use machines to transfer energy from Earth’s systems into our communities, with a focus on electricity. Using mathematical reasoning and data analysis, students apply an understanding of forces and

Newton's laws of motion to natural phenomena. Applying the understanding of energy and forces, including force diagrams, students continue to apply these ideas to understand momentum and collisions. Students will use computational models and mathematical representations to develop an understanding of gravitation and energy flow between systems. Students explore waves through various models, using mathematical representations to show relationships of frequency, wavelength and speed through various media. Inquiry based learning and required hands-on lab activities are integrated into the students' course work. Physics is required for graduation and fully aligns to the Next Generation Science Standards.

SC3041 – Environmental Science I (0.5)

Environmental Science I is a science course that focuses on the abiotic or non-living aspects of environmental science. The course is essential to our school's theme of environmental science and sustainability and enriches student's conceptual understanding of and science practice skills in the core science curriculum found in Geosciences.

SC3042 – Environmental Science II (0.5)

Prerequisite: Successful completion of Environmental Science I

Environmental Science II is a course that focuses on the biotic or living aspects of environmental science. The course is essential to our school's theme of environmental science and sustainability and enriches student's conceptual understanding of and science practice skills in the core science curriculum found in Biology.

SC2233 – ECE Environmental Science (1.0)

UConn ECE – NRE 1000

Prerequisite: Successful completion of 2 years of high school science.

ECE Environmental Science is a science course that seeks to investigate, in depth, current social issues such as Environmental interrelationships, Environmental Ethics, Environmental Risk/Economics and Energy and Civilization: Patterns of Consumption as well as address the scientific principles related to the field of environmental science.

SC4051 –Forensics (0.5)

Forensics is a half-year elective science course that focuses on the key aspects of forensic science. Students will utilize forensic science concepts and investigation techniques to visit various "crime scenes," collect samples, analyze data and draw conclusions as to the cause of the crime. Topics will integrate crime scene investigation and forensic science to examine how scientists: process the scene, utilize tools of the lab, gather physical evidence, study forensic toxicology, analyze inorganic/organic compounds and study entomology.

SC2261 – Fresh Water Ecology (0.5)

Prerequisite: Biology concurrent or completed

Freshwater ecology is a half-year science course that focuses on the local ecology of the Connecticut River. Students will visit various sites along the river, collect samples, analyze data and draw conclusions as to the health of the river as part of a project-based program. This course will enhance the learning of environmental science and sustainability with a focus on preserving local fresh water sources. Unit topics will include Aquatic Ecology, CT River Ecosystems, Invasive Species, Land and Water Use and Weather and Climate.

SC3305 – Anatomy & Physiology (1.0)

Anatomy and Physiology is an upper level course designed for students interested in the health professions. The course will require students to be highly independent learners. Students will gain an in-depth understanding of the structure and function of the major human body systems from the cellular level to the organ system level. Students will research how diseases affect body systems and how body systems function together for optimal health.

SC2581 – Cellular Biology (0.5)

Prerequisite: Biology

Cellular biology is the study of the structure and function of prokaryotic and eukaryotic cells. We will examine many different areas of cellular biology including the synthesis and function of macromolecules such as DNA, RNA, and proteins; control of gene expression; membrane and organelle structure and function; bioenergetics; and cellular communication. Examples of relevant human disorders will also be used to help the student understand what happens when cells do not work as they should. Laboratories will focus both on exercises that help illustrate cellular phenomena, as well as on the introduction of techniques and procedures commonly utilized in modern cell and molecular biology research. The course emphasizes the development of critical thinking processes and proficiency in scientific reading and writing.

SC1132 – Genetics (0.5)

Prerequisite: Biology

This course provides an overview of the principles of plant and animal genetics including Mendelian and modern concepts of heredity. The course addresses developments in molecular genetics by exploring the chemistry and physiology of genes and the nature of gene action in prokaryotic and eukaryotic cells. It conveys the basic principles of modern genetics that apply to all living things on Earth. Specific components include Mendelian genetics, gene regulation, molecular genetics, and genomics. The course emphasizes genetic methods and concepts, providing many opportunities to engage with biotechnology through laboratory experimentation.

SC3323 – Introduction to Hydroponics (0.5)

The Hydroponics course is a half-year technology elective that will teach students about the various technologies utilized to grow plants in a nutrient water solution without soil. Students will design and construct their own hydroponic systems and collect and analyze data to determine if their system is working efficiently and effectively at producing crops. This course will integrate a variety of sciences including environmental science, biology, chemistry, physics, and earth science behind the future of farming (both personal and large-scale) through hydroponic systems. Beyond the science, students will engage in problem solving through the integration of citizen science projects.

SC3831 – Aquaponics (0.5)

This course will integrate a variety of sciences including environmental science, biology, chemistry, physics, and earth science behind the future of farming (both personal and large-scale) through aquaponics systems. Beyond the science, students will engage in problem solving through the integration of citizen science projects. In the two semester-long courses, students will learn how aquaponics systems work, how to manage

an aquaponics system, and how aquaponics can be used to further food production within communities, large and small.

SOCIAL STUDIES

SS4022 – US History (1.0) – H

United States History is a course designed to take students on a chronological study from post-Civil War through modern times. Students will examine the significant events, people, and ideologies of the nineteenth, twentieth, and twenty-first centuries – particularly identifying how and why these events influence our world today. Students will evaluate and analyze primary and secondary sources, use inquiry to write argumentative and research papers, develop geographical skills, investigate economic impacts on societies, and gain an initial understanding of civics. This course begins with Reconstruction and examines topics such as World War I, Women’s Rights, the Great Depression, World War II, the Cold War, the Civil Rights Movement, and influences in modern American society.

SS2205 – Civics (0.5) – H

Civics is a required course for graduation. The focus of this course is to prepare students to participate in exercising their political responsibilities as thoughtful and informed citizens. Civics provides a basis for understanding the rights and responsibilities for 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.

SS4371 – Psychology (0.5) – H

This course will introduce basic concepts used by psychologists in understanding human behavior. It explores topics such as psychology as a science, human development, biological bases of behavior, motivation and learning, thinking and intelligence, normal and abnormal behavior, therapies, testing, and the effects of group membership on behavior.

1302 – Sociology (0.5) – H

Sociology is the study of society. In order to understand various societies, including our own, we must be able to see the world through the eyes of others. In the course, students will focus on the systematic understanding of social interaction, social organization, social institutions, and social change.

SS2001 – African American/Black and Puerto Rican/Latinx Studies – H

This is a full credit course where students will explore the contributions, accomplishments, achievements and perspectives of African American, Black, Puerto Rican, and Latinx communities throughout American History. Students will explore social, cultural, and economic contributions of these communities and its overall impact on the American society and identity.

SS4563 – AP Government and Politics (1.0)

AP Government and Politics introduces students to key political ideas, institutions, policies, interactions, roles, and behaviors that characterize the political culture of the United States. The course examines politically significant concepts and themes, through which students learn to apply disciplinary reasoning, assess causes and consequences of political events, and interpret data to develop evidence-based arguments.

WORLD LANGUAGE

SP5012 – Spanish I (1.0) – H

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 (1.0) – H

Prerequisite: Spanish I

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. The course introduces literature through poetry, fables, and short stories.

SP5212 – Spanish III (1.0) – H

Prerequisite: Spanish II

In this intermediate course, students engage in thematic units that enhance effective communication and improve oral and written skills through various instructional activities and authentic assessments. They refine their communication abilities through purposeful listening, speaking, reading, and writing activities. Students participate in advanced, meaningful exchanges of information, such as describing a visit to a national park, discussing school competitions, exploring the arts, giving health and nutrition advice, and examining volunteer opportunities in the community, careers, and cultural interactions. Authentic units also include discussions about emergencies and injuries. Throughout the course, students communicate using a variety of tenses and explore the history, geography, and cultural perspectives of Spanish-speaking countries. Additionally, they continue their study of literature with a focus on poetry.

SP5312 – Spanish IV (1.0) – H*Prerequisite: Spanish III*

Students enrolled in this advanced 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 refine their effective communication skills through purposeful 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 youth, fables and legends, and the environment, students augment and refine their skills in vocabulary and grammatical accuracy as they communicate on the relevant themes in the literary pieces. Students communicate in a variety of advanced tenses. This course weaves cultural perspectives from various Spanish-speaking countries into the thematic units of study. Students receive extensive practice and preparation for the Advanced Placement Exam scheduled for the following school year. All instruction takes place exclusively in Spanish.

SP3101 - SPANISH FOR NATIVE/HERITAGE SPEAKERS I**SP3102 - SPANISH FOR NATIVE/HERITAGE SPEAKERS II**

This course targets freshmen and sophomores who have a solid foundation in Spanish but lack formal education in the language. Each course provides one year of Spanish instruction and serves as a prerequisite for Spanish courses 3 and above. We tailored these courses to meet the needs of our large Spanish-speaking population, who often struggle and resist taking a language they feel they already know. Offering a Heritage Learners class allows students to learn at an appropriate pace while targeting their specific areas of need. The course focuses on improving and refining their Spanish skills and teaching reading and decoding skills that translate to English, which are crucial for the AP Spanish test. Additionally, it emphasizes vocabulary building through cognates and diverse global topics to enhance their comprehension of English. Completing both courses prepares students for Spanish 4 and provides the opportunity to continue to AP or ECE Spanish, as well as earn the Seal of Biliteracy in Spanish and English upon graduation (also contingent on their English grade). After finishing this course, students may proceed to Spanish 3, 4, or 5, AP, or ECE, depending on teacher recommendations.

SP5524 ECE Intermediate Spanish Composition**UConn ECE – 3178**

This course provides a thorough review of grammar and methodical practice in composition leading to command of practical idioms and vocabulary. Students will earn UConn ECE credit on successful completion of this course.

ENGINEERING**EG1021 – Principles of Engineering (0.5) (First Class in the Engineering Sequence)**

Students explore the fundamentals of the Engineering Design Process and learn what it means to be an engineer in this hands-on, inquiry-based course. Topics discussed include engineering, communications,

history of engineering and traditional engineering disciplines, teamwork, measurement, introduction to 3D solid modeling, basic electricity, problem solving, design and modeling.

EG0901 – Intro to Engineering (0.5) (Second Class in the Engineering Sequence)

Students explore the various areas of engineering based on electrical, mechanical and structural engineering. engineering design process and learn what it means to be an engineer. Topics discussed include teamwork and concurrent measurement, 3D solid modeling, basic electronics, problem solving, structural design and modeling, mechanical systems and design.

EG0905 – Engineering Design (1.0) (Final Class in the Engineering Sequence)

Prerequisites: Principles of Engineering, Introduction to Engineering, Environmental Engineering

This hands-on, inquiry-based course will introduce students to the engineering design process, research and analysis, teamwork, communication methods, global and human impacts, engineering standards, and technical documentation. The course gives students the opportunity to develop skills and understanding of engineering concepts through problem-based learning. There will be a school-based apprenticeship for this course.

COMPUTER SCIENCE

TE1131 – Computer Coding (0.5)

Computer Coding is half-year course that focuses on learning how to write computer code and develop computer programs. This course requires a fundamental understanding of computer science. The course will provide students with the background knowledge in topics including computation, programming, internet as a network, abstractions, binary sequences, modeling and simulations, computational manipulation, algorithms, and cybersecurity.

TE2000 – HS Game Design (0.5)

This course teaches students the fundamentals of game design. By the end of this course, students will understand the design planning process, be knowledgeable of industry related careers, and be able to navigate the Unity environment in order to create their own 3D games.

TE1043 – AP Computer Science Principles (1.0)

The AP Computer Science Principles course is 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.

ASC100 – Cybersecurity (0.5)

Cyber Security is a half-year course exploring cyphers, cryptology and information security. Cybersecurity is a growing field in the American and International workplace. This course introduces students to the skills needed to thrive in this field while providing an exploration of the field in general. Students will examine classic historical cyphers such as Caesar, Transposition, Affine, and Simple Substitution. Students will also explore current topics: public key encryption and modern protocols. Students have the opportunity to code examples of many of these cyphers. Students will produce a mastery project. While it is not required that students have a prerequisite class, it would be useful if they had some exposure to coding.

ROBOTICS

EG3301 – Unmanned Aerial Systems (Drones) (0.5)

Unmanned Aerial Systems is a half year engineering elective in which students will receive an in-depth overview of various aircraft, how they function and fly. Students will learn to build various unmanned aircraft, while learning the physics behind flight. Students use drones to facilitate some aspects of this course. Subjects include the history of flight, aerodynamics, gliders, hot air balloons, rockets, helicopters, and drones.

EG3302 – Robotics 1 (0.5)

Students are encouraged to join the after school robotics club to gain further experience in Robotics engineering. Students in the club compete at a state and national level.

Robotics 1 is a half year engineering elective that will develop and expand students' skills and knowledge related to the engineering design process so that they can design and develop robotic devices. Topics covered in the course will include basic gearing, chassis design, sensors, motor controls, computer basics, and programmable logic controllers. Students will build a programmable three-wheeled robot and clawbot.

EG3303 – Robotics 2 (0.5)

Students are encouraged to join the after school robotics club to gain further experience in Robotics engineering. Students in the club compete at a state and national level.

Robotics 2 is a half year engineering elective that will expand students' skills and knowledge related to the engineering design process so that they can design and develop robotic devices. Topics covered in the course will include more gearing, alternate chassis design, sensors, motor controls, computer basics, and programmable logic controllers. Students will build a programmable tracked robot and rack and pinion vehicle.

SC3143 – Robotics 3 (1.0)

Prerequisite: Robotics 2

Students are encouraged to join the after school robotics club to gain further experience in Robotics engineering. Students in the club compete at a state and national level.

Robotics 3 is a full year engineering elective that will further develop and expand students' skills and knowledge developed in Robotics 1 and Robotics 2 courses. Students will utilize the engineering design process to design and develop robotic devices and. Topics covered in the course will include advanced gearing/pulleys, sensors, motor controls, computer basics, and programmable logic controllers. Students build a scissor lift and a crane.

SC3303 – Robotics 4 (1.0)

Prerequisite: Robotics 3.

Students are encouraged to join the after school robotics club to gain further experience in Robotics engineering. Students in the club compete at a state and national level.

Robotics 4 is a full year engineering elective that provides students with an advanced understanding of mechanics, robotic control, and robot logic. This course is student lead, self-paced, problem and project based with the intent of leading students to develop innovative robotic solutions to open-ended engineering design problems.

SPECIAL COURSES**CP4991 – Capstone (0.5)**

All 11th grade students will enroll in the Capstone Project. It is a comprehensive experience that highlights a student's in-depth learning in various ways. Students have the opportunity to use their personal interests, abilities, skills and special talents to create and present authentic projects. This project is research-based and offers 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 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.

HE4025 ECE Health & Education Urban Communities (1.0)

All 11th grade students will enroll in ECE Health and Education Urban Communities. This course will also fulfill the capstone graduation requirement. Explores the historical and social forces that shape health and education in urban communities, specifically in Connecticut. Topics of study will include poverty, culture, and identity and how these phenomena affect children's health, nutrition, schooling and opportunities for success. Through readings, films, discussion, reflection and service-learning opportunities, class members analyze policies, norms and beliefs in our society. Students consider how these trends may lead us to a more just society and how these may perpetuate injustice.

HEALTH AND WELLNESS**PE6L2 – Physical Education (0.5)**

Physical Education is a half year course that helps students become empowered to make choices, meet challenges, and develop positive behaviors in fitness, wellness and movement activity for a lifetime. The course includes adventure education, lifetime activity, fitness and wellness, skill development, and rhythm, movement, and dance.

HE1001 – Health (0.5) and HE9111 – Health 2 (0.5)

Health is a required class where students must earn 1.0 credits. This course consists of two half-year segments designed to provide students with resources that help them make healthy lifestyle choices. Students will learn the importance of eating nutritious foods in addition to how exercise keeps the body in optimal condition. They will also learn to make responsible decisions and become well-informed consumers. The course will

cover topics such as nutrition, diseases and disorders, mental and emotional health, the effects of drugs on the body, alcohol, tobacco, growth and development, and healthy, safe relationships.

PE4221—Strength and Conditioning (0.5)

Students in this course will learn about the basics of Strength and Conditioning such as weight-lifting technique, directions for equipment use, strength training theory and application of basic principles. The goal is for each student to utilize scientific principles to create their own strength-training program. Students will participate in various exercise and programming techniques and exercises in a hands-on method to design their own experiments and test out their individualized strength training programs.

HE9221 – Lifetime Fitness and Wellness (0.5)

Students in this non-traditional PE course will learn the basics of lifetime wellness. This course will combine walking for fitness, low intensity body weight exercises, and wellness concepts that will educate students on the overall benefits of consistent aerobic/body weight exercises. Benefits of this class will also include lowering stress, improving sleep, and learning about lowering personal risk for heart disease, stroke, diabetes, and some cancers. Because of this class, each student will be able to design their own personal fitness and wellness program.

PE 9001 ECE Exercise and Personal Wellness

KINS 1100: Exercise and Wellness for Everyone

Overview of the five pillars of health (exercise, nutrition, sleep, stress and relationships); role of exercise in health promotion and disease prevention across the lifespan; impacts of exercise in leisure time, culture, community, careers and the workplace

VISUAL AND PERFORMING ARTS

AR6020 – Studio Art – Foundation Course

Studio Art is an Art immersion course focusing on drawing, painting, printmaking, and sculpting. The instructional goals of the Studio Art program are to encourage creative as well as systematic investigation of formal and conceptual issues. The course emphasizes making art as an ongoing process that involves the student in informed and critical decision-making. Students develop technical skills and familiarize students with the functions of the visual elements. The course encourages students to become independent thinkers who will contribute inventively and critically to their culture through the making of art.

AR6022 – Advanced Studio Art (0.5)

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.

AR3871 – Recycled Art (0.5)

This course is a half year course that provides students with the knowledge and opportunity to explore an art form and to create individual works of art using materials such as trash and recycled materials. The course emphasizes the processes of a particular art form and the design elements and principles supporting a work of art. As students advance and become more adept they will develop their own artistic styles.

AR6202 – Digital Photography (0.5)

Digital photography is a half-year elective course that exposes students to the materials, processes, techniques of taking photographs, and digital editing. Students learn about the operation of a camera, composition, lighting techniques, and depth of field. This course will also focus on the utilization of photography in journalism, media, and social and environmental activism. This course meets the requirement as a STEM elective.

AR6011 – Mixed Media Exploration

This course aims to build innovative, purposeful learning about how to use the arts and technology in integrative and collaborative ways. In addition to learning powerful skills and building creative stamina, students are encouraged to recognize and respect their own and others' skills and interests. There are two major components to the course: (1) Foundations (2) Arts, Science and Technology

AR3211 Digital Graphic Design

This course gives students the chance to explore the various tools of Adobe Illustrator. They will utilize that knowledge to create and edit themed illustrations and icons.

MUSIC**1820 – Band 1 (0.5)****1821 – Band 2 (0.5)**

Concert Band promotes students' musicianship and technique for playing brass, woodwind, and percussion instruments and cover a variety of band literature styles, primarily for concert performances. Each semester of learning culminates in a mandatory concert performance that may take place outside of school. Band is offered over multiple semesters and students should use this opportunity to build on their learning.

1810 – Chorus 1 (0.5)**1811 – Chorus 2 (0.5)**

Chorus provides students with the opportunity to sing a variety of choral literature styles for men and/or women's voices and develop vocal techniques and the ability to sing parts. . Each semester of learning culminates in a mandatory concert performance that may take place outside of school. Chorus is offered over multiple semesters and students should use this opportunity to build on their learning.

CW1046 – Digital Audio Production (0.5)

This course is for students who desire the opportunity to explore real-world applications of modern music-making and digital audio production, such as commercial radio jingles, podcasts, YouTube, and scoring for film and video games. Studies will concentrate on composition, recording, editing, mixing, and media scoring

techniques using the latest computer software and hardware in ASI's Music Lab. Students will work on individual and group projects and present them to the class for feedback, revision, and evaluation.

MU0761 – Digital Piano 1 (0.5)

This course is for students who have little to no experience on a musical instrument. Students will learn how to read notation for piano while playing music from various cultures and styles. This is a performance-based class where students will be working alone and in groups. Students will also use computers to aid instruction and evaluation.

MV1084 – Digital Guitar (0.5)

This class focuses on understanding the basic principles of playing and writing music for the guitar. Students will learn to write chord progressions, create melodic leads, and string their instruments.