Conroe Independent School District

Academy for Careers in Engineering and Science

2019-2020
Student Handbook/Course Description Guide

(revised 9/1/18)

ACES is a member of The National Consortium of Secondary STEM Schools (NCSSS).

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Table of Contents

General Information

This Course Description Booklet is designed to assist Academy students and parents in planning Academy course selections for the 2019-2020 school year. A wide variety of Academy courses are offered. Each course is described along with its prerequisites and amount and type of credit. As an Academy student, you should use this booklet along with your ORHS Course Selection Booklet to develop a four-year plan. It is **your** responsibility to be sure that your 2019-2020 courses help you meet Conroe ISD and Academy graduation requirements.

The information in this booklet should be consulted as you select courses for next year. However, printed descriptions cannot replace the value of talking about courses and plans with teachers, counselor, and your parents. If you have questions regarding courses and the implication of selecting them, you are encouraged to consult your class counselors listed below and the Academy Headmaster. Please feel free to contact us at any time during the registration process.

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Vision, Mission, and Goals

Vision:

Students graduating from ACES will be capable, confident lifelong learners who will be prepared for collegiate or advanced level STEM study. They will possess and reflect the desirable qualities of an Oak Ridge High School and CISD graduate.

Mission:

To maintain high school students in the STEM career pipeline and to prepare them for lifelong learning and achievement by focusing on student STEM career interests and pathways at both the occupational and professional levels.

Goals:

1. To provide students specialized courses in mathematics, science, allied health science, engineering and technology.
2. To transmit to students an understanding of the nature of science and the scientific enterprise and to serve as a portal of entry to advanced science study.
3. To maximize student achievement by providing a stimulating learning environment characterized by application, career exploration, academic rigor, support, and varied learning and assessment opportunities.
4. To support students through internships, competitive group and individual design and research efforts, and student-driven demonstrations and outreach initiatives.
5. To help students explore a wide range of opportunities available in STEM careers through interactions with individuals at institutions of higher learning, hospitals, businesses and industries.
6. To develop competent, confident, capable learners.
7. To develop a community of learners based on a continuous improvement model involving teachers, students, parents and community members.
8. To serve as a resource to other CISD schools.
9. To be a vital, integral, value-added component of Oak Ridge High School.

ACADEMY GRADUATION REQUIREMENTS
Classes of 2018-2022

Academy graduates are recognized by a plaque presented at our annual Banquet and by a medallion to be worn at graduation. In addition, an Academy Class Profile and letter describing the program are enclosed with students' transcripts sent to colleges and universities. Beginning in 2018, students will have endorsements and performance acknowledgements on their diplomas.

Following are the minimum graduation requirements for the Academy for all students in the Classes of 2018-2022. We expect that many Academy students will exceed them.

NOTE: The Academy reserves the right to modify course offerings and graduation requirements based on staffing, funding, enrollment, and scheduling.

(1) Completion of the **CISD 26-Credit Graduation Plan** beginning with the Class of 2011. We **recommend** that Academy students plan to complete **three years of the same foreign language** to be better qualified for the college admissions process.

(2) The **Academy Science Core** taught in the Academy or otherwise pre-approved:
(a) Computer Science I PreAP (9), preAP Biology (9), preAP Chemistry (10), AP Physics I (11);
(b) AP Chemistry (11), AP Environmental Science (11 or 12), AP Biology (12), **or** AP Physics C (12).

(3) The **Academy Mathematics Core**: **four** years of mathematics (one course per year) taught in the Academy or otherwise pre-approved. Academy courses planned for the future are: preAP Geometry, preAP Algebra II, Pre-calculus, AP Calculus AB, AP Calculus BC, and AP Statistics.

(4) **Health Science Specialization: Principles of Health Science and Health Science Technology I (**10,11,12).

Or

Technology Specialization: AP Computer Science A; AP Computer Science Principles (10, 11, 12).

(5) **Specialization** Requirements
At least one additional advanced course: (chosen from AP Chemistry, AP Physics C, AP Biology, an advanced AP Computer Science, AP Environmental Science, AP Statistics, Anatomy and Physiology (H), Health Science Technology may count with advance approval.

(6) **Career Path Emphasis**
Academy students are asked to declare a career path emphasis, such as engineering, medicine, biotechnology, etc., and to select classes consistent with that emphasis when choosing classes for 11th and 12th grades.

(7) The **Career** Requirement (co-curricular)
Field trip/exploration credits- students must complete 14 field trips *(i.e., meeting attendance, distinguished lecture attendance or actual field trip experiences)*
Internship – Student is eligible after the sophomore year. It is typically done between the junior and senior year.

(8) The **Independent Project** Component (co-curricular):
Research and Problems I, II, and III, IV represent for independent, co-curricular projects done in grades 10, 11, and 12 as appropriate. Projects should be completed by the end of the third nine weeks each year for credit to be given. Options will be delineated annually.

(9) The **Enrollment** Component

To be considered an Academy student, i.e. enrolled in the Academy and making satisfactory progress towards graduation, the student must:

(a). Be enrolled in at least three required Academy courses for each grade level for **four** years; early graduation from the Academy will NOT be possible.

(b). Earn credit for Research and Problems in grades 9, 10, 11 and 12. If credit is denied or otherwise not earned during the school year the student is subject to dismissal review. A summer Independent Project may be required, which would have to be presented to an appropriate panel by September 15th of the following school year.

NOTE: An Academy student is expected to enroll in an available Academy course unless an irresolvable scheduling conflict or other documented need exists. Under these circumstances, the course taken would count as a course "taught" in the Academy.

Students not meeting Academy enrollment requirements are subject to dismissal.

(10) The **Senior** Component: complete, pass, and get credit for **all** Academy courses (i.e. taught by Academy teachers or approved as "Academy" courses) the senior year.

Waivers: Modifications to the above requirements may be granted to students who enter the Academy after the ninth grade, or in recognition of special circumstances, as long as all other requirements are met. Waiver requests must be submitted in writing and signed by student and parent. The specific graduation plan of any student granted a waiver as approved by the faculty and Headmaster will be placed in the student's file.

Satisfactory Graduation Progress

Satisfactory graduation progress means that a student is completing his or her graduation requirements in a timely manner. These requirements include courses, Explorations, Internship, and Research & Problems projects. Teachers writing recommendations will be kept informed of your graduation progress. In addition:

- If you are making satisfactory graduation progress, a letter and an Academy Class Profile will be included with your official transcript for college and/or for scholarship applications. The letter explains the special nature of the Academy program. The Class Profile provides further information about the Academy and your class.

- If you are **not** making satisfactory progress, these items will **not** be sent with your transcript.

Following are specifics for *satisfactory graduation progress*.

- **Courses**: Required courses have been taken and passed; passing averages in all current Academy classes.

- **Explorations**: all **14 Exploration Credits** should be completed by the end of the first semester of the senior year. If you **start** your *senior* year needing Exploration credits, you are **not** making satisfactory graduation progress. If you have questions, see The Headmaster.

- **Internship**: You must complete all Internship requirements by the end of the nine-weeks following completion of your Internship time requirement. For example, if you do your Internship in the summer of 2019, you have until the end of the first nine weeks of the 2019 fall semester to complete all of the other requirements. If you have questions, see the Academy Internship Coordinator.

- **Research & Problems Projects**: You must complete your Research and Problems project requirements by the end of the **third** nine weeks each year (unless competition occurs after this date).

- **End of Senior Third Nine Weeks**: You must be passing all Academy courses (i.e. used for maintaining enrollment) and must have completed all Internship, Explorations, and Research & Problems requirements by this date to receive your Academy Medal at the Banquet in April.

- **Last Senior Progress Report Date**: You must be passing all Academy courses and must have completed Internship, Explorations, and Research & Problems requirements by this date to receive your Academy medallion and to be recognized as an Academy graduate at graduation. Any student who does not meet this final deadline or who subsequently fails or is denied credit for an Academy course will not be recognized as an Academy graduate.

- **Adequate Progress:** The Academy faculty is committed to the success of our students. We realize that each student is uniquely dedicated and talented but also may experience difficulty in one or more courses from time to time for a variety of reasons. Although it is uncommon, students occasionally do earn grades lower than 70. Nevertheless, Academy students are expected to maintain a minimum grade of 75 each semester in each Academy course in order to demonstrate satisfactory progress and to be prepared for further study. Every effort will be made to work with students to attain this level of consistent performance. Any student experiencing academic difficulty is expected to work with teachers, other students, and with adults at home to identify and solve the problem. Tutorial help is available by special arrangement. ORHS Counselors are also available for help. Three-week progress

reports are provided by teachers to help students and parents monitor academic progress and for UIL eligibility. Academy teachers may report progress in their classes as averages or as follows:

- Satisfactory - student's average is above 75; work complete
- Concern - student's average is 70-74 and/or work is missing
- Incomplete – significant work is missing
- Failing - student's average is below 70

Dismissal from ACES: Students may be dismissed from ACES for academic or behavioral reasons in accordance with this handbook, the CISD student handbook and/or the ORHS student handbook. Students, of course, have a right to due process and appeal.

Course Selections For Career Emphasis

Students and parents should be familiar with Academy and CISD graduation requirements and make careful plans for taking required and elective courses. The sample four-year Academy plan with seven courses per year suggests sequences for taking required courses. Courses that meet Academy graduation requirements are listed in **bold**. Co-curricular Academy requirements that are accomplished outside the school day are listed in *italics*.

We expect that Academy students do NOT take early release and that they take as many Academy courses as possible

Sample Academy 4-Year Plan

Sample Plan	**Grade 9**	**Grade 10**	**Grade 11**	**Grade 12**
Language Arts (all required)	English. I	English II	English III (AP or dual credit)	English IV (AP or dual credit)
Mathematics (all Required-may be accelerated through summer school))	**PreAP Geometry**	**PreAP Algebra II**	**PreAP PreCal**	**AP Calculus AB/BC**
Science (all required; choose at least one for senior year)	**Biology Pre-AP**	**Chemistry Pre-AP**	**AP Physics I**	**AP Biology/AP Chemistry/AP Physics/AP Env Science/Anatomy and Physiology**
Social Studies (all required)	PreAP World. Geog. Or AP Human Geography	AP World History	AP U.S. History (or dual credit)	AP Govt./Econ. (or dual Credit)
3rd Academy Course	**Comp. Sci. I Pre-AP**	**Principles of Health Science or AP Computer Science or AP Computer Science Principles or other course sequence**	**AP Bio/AP Chem/ AP Physics/AP Env Science/Anatomy and Physiology/AP Statistics/Principles of Health Science/Health Science /AP Computer Science/SRD, or other appropriate courses**	**AP Bio/AP Chem/ AP Physics/AP Env Science/Anatomy and Physiology/AP Statistics/Principles of Health Science/Health Science /AP Computer Science/SRD, or other appropriate courses**
Foreign Language (3 required for DAP graduation; 2 required for recommended plan; some courses may be taken is summer school or Junior High)	Foreign Lang. I	Foreign Lang. II	Foreign Lang. III [1] (not required)	
P.E./ fine arts (one year of fine arts; one year of P.E. should be taken before the senior year if possible)	P.E. /athletics/fine arts	Electives	Electives	
	R/P Project field trips/	*R/P Project*	*Internship R/P Project Field trips/ community service*	*R/P Project Field trips/community service*

	community service	*Field trips/ community service*		

Academy For Careers in Engineering and Science FOUR-YEAR PLAN

Student Name _____ ID_____ Class of __2022, ___ 2023, ___2024, ___2025 ____2026 Program of Study ___ Rec Plan

Post Secondary Plans: _____**4 year institution** **Area of interest** _____**Engineering** ____**Medicine** ____**Biotechnology** ____**Computer Science** _____**Other**_____

Course	Credits	Junior High	SS	9th	SS	10th	SS	11th	SS	12th
English	**4**			**English I Pap, H, L**		**English II Pap, H, L**		**English III AP, DC, H, L**		**English IV AP, DC, H, L**
Math**	***4***			***Academy Math Geom. Pap Alg II Pap Pre-Calc Pap***		***Academy Math Alg II Pap Pre-Cal Pap AP Calc AB***		***Academy Math Pre-cal Pap AP Calc AB***		***Academy Math AP Calc BC***
Science**	***4***			***Biology Pap***		***Chemistry Pap***		***AP Physics I***		***Academy Elective***
Social Studies	**4**			**W. Geog Pap or AP Human Geo.**		**W. History AP, H, L**		**US History AP, DC, H, L**		**Gov/Eco AP, DC, H, L**
Foreign Lang.	**2**									
Health	**1**									
PE (2014, 2015, etc)	**1**									
Com App	**.5**									
Fine Arts	**1**									
Electives	**5**									
Academy courses**				***Computer Science I Pap** required***		***Principles of Health Science or AP Computer Science A or AP Computer Science Principles or other course***		***AP Chemistry AP Bio Health Science Other elective***		***AP Chemistry AP Bio Health Science Other elective***
								AP Env Science		***AP Env Science***
								Anatomy & Phys- H		***Anatomy & Phys***

								AP Statistics		***AP Statistics***
								SRD AP Statistics		***SRD AP Statistics***
								AP Computer Science		**AP Physics AP Computer Science**
Credit	**26**									
CTE Coding				**0 1 2 3**		**0 1 2 3**		**0 1 2 3**		**0 1 2 3**

(1) Select a Career Emphasis: engineering, life science/health, computer science, biotechnology;

(2) Select Extracurricular – band, orchestra, choir, theatre, athletics, debate, yearbook, etc.; enter as many years as needed

(3) Choose a Foreign Language; enter type and years needed

(4) Select PE or PE substitute as necessary if needed (2 semesters PE or equivalent are needed). View the CISD website under PE to select an approved off-site PE.

(5) Choose four math classes.

(6) Choose a Fine Arts course.

(7) Choose at least one from AP Chemistry (11), AP Biology (12) or AP Physics (12).

(8) Choose a second advanced course.

(9) Select other courses as needed.

(10) Decide what classes must be taken in summer school, by correspondence, etc.; enter in **Outside** as needed.

[1]NOTE: Explorations, R&P Project and Internship are *co-curricular* - done outside of the school day.

CISD Summer School

Health, Communication Applications, a fine arts course, U.S. History, and possibly other required courses are being planned for CISD summer school. These options, together with correspondence, credit by exam, private/outside PE, and Montgomery College offerings provide opportunities for students to maximize their Academy experience. See your counselor for more information on these options

Prerequisites

Students must take all required courses in sequence. This is especially important in mathematics courses. No student will be allowed to take a mathematics course for which he/she has not successfully completed all of the prerequisite courses.

Gifted & Talented/Pre-Advanced Placement/AP

Gifted & Talented/Pre-Advanced Placement and Advanced Placement is the district's secondary sequence for gifted students. Students who meet the established criteria for admission are committed to developing an in-depth knowledge of the major discipline areas and anticipate pursuing post-secondary studies. In addition to complex and abstract bases of knowledge, students are provided opportunities to utilize the processes, methodologies, and techniques used by professionals in all Academy discipline areas as they experience greater depth, complexity and independent study.

While the Academy is **not** a gifted program, every attempt will be made to provide Academy students in the Gifted & Talented/Pre-Advanced Placement program with appropriate course experiences consistent with availability within the Academy and Oak Ridge High School.

Advanced Placement Courses and Testing

Advanced Placement (AP) Courses are among the most advanced academic courses offered by the district. This program gives students the opportunity to pursue college-level studies while still in secondary school and to receive advanced placement and/or credit upon entering college. Students should plan for 1 to 3 hours of homework per class period per course. Students are expected, but not required, to take the College Board Advanced Placement Tests in May.

Students must meet AP criteria to be placed in an AP class. Academic ability, motivation, and willingness to work are considered in placing students. **Academy students planning to take more than four AP courses in a school year should consult with the Academy Headmaster and their counselor**.

Dual Credit Courses

Through a direct partnership with Lone Star Montgomery, CISD students successfully completing a specified high school course will receive college credit as well as credit toward high school graduation. The student must pass the *ASSET* examination, must meet TASP standards, must pay applicable fees, and must enroll in the college course prior to the beginning of the course on the college campus in order to receive college credit for the course.

Local Credit Courses – No Pass/No Play

A number of Academy required and elective courses are listed as *local credit*. Academy courses receiving local credit do not meet for state requirements for graduation - they do not count toward high school graduation. Nor do they earn grade points to be calculated in a GPA. Nevertheless, all **required** Academy local credit courses (Explorations, Internship, Research and Problems) must be completed for the student to be recognized as an Academy graduate. By district policy, Incompletes and Failures in local credit courses **do** have UIL no-pass, no-play consequences.

Academy Application and Selection Criteria

Application information is made available during the fall to all eligible eighth grade students interested in the Academy program. **Resident students must apply during their eligible 8th-grade year.** No applications from resident students will be accepted after this time. Late and move-in applications will be taken March through July. Out-of-district eighth grade and high school transfer students interested in the Academy should contact the Academy office for further information.

Junior high grades and standardized test scores are used to qualify students for the Academy. Minimum averages in junior high English, social studies, math and science courses are required**.** The Academy selection committee uses the student's application letters, teacher evaluations, test results, writing sample, and an interview to assess the student's interest in and commitment to succeeding in a rigorous academic program. Parental understanding of the program and support of the student are vital to this success. We want to choose students who will bring something special to the program and who will benefit from it. Not all applicants may be interviewed.

A student must have completed Algebra I to enter the Academy.

Summer School Algebra

Conroe ISD will be offering an accelerated summer school algebra program for students accepted into the Academy. More information will be available in mid-April and will be sent to students needing the course.

Maintenance Criteria for Academy Membership

The Academy program of courses involves intensive study at an increased pace, requiring extra student effort in order to successfully complete the program. To graduate from the Academy, each student must complete ***all*** requirements of **CISD's 26-Credit Graduation Plan** (beginning with the Class of 2011) as well as ***all*** Academy requirements.

A student is eligible to continue in the Academy if he/she maintains a grade average of 75 or above in each Academy course. A semester grade below 75 in an Academy class will result in the student being placed on Academy Academic Probation. Chronic probation status or any semester grade in an Academy course less than 70 (failing) will result in review of the advisability of the student's continuing in the Academy.

Resignation or Dismissal from the Academy

A student who resigns from the Academy, or who is dismissed from the Academy for academic or behavioral reasons, will be reassigned to his or her attendance zone high school **only** at the semester (unless requested otherwise by the parents and approved by both principals).

Course Information

Codes for Courses

To facilitate student needs and wants with scheduling, courses will be scheduled by years. Therefore, each full-year course will have a "**1**" as the last number in the course code. One-semester courses will be indicated by "**E**", with an "**F**" or "**S**" identifying the semester offered. **U** refers to a Dual Credit (DC) course.

Courses that begin with "H" are Academy courses.

Schedule Change Requests, Changes, and Choices

You should choose your electives carefully. Requests for changes in a schedule will be allowed in accord with **deadlines.** Requests for changes after that deadlines may **not** be honored. **You** are responsible for meeting your high school ***and*** Academy graduation requirements.

Be sure to indicate as many second choice courses as possible. Every reasonable attempt will be made to honor your course requests.

Academy Computer Science/Technology Application Courses

One Computer Science course s required of **all** Academy students. A second course is suggested for future technology and engineering majors.

Computer Science I Pre-AP

NE8601 1 Credit Grade 9
Prerequisite:
Class Rank Category: Honors/Pre-AP (5)
Cost of Materials and Supplies: approximately $10

This course is designed to provide an in-depth study of the major components of computer science. Course content will include programming methodologies, simple data structures, algorithms, and an introduction to Object Oriented Programming design and implementation. The program language used is Java and the development environment is JCreator. Both are free software to encourage student use at home. Students who successfully complete this course may enroll in AP Computer Science I.

Computer Science Principles AP

E8581 1 Credit Grades 10-12
Prerequisite: Enrollment in or Completion of Algebra I
Class Rank Category: AP (6)
Cost of Materials and Supplies:

This course is equivalent to a first-semester introductory college computing course. Students will develop computational thinking skills 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.
Students are encouraged to apply creative processes when developing computational artifacts and to think creatively while using computer software and other technology that interests them. Students will also develop effective communication and collaboration skills through discussions and writing.
Prerequisites: Students should have successfully completed Algebra I.
* This course is complementary to AP Computer Science A. These courses can be taken in any order or at the same time, as schedules permit.

Computer Science I AP

E8631 1 Credit Grades 10-12
Prerequisite: Computer Science I PreAP
Class Rank Category: AP (6)

Cost of Materials and Supplies:

This course follows the College Board Computer Science Advanced Placement Guidelines. The course will be taught using the programming language Java. The Barron's study guide will be used in preparation for the AP Computer Science A test. This course may be counted as a math credited on the recommended Plan ONLY. Students are required to take the AP Computer Science exam

Technology Applications Independent Study I - Special Topics I

E8701	1 Credit	Grades 10-12
	Prerequisite:	AP Computer Science I and Instructor Approval or Computer Science H/pre-AP
	Class Rank Category:	Level (4)

Technology Applications Independent Study II- Special Topics II

E8721	1 Credit	Grades 11-12
	Prerequisite:	Technology Applications I
	Class Rank Category:	Level (4)

Technology Applications Independent Study III – Special Topics III

E8741	1 Credit	Grade 12
	Prerequisite:	Technology Applications II
	Class Rank Category:	Level (4)

These project-based courses are intended to provide opportunities for students to either explore topic areas in computer science in greater depth and/or breadth than is possible in the pre-AP /AP Computer Science sequence. Programming topics will center on object-oriented programming (OOP) with languages such as C++, Turbo C++, Perl, Visual Basic, Visual C++, and Professional Builder C++. Multifile programming, which involves the use of class libraries, the organization of programmers working on a project, and the conceptual design of programs may also be included. Other possible projects include networking, web mastering, advanced digital graphics and animation, and game design. A notebook and project presentation(s) are required.

Electronics and Robotics (SRD II)

EK5361	1 Credit	Grades 11-12
	Class Rank Category:	Honors (5)

The first semester of this course will introduce students to the fundamentals of electronic circuits. Students will build analog and digital direct-current circuits using breadboards. There will also be limited exposure to programmable logic chips. Each student will design and prototype a battery-powered device. During the spring, the students will apply the principles learned in the fall to the design and construction of robots. They will explore the ways robots interact with their surroundings by testing a variety of sensors and interfacing them with programmable logic chips. Some simple programming experience is desirable.

Academy Mathematics Courses

Four credit units of Academy mathematics are required to meet Academy core requirements. If Algebra I has been satisfactorily completed in Grade 8 or summer school, the student must complete Geometry (9), Algebra II (10), Pre-Calculus (11), and one additional Academy mathematics course (12). If Geometry has been successfully completed in Grade 8, the student must complete Algebra II (9), Pre-Calculus (10), a Calculus (11), and one additional Academy mathematics course (12).

Our recommendation is that all students take Calculus! When the student is having great difficulty, other sequence arrangements may be made by waiver.

Math Options - Starting with Geometry

Grade 9	Grade 10	Grade 11	Grade 12
Geometry	Algebra II	Pre-Calculus AP Statistics	AP Calculus AB AP Calculus BC AP Statistics

Math Options - Starting with Algebra II

Grade 9	Grade 10	Grade 11	Grade 12
			AP Calculus AB AP Statistics
Algebra II	Pre-Calculus	AP Calculus AB AP Statistics	AP Calculus BC AP Statistics

Geometry Pre-AP

NE1651 1 Credit Grade 9
Prerequisite: Algebra I
Class Rank Category: Pre-AP (5)

While covering the same basic objectives of the 164 Geometry course, students in this course will be challenged with assignments requiring exploration, abstract and higher order thinking skills and be required to synthesize their knowledge of postulates and theorems to organize and construct detailed proofs of more complex mathematical theorems. Successful students are willing to devote time to memorizing basic theorems and postulates.

Algebra II Pre-AP

E1681 1 Credit Grade 10
Prerequisite: Geometry Pre-AP
Class Rank Category: Pre-AP (5)

While covering the same basic objectives of the 167 Algebra II course, students in this course will be challenged with assignments requiring abstract and higher order thinking skills. This course provides a solid foundation for upper-level mathematics courses. Graphing calculators and other graphing utilities will be used extensively as students incorporate technology to discover generalizations of concepts and apply these concepts to realistic situations. Students may learn several methods for solving a problem and will be required to choose the most efficient method to complete the task

Pre-Calculus Pre-AP

E1711 1 Credit Grades 10-12
Prerequisite: Algebra II Pre-AP
Class Rank Category: Pre-AP (5)

Precalculus Pre-AP is a preparatory course for Advanced Placement Calculus. The course expands on the Algebra II PreAP curriculum and introduces trigonometry, polar equations, vectors, and sequences and series. There is an expectation of higher level mathematical thinking skills with an emphasis on applications.

Advanced Placement Calculus AB

E1751 1 Credit Grades 11-12

Prerequisite: Pre-Calculus Pre-AP
Class Rank Category: AP (6)

This course is designed for advanced math students. Limits, derivatives, and the definite integral are studied in detail. This course emphasizes the various types and applications of differentiation and integration. Students are required to take the AP Calculus AB exam.

Advanced Placement Calculus BC

E1761 1 Credit Grades 11-12
Prerequisite: Pre-Calculus Pre-AP or AP Calc AB
Class Rank Category: AP (6)

This course is for highly motivated math oriented students who desire the challenge of a college course. The curriculum includes all AB topics plus methods of integration, calculus of polar functions, parametric functions, and vectors, sequences and series including Taylor and McClaurin functions. Students are required to take the AP Calculus BC exam.

Advanced Placement Statistics

E1741 1 Credit Grades 10-12
Prerequisites: Algebra II Pre-AP
Class Rank Category: AP (6)

This course prepares students for the Advanced Placement Statistics Exam in May and requires students to collect, interpret, summarize, and compare various distributions of data. The topics for AP Statistics are divided into four major themes: exploratory analysis, planning a study, probability, and statistical inference. Graphing calculators with statistical software such as the TI-83/84 or TI-89 are used extensively. A lab fee may be assessed. Students are required to take the AP Statistics exam.

Independent Study: Research Project in Mathematics I Honors

E1183
1 Credit Grades 11-12
Prerequisites: Pre-Calculus Pre-AP
Class Rank Category: Honors (5)

This course is survey of advanced mathematical topics, including Abstract Algebra, Non-Euclidean Geometry, Probability, and Basic Analysis. Students will be required to do and present a research project each nine weeks. Students will also participate in mathematics competitions.

Note: ISRPM may be used ONLY *with approval* as an alternative to Research and Problems II or III. It may NOT count toward meeting any other Academy graduation requirements.
See the Research and Problems section, Note 3.

Academy Health Science Courses

Principles of Health Science

EK350	1 Credit	Grade 10
	Prerequisite:	Biology
	Class Rank Category:	Pre-AP (5)

The Principles of Health Science provides an overview of the therapeutic, diagnostic, health informatics, support services, and biotechnology research and development systems of the health care industry.

Health Science

EK352	1 Credit	Grade 11
	Prerequisite:	Principles of Health Science
	Class Rank Category:	Pre-AP (5)

The Health Science course is designed to provide for the development of advanced knowledge and skills related to a wide variety of health careers. Students will have hands-on experiences for continued knowledge and skill development. The course may be taught by different methodologies such as clinical rotation and career preparation learning.

Practicum in Health Science

EK353	1 Credit	Grade 12
	Prerequisite:	Principles of Health Science, Health Science
	Class Rank Category:	Pre-AP (5)

The Practicum is designed to give students practical application of previously studied knowledge and skills. Practicum experiences can occur in a variety of locations appropriate to the nature and level of experience. Participation may require personal transportation, background check, and possible drug testing.

Academy Science Courses

Four units of science at the Pre-AP introductory level (Scientific Research and Design, Biology, Chemistry, and Physics) and two advanced-level courses are required for graduation from the Academy. See the graduation requirements section (page 5) for more information regarding which courses meet these requirements.

Biology Pre-AP

NE0141	1 Credit	Grade 9
	Prerequisite:	None
	Class Rank Category:	Pre-AP (5)

This is an accelerated laboratory/lecture course. Topics include scientific method, biochemistry, cell structure and function, DNA structure and function, genetics, human body systems, taxonomy, kingdoms and ecology. Laboratory skills and safety are stressed. Investigations, both individual and group, are integral components of the Pre-AP curriculum and may be performed both inside and/or outside of class.

Advanced Placement Biology

E0151 1 Credit Grades 12
Prerequisites: Biology Pre-AP, Chemistry Pre-AP
Class Rank Category: AP (6)

The advanced placement biology program provides an opportunity for high school students to pursue college level course work and prepare for an exam that allows for college course credit. AP Biology students will be introduced to advanced topics and current aspects of biology, including these areas: biochemistry, cell structure and function, energy transformations, molecular genetics, heredity, natural selection, an overview of organisms and populations, plant and animal physiology, and ecology. Laboratory work is emphasized. A summer assignment will be required. Students are required to take the AP Biology exam

Anatomy and Physiology of Human Systems Honors

EK3551 1 Credit Grades 11-12
Prerequisites: SRD, Biology, Chemistry
Class Rank Category: Honors (5)

This course is an in-depth study of the systems of the human body. Each system is investigated using illustrations, microscope slide studies, physiological experiments, computer simulations, and detailed dissections of the cat. Students may be expected to complete a supervised individual investigation. The course is available as either honors or dual credit. One or more projects required.

Advanced Placement Environmental Science

E0441 1 Credit Grades 11-12;
Prerequisites: Biology Honors, Chemistry Honors
Class Rank Category: AP (6)

The Advanced Placement course in Environmental Science is designed to be the equivalent of a one-semester, introductory college course in environmental science. Its goal is to provide students with the scientific principles, concepts, and methodologies to understand the interrelationships of the natural world; to identify and analyze environmental problems, both natural and human-made; to evaluate the relative risks associated with these problems; and to examine alternative solutions for resolving and/or preventing them. The student is expected to take the AP Environmental Science examination.

Chemistry Pre-AP

E0231 1 Credit Grade 10
Prerequisites: Biology Pre-AP; Completion of or current enrollment in Algebra II
Class Rank Category: Pre-AP (5)

Pre-AP Chemistry is a rigorous introductory course for students on an accelerated math and science track. Topics include scientific measurement and calculations, lab skills, atomic structure, chemical formulas, equations and stoichiometry, chemical bonding, states of matter, solutions, acids and bases, and nuclear chemistry. The topics will be covered with more depth of theory and with higher mathematical expectations than level Chemistry. Laboratory skills and safety are stressed. Investigations, both individual and group, are integral components of the Pre-AP curriculum and may be performed both inside and/or outside of class

Advanced Placement Chemistry

E0241 1 Credit Grades 11-12
Prerequisites: Chemistry pre-AP
Class Rank Category: AP (6)

The course is equivalent to an introductory college course in chemistry. The topics covered follow Advanced Placement guidelines and include: atomic structure, balancing chemical equations, stoichiometry, acids and bases, equilibrium, kinetics and periodic trends. Laboratory investigations requiring formal laboratory reports will be performed 1-2 times per week. Students may be required to participate in additional class meetings for laboratory sessions outside of regular school hours to better prepare for the exam in May. Students are required to take the AP Chemistry exam

Organic Chemistry Honors

E0541 1 Credit Grade 12
Prerequisite: Chemistry pre-AP
Class Rank Category: Honors (5)

Organic chemistry is a laboratory course that includes the topics in the typical one-semester college course: functional group nomenclature; reactions within functional groups; bonding theories; reaction mechanisms; stereochemistry, biomolecules (including DNA), and metabolic pathways. A college-level text will be used.

Advanced Placement Physics I

E0281 1 Credit Grades 11-12
Prerequisites: Algebra II, Chemistry I Pre-AP
Class Rank Category: AP (6)

Physics I AP is equivalent to a first-semester college-level physics course. Major topic areas of study include Newtonian mechanics, work, energy, power, mechanical waves, and sound. Problem-solving will be rigorous. A variety of hands-on laboratory investigations and inquiry activities will be included

Advanced Placement Physics C

E0351 1 Credit Grade 12
Prerequisite: AP Physics I. Completion of/concurrent enrollment in Calculus
Class Rank Category: AP (6)

AP Physics C is a calculus based college level physics course. It is designed for students who are planning to major in science or engineering. Major topic areas of study include classical mechanics, electricity and magnetism. Problem solving will be rigorous. A variety of hands-on laboratory investigations and inquiry activities will be included. Students are required to take the AP Physics C exam.

Advanced Biotechnology

EK527 1 Local Credit Grades 11-12
Prerequisite: SRD, Pre-AP Biology, Pre-AP Chemistry
Class Rank Category: Honors (5)

Students will apply advanced academic knowledge and skills to the emerging fields of biotechnology such as agricultural, medical, regulatory, and forensics. Students will have the opportunity to use sophisticated laboratory equipment, perform statistical analysis, and practice quality-control techniques.

Laboratory Management/Teacher Aide

E060HF 1/2 Local Credit per seem Grades 12

E060HS

Class Rank Category: Local (0)

Students help prepare, distribute and clean up lab set-ups for science. Students will prepare solutions, perform standardization titrations, and help maintain stockroom organization. Good organizational skills are necessary. Does not count as a science credit.

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Note: Laboratory Management/Teacher Aide does NOT meet any Academy graduation requirements.

Other Academy Requirements

Academy students earn credit for the following courses outside the regular curriculum. Therefore, students **DO NOT NEED TO REGISTER FOR THESE COURSES**!

Research and Problems I

E064HS H0641 1/2 – 1 Local Credit Grades 9-12 Co-curricular

Prerequisites: None

Class Rank Category: Local (0)

Research and Problems II

E065HS H0651 1/2-1 Local Credit Grades 10-12 Co-curricular

Prerequisites: Research and Problems I

Class Rank Category: Local (0)

Research and Problems III

E066HS H0661 1/2-1 Local Credit Grade 11-12 Co-curricular

Prerequisites: Research and Problems II

Class Rank Category: Local (0)

One half credit of Research and Problems will be earned each year that a student successfully completes the required Academy major project in grades 10-12. For their projects, students may solve design problems, do individual or group research, or participate in Destination Imagination or other approved competitions. Credit will be awarded upon completion of the course requirements. **DO NOT REGISTER FOR THESE COURSES.**

Explorations in Science and Technology

E067HS 1/2 Local Credit Grades 9-10 Co-curricular

Prerequisites: None

Class Rank Category: Local (0)

Academy students are required to earn **14 "Exploration Credits**" over two years that then generate one-half unit of local credit for the Explorations course. Credit will be given for lectures as well as trips that take place at night, on Saturdays, on holidays, over weekends, and during breaks, and will focus on developing self-reliance, responsibility, and a greater understanding of career opportunities and of the importance of science and technology in our world. Activities earning trip equivalents are announced during the year by flyer, e-mail, bulletin board and on our web site.

Note 1: By pre-arrangement, students may be given "trip equivalents" for travel experiences with parents or on their own. The Independent Exploration Approval Form is available in the Academy Office, at the Academy Web Site, or in the Academy Student Handbook Addendum.

Note 2: Students are expected to complete their Explorations by the end of their sophomore year. Explorations MUST be completed before the Internship may be started. A letter jacket patch is awarded when Explorations are completed.

Internship

E0611	1 Local Credit	Grades 11-12 Co-curricular
	Prerequisites:	Explorations in Science and Technology; Acceptance in EfTA Internship Program or Registration with the Academy Internship Coordinator
	Class Rank Category:	Local (0)

The Education for Tomorrow Alliance (EfTA) Summer Internship Program places students into a variety of scientific, technical, medical, and other professional settings in the CISD community in June. Each student is evaluated by his/her mentor during the internship and is visited by a CISD internship sponsor. Students accepted into this program are offered the option of earning one unit of local credit.

Each Academy student is required to complete at least one internship with a mentor during his or her sophomore or junior year or during the summer. The internship is designed to provide an in-depth experience in an area of student interest and 80 hours is the *minimum* time requirement. (An EfTA internship meets this requirement.) The Academy intern coordinator works with the student and mentor regarding placement and evaluation. A variety of settings and options are available.

To earn one-half unit of local credit for internship, the student must submit a report to the Academy intern sponsor, as appropriate, and must make a presentation based on the internship. **DO NOT REGISTER FOR THIS COURSE.**

Note: To be making satisfactory graduation progress, all Internship requirements must be completed by the end of the nine-weeks following completion of the Internship time requirement or *no later than* the end of the third nine weeks of the senior year.