

2025-2026 HCHS STEAM PLAN

STEAM Track Academic Requirements

Freshman Year - AP Environmental /Engineering and Technology

Sophomore Year - AP Biology/Honors Advanced Algebra

Junior Year - AP Chemistry /Honors Pre-Calculus

****Suggested : AP Physics/ AP Calculus****

LIFTed Track Academic Requirements

Freshman Year - Honors English Language Arts/Honors Environmental Science

Sophomore Year - Honors English Language Arts/Honors Biology

Junior Year - Honors Advanced Algebra/Honors Chemistry

**** Suggested : Pre Calculus / Honors Forensics ****



STEAM

STEAM education refers to the teaching of Science and Technology through the use of Engineering and Artistic processes, based on the principles of Mathematics. STEAM provides students with the overarching view of how standards (that are typically taught in only specific content areas) are interconnected with other content areas, which also provides eye opening views of how real world problems are solved. The goal of HCHS STEAM is to provide students with rigorous coursework that is focused on the development of solutions to real world problems through research, design, and problem solving. STEAM education helps to prepare students to become active and effective members in society through the development of business and industry partnerships, internships, and capstone projects.

Vision and Mission

Our Vision: For all students to use higher-order thinking skills and to develop the skills necessary to research, design, produce, and communicate solutions to real world problems, to benefit their future and the future of society.

Our Mission: To provide all students with the knowledge and skills that they will need as they move into college and careers, in order to solve the problems of the 21st Century and beyond.

Continuing Vision Expansion

Over the next three years, our STEAM Mentor teachers will work with all teachers, including College and Career Technical teachers, to begin integrating STEAM lessons into their classrooms (if they have not already been doing this). We will accomplish this goal by providing professional development to all teachers, that will provide insight as to how they can collaborate and integrate different content areas into their classrooms.

- 2022-2023 School Year - all teachers will be encouraged to have one STEAM integrated project (per semester) in which they show collaboration with teachers from other content areas. STEAM Mentor teachers will work with all other teachers to assist with the development of projects as it relates to STEAM.
- 2023-2024 School Year - all teachers will be encouraged to integrate STEAM principles into their daily lesson plans (for example, when the History Department is discussing specific time periods, they can discuss artistic innovations, engineering innovations, scientific developments, etc). Teachers will also be encouraged to have two STEAM integrated projects (per semester) in which they show collaboration with teachers from other content areas.
- 2025-2026 School Year - all teachers are actively integrating STEAM on a daily/weekly basis.

Members of the STEAM cohort will be fully integrated in the STEAM student-centered learning model at HCHS. This will include, but is not limited to,

- Fulfilling the course requirements by following the course schedule as designed by STEAM Mentor teachers
- Completing a Dual Enrollment, CTAE and/or Fine Arts pathway (which requires the student to take and pass three or four courses in a specific subject area) that has been agreed upon by the STEAM Mentor teachers
- Fulfilling the requirements of either an Internship, and/or Capstone Project that has been agreed upon by the STEAM Mentor teachers during their 11th grade year.
- Maintaining 90% (3.6) Minimum GPA.
- Maintaining a clean behavior record with no ISS or OSS.
- Mandatory participation in the STEAM Showcase during 9th - 11th grades.

Student Outcomes

Expected student outcomes include but are not limited to:

1. Application of Conceptual Knowledge - Demonstrate understanding of concepts learned in all STEAM areas through the development and implementation of solutions to complex STEAM problems.
2. Cognitive Skills - Demonstrate higher-order thinking skills through the research, design, development, and communication of solutions to real world STEAM problems.
3. Academic Engagement - Demonstrate academic engagement through the participation in course work, community partnerships, internships, and/or capstone projects.

Teacher Outcomes

Expected teacher outcomes include but are not:

1. Pedagogical Content Knowledge
 - a. Teachers' knowledge of and use of different types of instructional strategies will increase due to the integration of STEAM.
 - b. Teachers' knowledge of other content areas will increase due to the implementation of project based learning which incorporates all areas of STEAM into the classroom.
2. Effective Instructional Practices - Increased focus on students' development of higher-order thinking skills as they work to meet their instructional goals.
3. Supportive Teacher-Student relationships

- a. Facilitate learning through student-centered activities and projects that are focused on real world problems.

Hart County High School's Theory of Change

The change that we seek for our STEAM program (including our STEAM cohort and our entire school) can only be manifested when educators stop seeing themselves as the only avenue from which students can learn, and start understanding that in this day in age, they are facilitators of learning; responsible for guiding students through the learning process, and assisting them in finding solutions to the problems they face. As Allison King (1993) stated, teachers should move from being a “Sage on Stage to a Guide on the Side.”

HCHS' view of STEAM education allows teachers to move from the position of the “Sage on Stage” and are able to become more of a “Guide” or facilitator of learning. STEAM at HCHS will focus on student centered learning approaches, real world problem solving, the development of skills and abilities that will help students become more College and Career ready, and prepare them to solve the issues that they will face throughout the 21st Century and beyond.

In order to achieve this change, teachers will need appropriate professional development to help them grow, not only in their content areas, but also to gain knowledge of other content areas. For this reason, it is important that teachers attend professional conferences that pertain to other content areas. For example, in the STEAM cohort, it will be necessary for all cohort mentors to attend the GETEA (Georgia Engineering and Technology Educators Association) conference in order to gain insight into Engineering and Technology practices, the same goes for Math, Science, and Art/Design conferences.

In order for STEAM to be effective in our school, there must be a change in the way our teachers and students view education. We must assist our school in moving in this direction by providing needed professional support and training, and we must encourage students to take greater responsibility for their learning, and encourage teachers to change their methods. We must provide lessons that are meaningful, and can connect students with problems that occur in the real world. Finally, we must focus on College and Career Readiness.

Our Focus: Marketability

HCHS STEAM desires to help students develop their marketability. Our goal is to provide our students with the educational background that makes them highly desirable candidates in their fields, whether they choose to further their education through attending college, or whether they decide to enter the workforce following graduation.

Barriers

The following are barriers that could potentially keep us from meeting our goals:

- Educational - (barriers that are related to education include but are not limited to the)
 - *Teacher buy-in:* Willingness of teachers to step out of their comfort zone and integrate new methods of teaching; as well as, their willingness to attend professional development conferences outside of the regular school day which will assist with gaining knowledge and understanding of these new methods of teaching.
 - *State requirements:* Understanding that standards can be met through student-centered project, problem, and place based learning, and that students can still meet the requirements of state mandated testing through completing these assignments.
 - *Collaboration:* Teachers need to be willing and able to collaborate with other teachers from different content areas. This is difficult due to the lack of common planning times, and the amount of time required after school to make this happen.
- Financial - (barriers that are related to finances include but are not limited to the)
 - *Funding:* Our goal is to provide our students with quality educational STEAM training so that they are marketable and competitive members of society, and therefore, we must provide them with tools, machines, materials and other resources that allow them to meet these high demands; all of this is a very expensive undertaking.

Overcoming Barriers

The following are ways that we can overcome the above mentioned barriers:

- Educational - (barriers that are related to education include but are not limited to the)
 - *Teacher buy-in:* In order to increase teacher buy-in, we must first increase professional development training in areas of need. Some teachers are able to attend their professional conferences for their content specific areas, however, some are not. If we want to encourage a school wide STEAM initiative, we must remember that ALL teachers need professional development. We can provide quality training opportunities at our school to help meet these requirements, but this training must allow us to step out of the box that we currently know as education, and step into the student-centered, teacher as facilitator role. Training of this nature would consist of hands-on activity planning courses, courses on how to collaborate with teachers outside of your area, effective use of technology to assist students in learning, et cetera.
 - *State requirements:* We can not force the state to change their standard requirements, but we can change the way we view education, and that can be done through (as stated above) professional development opportunities that assist teachers in understanding the “Guide on the Side” (1993) philosophy.
 - *Collaboration:* In order to assist with collaboration, even though teachers may not have common planning, we must educate them on how to utilize their resources. A great deal of

collaboration can be accomplished remotely through the use of sites like Google, Facebook, Skype, etc.

- Financial - (barriers that are related to finances include but are not limited to the)
 - *Funding:* As stated above, an effective STEAM cohort and STEAM school wide program can be very costly to run. We can assist with covering funding of our STEAM resources through increased business and industry partnerships, and through the application of grants. We are also able to use resources that are right at our fingertips to allow our students to achieve the described higher-order, student-centered learning experiences. Some resources include, but are not limited to, Google (classrooms, apps, et cetera), Chrome Extensions, Social Media (to connect outside of the classroom), Skype (can be used as a “Virtual Field Trip” tool to allow for students to “travel” to another country, talk with educators in that country, connect with students, view the world from the comfort of their classroom), and other media that can be accessed through the use of technology.

Implementation Plan

The STEAM Mentor teachers will come up with several STEAM projects and trips prior to the school year beginning. They will also make plans for supplies needed for the STEAM teachers. The continued collaboration among multi-disciplinary subjects will be the focus of building a positive STEAM focused classroom.

Expectations and Requirements

For students in the STEAM program, there are expectations and requirements that are set forth in order for them to remain in the program. Students must maintain a 90% (3.6) GPA. Failure to do so will result in a suspension from the program. Students should have exemplary behavior and any ISS/OSS can result in your dismissal from the program. Students must complete a project presentation for the freshman and sophomore year. They also must complete an Internship or Capstone project their junior year and present their project in the STEAM Showcase in the Spring.

Rewards and Opportunities

Students will be given many opportunities for rewards and recognitions. Students will receive a special STEAM Stole for graduation with special recognition. A STEAM Stamp will be placed on their diplomas. There will be a STEAM Social each spring. We will hold a special STEAM Awards night in the spring of each year. There will be many special off-campus opportunities with field trips to special events and places. Completing the program will be very helpful on both college applications and scholarships.

Budget

The budget will be supplied by various grants and earmarked funds provided by the Hart County Charter System.

Build Capacity

We will strive to build a culture of fun and excitement that students desire to be a part of. We will make sure that all students feel supported and encouraged through every STEAM course. We will also give students many opportunities to explore PBL, which will allow them many more hands-on experiences.

Pursuing Investment Opportunities

HCHS STEAM mentors will work together with administration to build relationships with business and industry partners who are willing to work with our students and STEAM program. We will also actively seek grants and other funds that are given to help develop STEAM programs.

Current Assets

Faculty/Staff

- STEAM Committee
 - Marvin McDuffie
 - Megan Milford
 - Deedra Kotal
- STEAM Faculty Mentors:
 - Morgan Ruby
 - Linda Frye
 - Bernadette Fouch
 - Luke Christopher
 - Missy Morgan Phillips
 - Rebecca Mize
 - Gerald Gates
 - Mary Thomas
 - Katelyn Wilhite
 - Kyle Ashworth

References:

King, Alison (1993): "From sage on the stage to guide on the side" in *College Teaching*, Vol. 41, No. 1 (Winter, 1993), pp. 30-35.