HOUSTON ACADEMICS

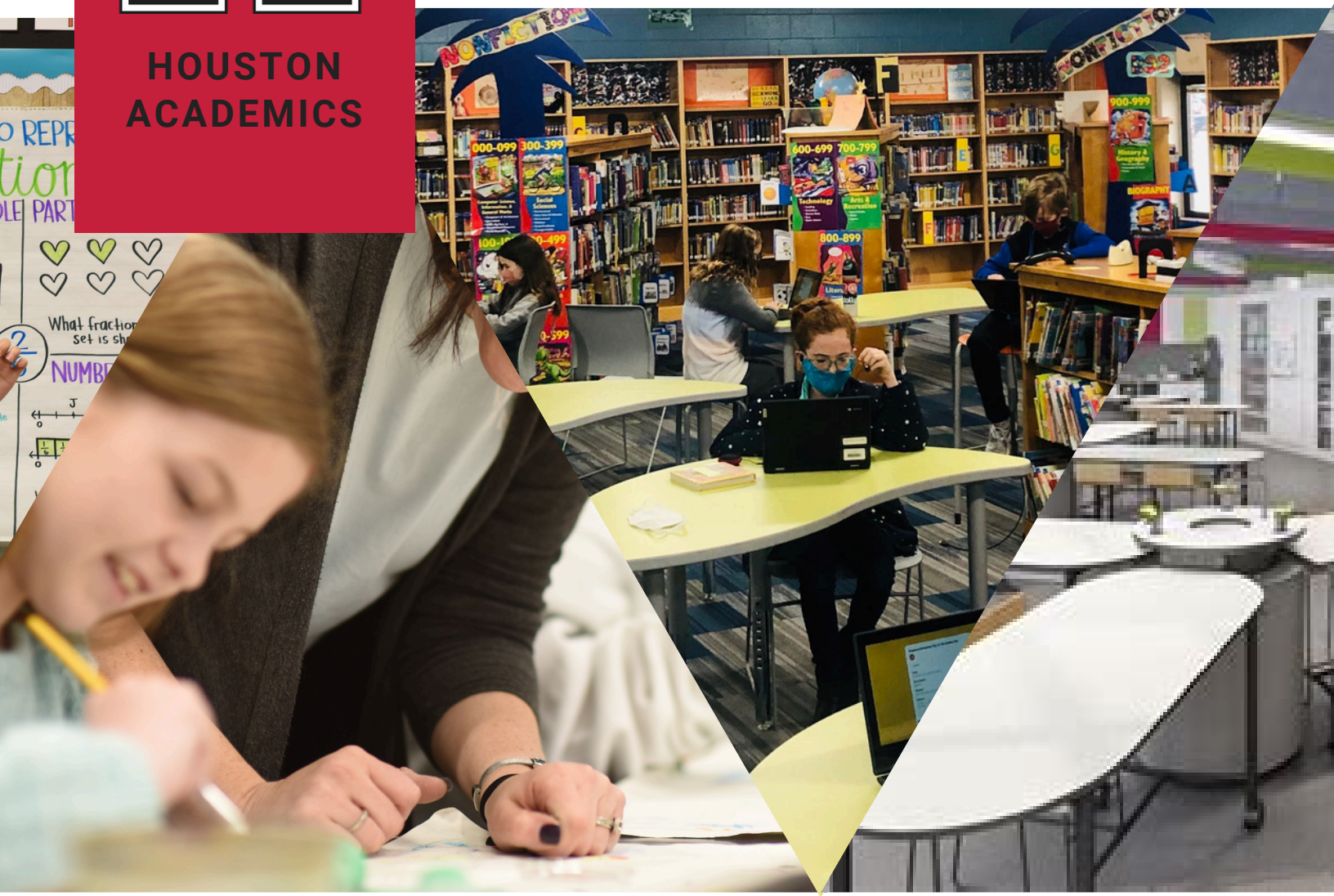
Proposal DRAFT of the

ACADEMICS FACILITIES PROPOSALS

Prepared by the HHS Academics Master Planning Subcommittee

STRATEGIC PLAN GOAL CONNECTIONS:

GOAL ONE: INNOVATIVE AND CHALLENGEING ACADEMICS



Sarah Huffman
Missy Abel
Ethan Constant
Erin Rhodes
Melissa Steinbach
Leigh Ellis
Annitta Rothenberger
Katie Riley

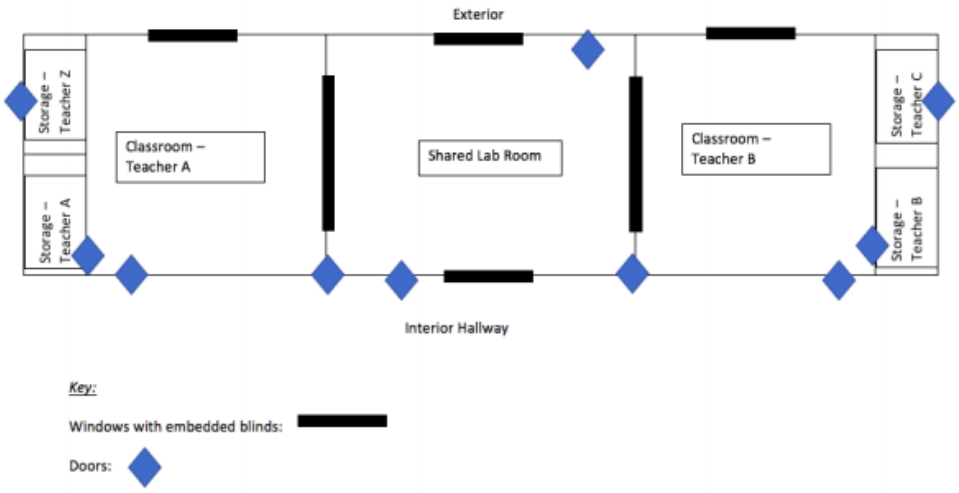
Christa Phillips
Kate Crowder
Melissa Ducey
Roya Perkins
Thomas Suchman
Traci Spain
Valerie McKinney
Amanda Freeman

Jessica Woody
Jonathan Ferebee
Ashima Mehna
Audra Bass
Amber Lenz
Betsy Landers
Amy Eoff
David Pickler

2021 | MARCH

HHS MASTER PLANNING COMMITTEE

SCIENCE LAB/PODS REDESIGN & UPDATES



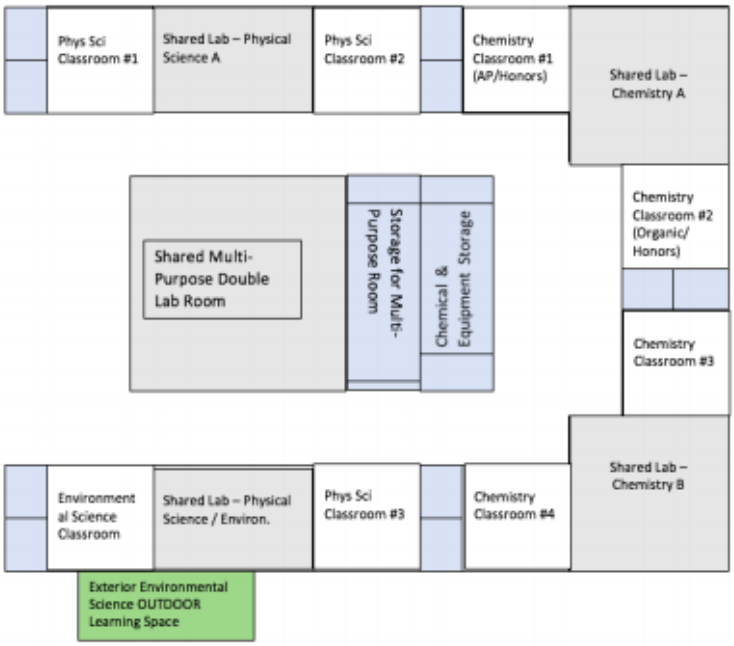
Proposal Description

We propose an extensive redesign of our science lab spaces to allow for additional and updated safety equipment that is required for more advanced coursework, promotes the current trends in science education (NGSS, emphasis on science practices), and improves the usability of the lab space for current and future needs. Of utmost importance is the updating and expansion of our chemical fume hoods, which are essential for venting out certain chemicals. As the complexity of the chemistry courses increases (physical science through AP or Organic chemistry), the need for fume hoods increases as well. A lab devoted to AP, Organic, and Honors Chemistry would ideally contain multiple fume hoods for students to work under simultaneously. The other lab spaces should be redesigned with updates to gas and water placement, electrical upgrades, and tables that are more conducive and flexible for student use.

Sample A.2 - Hallway view of shared lab pods

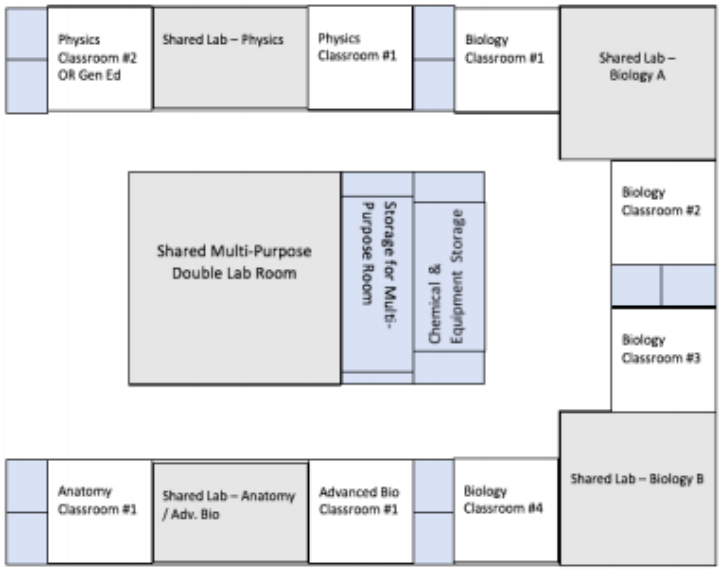
Full Hallway

Downstairs



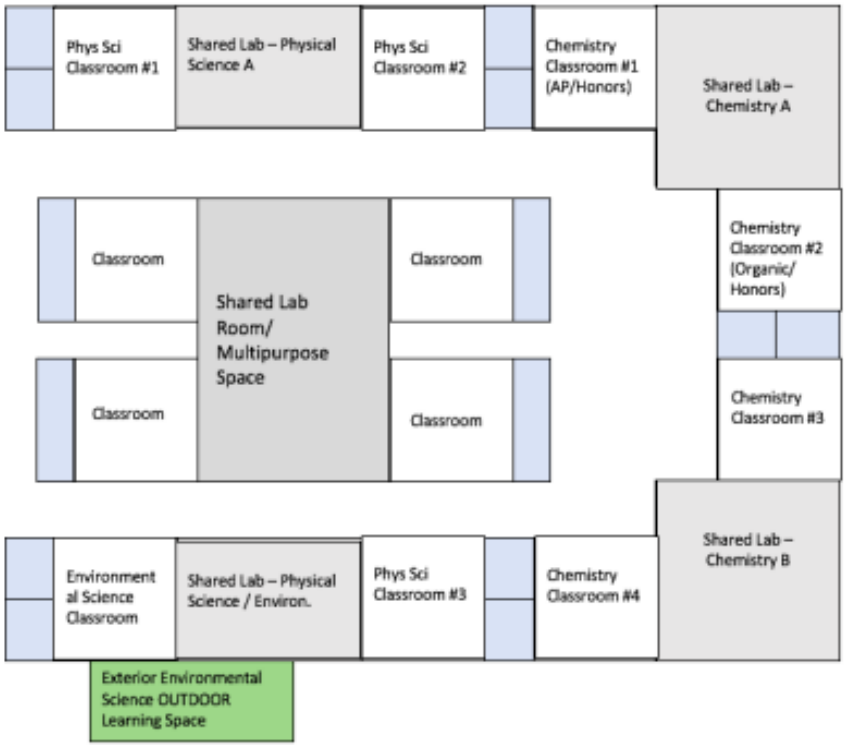
Upstairs

(or use mirror image as left "U" to pair with above. Stairwell, restrooms, Atrium in the center)



SCIENCE LAB/PODS REDESIGN & UPDATES

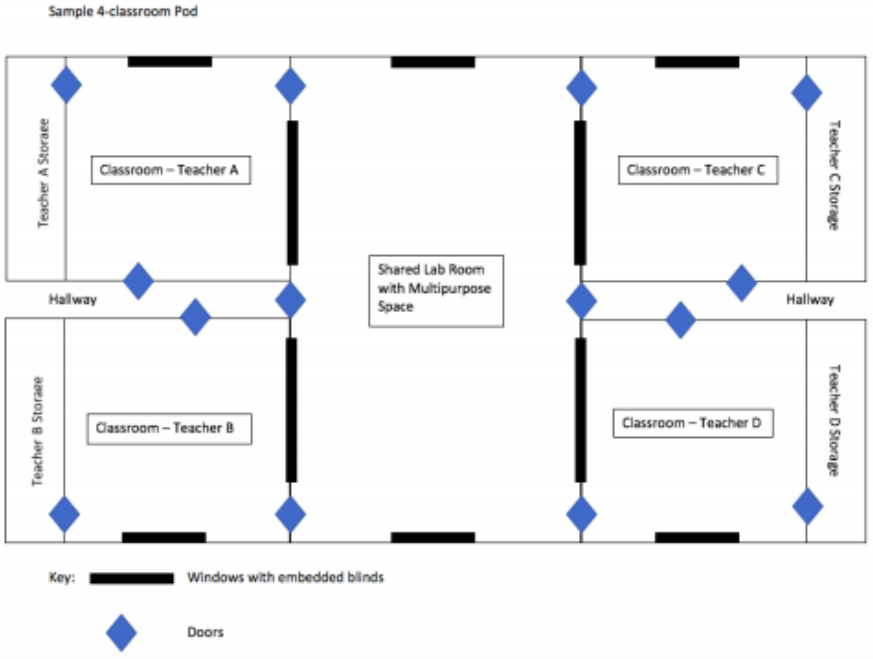
Downstairs w/ Large Lab Quad



Proposal Description

For the redesigned science spaces, it would be ideal to have the classrooms and labs situated in a pod configuration. The pod configurations can accommodate either two classrooms connected via a central shared lab space in between the classrooms, or four classrooms with two classrooms on either side of a central large shared lab space (see mockup diagrams). This configuration allows teachers who teach the same subject to share the same lab spaces, which is optimal because these teachers would do similar (if not the same) lab activities that require the same equipment. These pod configurations would provide for ease of transition from the classrooms into the large lab spaces. If the lab spaces are large enough, it may be possible for two classes, one from each adjoining classroom, to use the lab space simultaneously. The walls separating the classrooms from the adjoining central lab space would be lined with windows so that the lab space can be observed from the classrooms. This gives teachers the ability to readily observe both spaces, so students who have completed their lab activities can transition back into the classroom and still be monitored by the teacher. Student safety would be easier for a teacher to monitor as there will be less students in the lab space as the activity progresses. Windows would also line the walls separating the classrooms and lab space from the hallway. All windows would have built in blinds to minimize distractions and provide for safe environments during safety drills, but still allow for moments when observation of the space is desired. The blinds would also allow teacher A, on one side of the lab, to close the blinds while teacher B is utilizing the lab, and vice versa. To promote collaboration within the classroom, it is recommended to purchase desks that are designed to nest together when students are working together, but can pull apart to be separate spaces when desired.

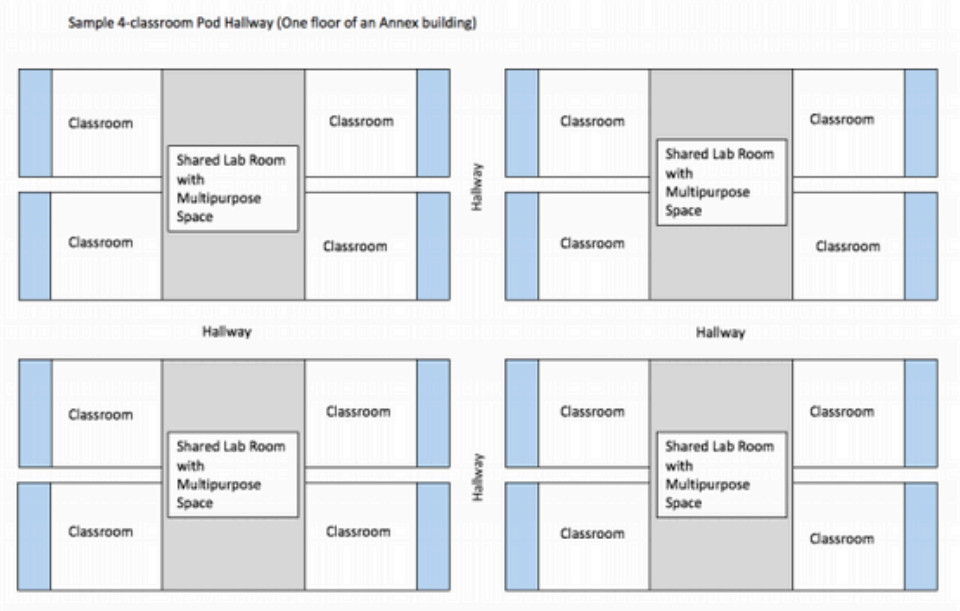
Sample B.1 - 4 Classrooms + Shared Lab Quad



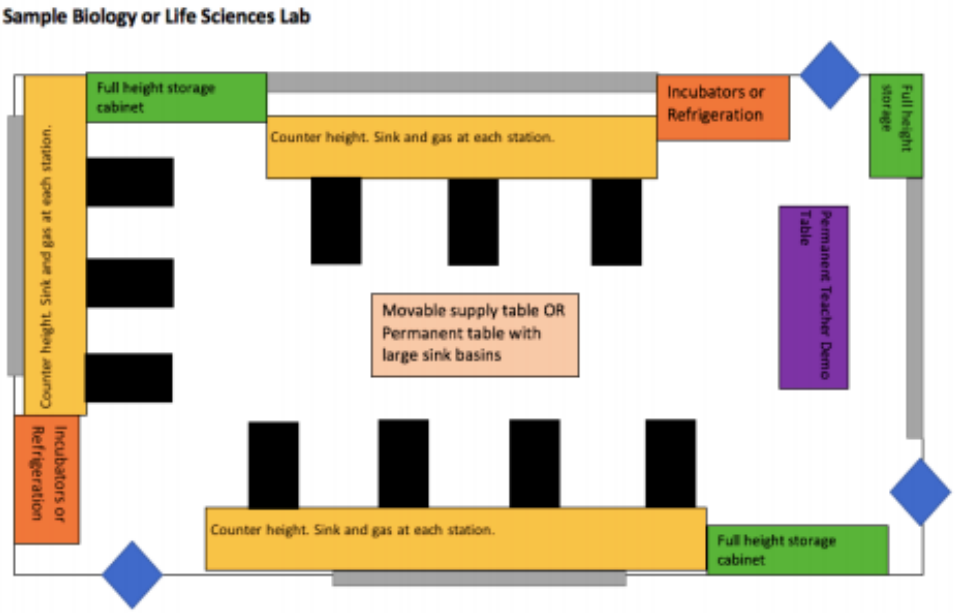
SCIENCE LAB/PODS REDESIGN & UPDATES

Most lab spaces would benefit from having the perimeter of the room lined with counter space, with the counters containing access to sinks and gas, along with cabinet storage above and below. This configuration allows for sinks and gas to be readily accessible when needed but out of the way when they are not. Jutting out from the perimeter counter space would be perpendicular lab benches that are of equal height to the perimeter counters, with each having access to one sink and one gas outlet. However, the size of the space, the arrangement of lab benches/desks, and equipment present may look different depending on the science content focus assigned to that space. For example, the chemistry lab might be placed in the largest lab space to allow for maximum spacing between stations and the placement of multiple fume hoods. The physics lab space would benefit from having retractable electrical drop downs suspended from the ceiling and lab benches that are adjustable in height. The physical science lab space may benefit from having moveable or rolling lab benches/desks that have the ability to elevate on one side to create angled work surfaces. It would be ideal for all spaces to utilize furniture that is versatile with adjustable components as a means of future proofing the spaces. That way, as needs change, the spaces have the ability to change and adapt as well.

Sample B.2 - Hallway view of shared lab quads



Sample C - Biology Lab Interior



SCIENCE LAB/PODS REDESIGN & UPDATES

Proposal Description

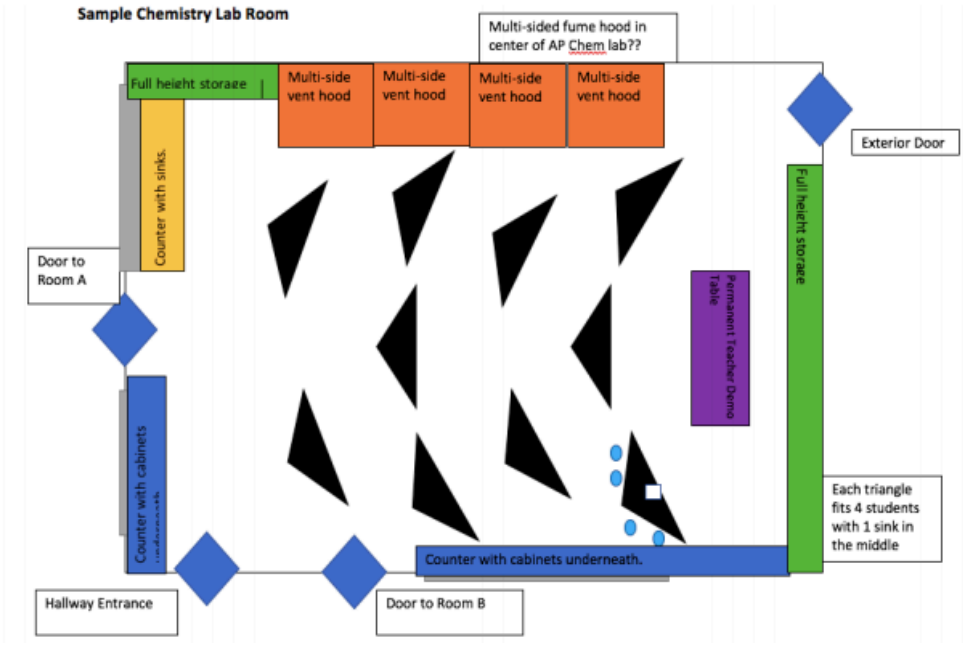
A Science and CTE annex building may also be beneficial. There are many cross curricular opportunities available between the CTE courses and science courses offered at Houston High. Having these departments and classroom spaces within close proximity to each other allows for more opportunities for collaboration between teachers and students. For example, the robotics and STEM classes could work collaboratively with the physics classes on projects that involve common course concepts such as gear ratios and speed/torque, projectile motion, net force, etc. The anatomy & physiology and health science classes could work collaboratively on projects/activities that involve common course concepts such as the effects of cardiovascular activity on blood pressure, anatomical observations during specimen dissection, etc. An annex building would also make multi-floor pod configurations (see mockup diagram) with common lab spaces more attainable. It would also allow for a very large centralized space that could be used for hands on learning, guest speakers, or special events. A separate building would also minimize noise and distraction for the classes in the main building.





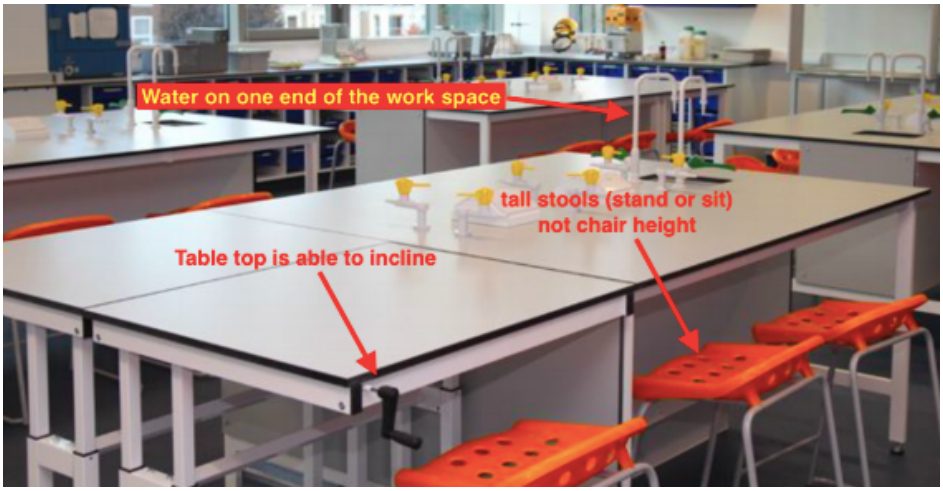
Sample D - Chemistry Lab Interior

(AP Chemistry Lab room - move fume hood to center of room / multisided)



SCIENCE LAB/PODS REDESIGN & UPDATES

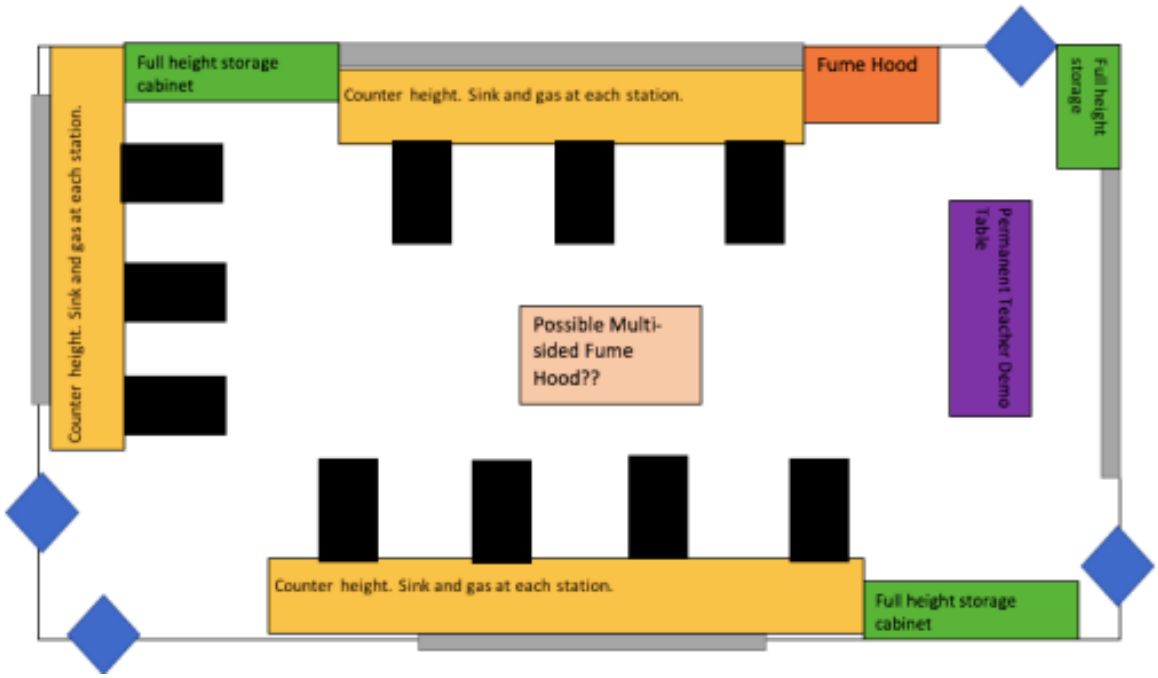
Proposal Description



In addition to upgrading the lab rooms, each lab space needs updated equipment and additional storage to support this equipment. Ideally, each lab room would have a full complement of modern lab equipment and sensors, comparable to what would be found in collegiate freshman science lab rooms. This would be supplemented by analog versions of similar items. While we want to support our students with cutting edge lmaterials, the use of analog items promotes thinking and analysis in ways that digitized equipment does not. Digital equipment has the advantage of minimizing error and allowing for complex analysis, however, students might disengage from the data collection process and rely on the output without thinking critically about what that data represents. Both sets of equipment would allow for a variety of lab experiences and skills. The environmental science lab would benefit from having additional exterior space attached to the lab room to allow for ease of flow between the classroom, lab room, and the actual environment. This space could be outfitted with tables, chairs, and working spaces for experiments to be conducted outdoors or long-term data collection.

Sample E - Physical Science Lab Interior

Sample Physical Science or Chemistry Lab
(This configuration could possibly work for all sciences. Standing stations. Fume hoods not needed in biology or physics versions)

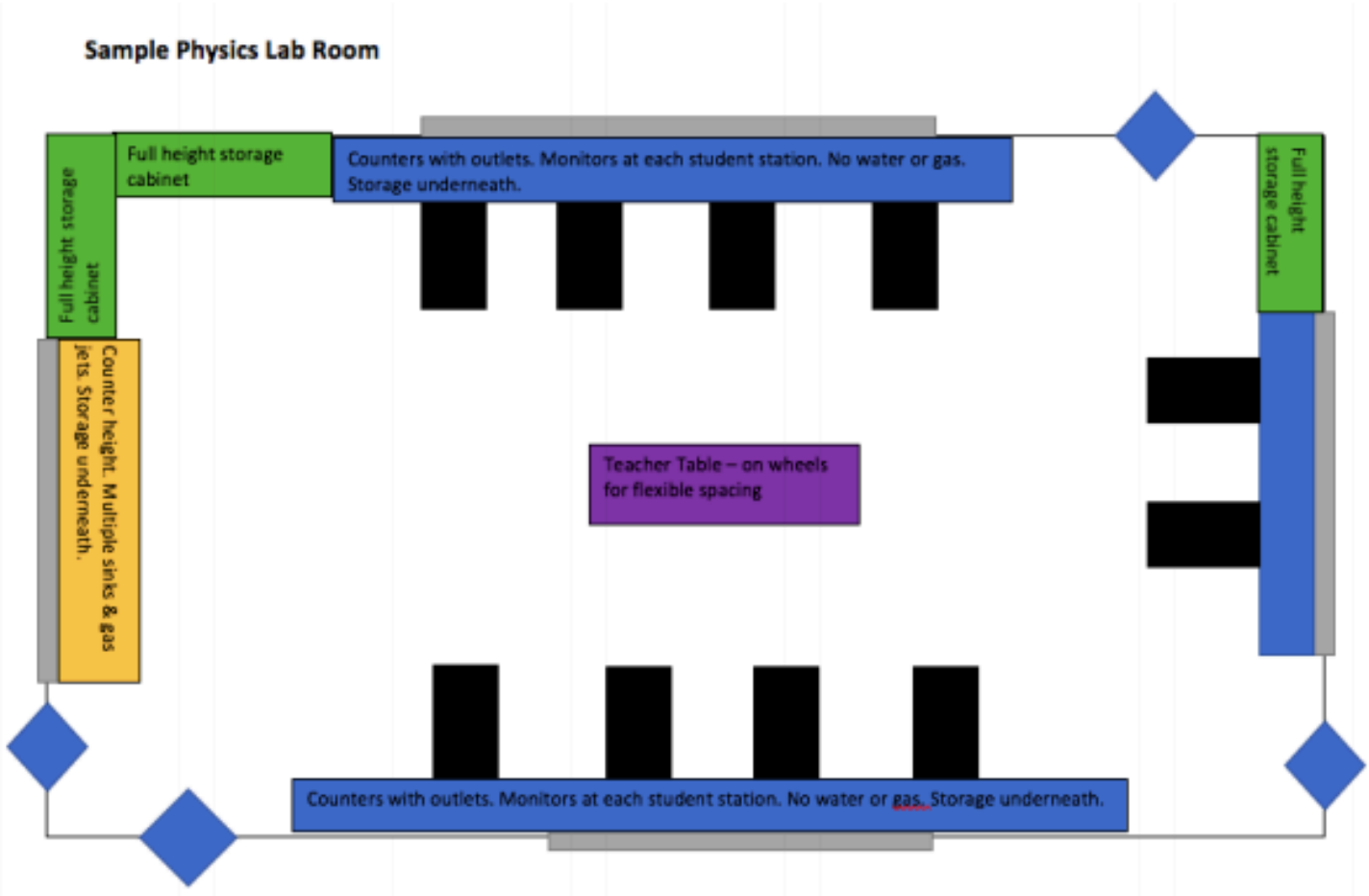


SCIENCE LAB/PODS REDESIGN & UPDATES



Proposal Description

These spaces are the backbone of science courses. The vision of these renovations would update our 1989 facilities into facilities that promote 21st century learning and the focus on current science standards. Furthermore, the rooms are designed with growth and flexibility in mind so that the spaces are better suited to adapt to future changes in science education. The current shift in science education promotes scientific practices, where students are encouraged to learn science through the process of experimentation. Having spaces where the line between the classroom and the lab room are blurred, where curiosity can be encouraged, and students can explore with high-quality equipment will foster increased engagement with the curriculum and content. Modernizing our lab spaces will continue to support GMSD's strategic plan and the mission of HHS by providing meaningful lab opportunities for our students in a way that is congruent with collegiate experiences. For non-college bound students, our labs will still promote curiosity and STEM-based thinking, which are important attributes for 21st century employment.





SCIENCE LAB/PODS REDESIGN & UPDATES

Courses that Could Benefit from these Improvements

What Houston High School Currently Offers
Physical Science
Physical Science Honors
Biology I
Biology I Honors
Chemistry
Chemistry Honors
Physics
Physics Honors
Human Anatomy & Physiology
Human Anatomy & Physiology Honors
Environmental Science
Ecology
Organic Chemistry
Dual Enrollment Biology II
Dual Enrollment Human Anatomy & Physiology
AP Biology
AP Chemistry
AP Physics 1
AP Physics 2

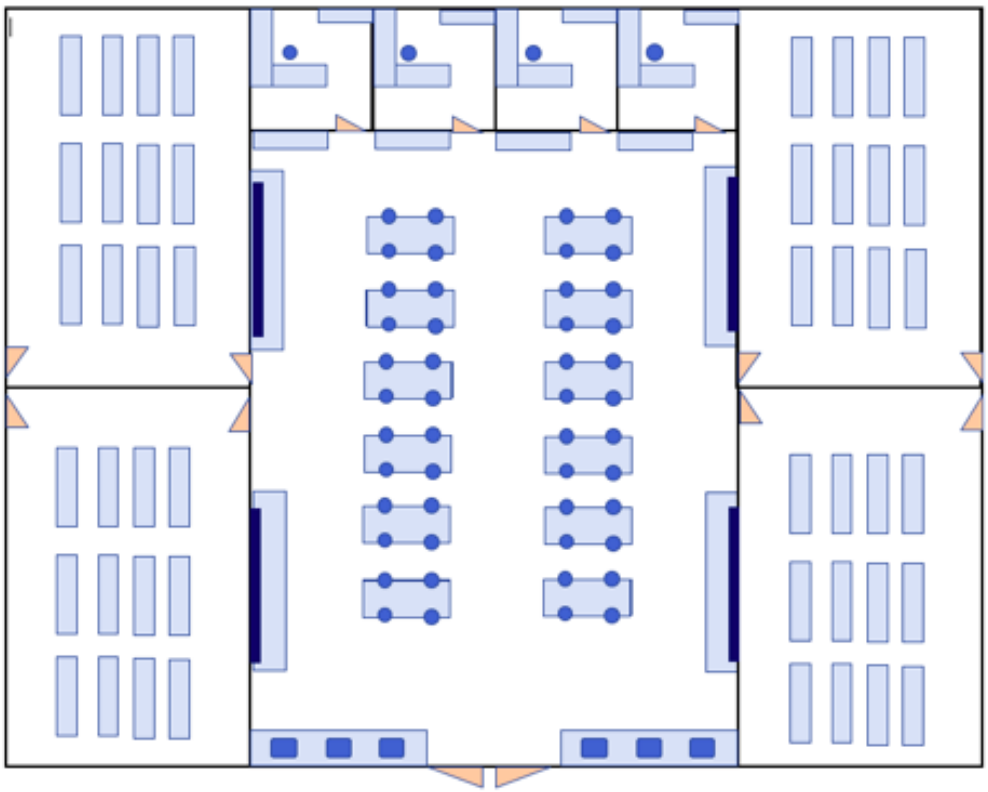


TN Course Codes for Potential Future Classes
G03H25 AP Environmental Science
G03H24 AP Physics: Electricity & Magnetism
G03H29 AP Physics: Mechanics
G03H15 Chemistry II
G03H35 Scientific Research



STANDARD CLASSROOM/LAB ADOPTION

Comprehensive Proposal Description This proposal doesn't simply reimagine teaching and learning spaces at Houston High School, but more so it reimagines teaching and learning at Houston High School. This proposal places a focus on building students' agency, creativity, and problem solving by providing them with spaces to apply their core learning. This space transformation serves as a pedagogical and paradigm transition for our teachers, students, administrators, and community.



We're moving from data processing centers to student creativity and collaboration that will equip our students to solve problems that arise now and in the future. The space I've identified and outlined below is a hub for 9th - 12th grade core content classes.
The Space = Four Classrooms + Four Offices + One Huge Lab



The Classrooms: Along the perimeter of the hub would be four classrooms. This would allow for a PLC to almost exclusively inhabit a "hub." For example, all of Algebra I could live in one hub while Geometry lives in another. The classrooms could have tiered seating.These classrooms could take the shape of lecture halls, but ultimately flexibility is the goal. These spaces would likely be smaller than traditional classrooms as this room would serve more to facilitate the exchange of information through collaboration and instruction.

These rooms would not be tied to any specific teacher or course making them highly flexible in scheduling and functionality. Of course, they would be outfitted with the best technology to enhance teaching and learning.
(Strategic Plan Goals 1 & 2)



STANDARD CLASSROOM/LAB ADOPTION

The Lab: The lab would be specifically designed to the PLC and Content that will be served by its space. For example, a math hub such as Algebra I will function a lot like a S.T.E.M. makerspace where students could build catapults to explore how a projectile is launched in the shape of a parabola to enhance the students exploration and study of Quadratic Functions. Most importantly, this lab would make learning real. For English or Social Studies, there could be reading rooms, research stations, and green screens. For Science, we could see traditional labs just one door down. (Strategic Plan Goals 1, 2, and 4)







The Offices: The offices would serve to elevate and set our teaching staff as high on the professional status as we could place them. With the PLC hub, teachers would be in constant connection to promote their subject areas and provide the best learning experiences possible. Teachers would have the privacy to make those important home connections through positive phone calls or student conferences about grades. Teachers would need spaces to be creative, just as the students would, especially when teaching in this manner. (Strategic Plan Goals 3 and 5)

STANDARD CLASSROOM/LAB ADOPTION

Solutions: This proposal focuses on being able to reach all students through project and problem-based learning in core content classes. It would also provide flexible spaces for remediation, and access to different teachers throughout the pod. The space would be just the beginning; the real change happens with the culture and attitude of doing things in a new way for a new future.



The Future: Our students will have to find solutions for problems that we can't fathom on technology that doesn't even exist yet. If we don't find a way to shift instruction from recall and absorption to application through creativity, we will certainly feel the ramifications of these decisions for generations to come. How is it that our brightest students can score perfect scores on the ACT or AP exam but shudder at the idea of making a doctor's appointment or filing their taxes? We must do better, and I believe that this proposal is a step in the right direction. All educational research shouts loudly that students learn by connecting and doing. If we want all students to have a chance at being successful, we must change and provide the space for that change to happen.

Final Thought: In 10 years, can we afford to still look like this?...





GERMANTOWN MUNICIPAL SCHOOL DISTRICT
Excellence. Always.

GERMANTOWN CTE

HOUSTON HIGH SCHOOL 1989

CAREER AND TECHNICAL EDUCATION HUB

Long Term Goals

1. Ready graduate percentage matches graduation rate
2. All programs lead to practicum or clinical experience (Work-Based Learning)

Fall 2020	2018-19 Graduates	✓ *ACT/SAT* ✓ *4 EPSOs* ✓ *2 EPSO + earn an industry certification* ✓ *2 EPSOs + earn an ASVAB AFQT score of military readiness* ✓ *2 EPSOs + earn a WorkKeys NCRC level TBD*	• *earn a composite score of 21 or higher on the ACT or a 1060 or higher on the SAT; or* • *complete four early postsecondary opportunities (EPSOs); or* • *complete two EPSOs + earn an industry certification; or* • *complete two EPSOs + earn a score of 31* on the Armed Services Vocational Aptitude Battery (ASVAB) Armed Forces Qualifying Test (AFQT); or* • *complete two EPSOs + earn a WorkKeys National Career Readiness Certificate (level TBD)*

Source: https://www.tn.gov/content/dam/tn/education/ccte/ccte_ready_graduate_overview_2018-19.pdf

WHERE ARE WE NOW?

10 Career Clusters

- Advanced Manufacturing
- Agriculture, Food, and Natural Resources
- Business Management and Administration
- Finance
- Health Science
- Human Services
- Information Technology
- Law, Public Safety, Corrections, and Security
- Marketing, Distribution, and Logistics
- STEM

By The Numbers

- 19 Programs of Study
- 49 Unique Courses
- 6 Dual Enrollment Courses
- 2 AP Courses
- 5 Industry Credentials

SOUTHWEST TENNESSEE COMMUNITY COLLEGE

GERMANTOWN MUNICIPAL SCHOOL DISTRICT
Excellence. Always.

GERMANTOWN CTE

HOUSTON HIGH SCHOOL 1989

CAREER AND TECHNICAL EDUCATION HUB

PROGRESS:



BEFORE



AFTER

WHAT WE'RE ASKING FOR:

Phase One

Renovate the Annex Building (A Building) to house the majority of our CTE Programs.

1st Floor = Health Science, Human Studies, and Agriculture

2nd Floor = Business and Finance

Phase Two

Update existing computer lab spaces for Coding, Networking, and Cybersecurity and Criminal Justice.

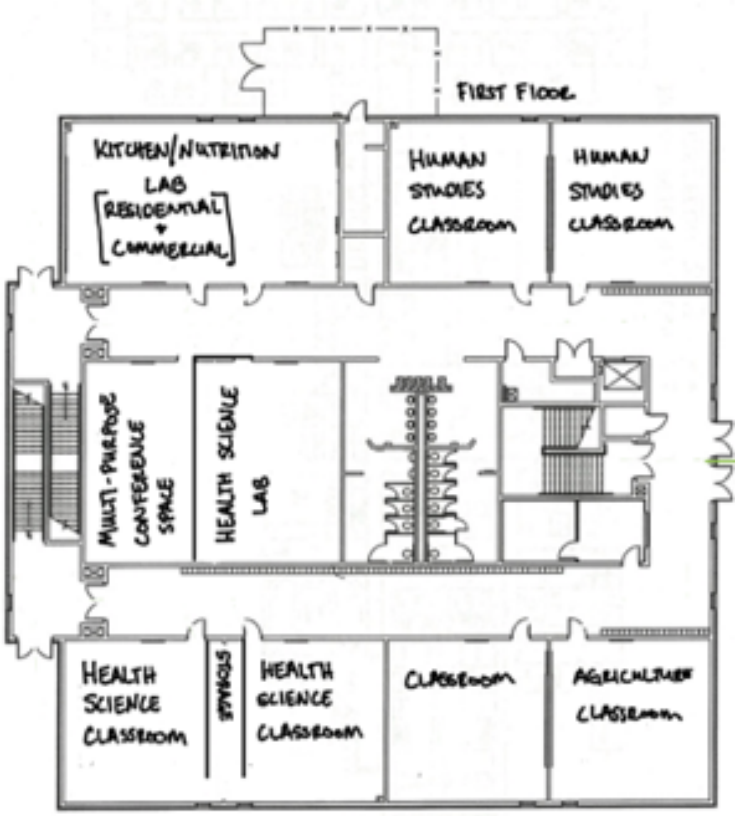
Phase Three

Build additional classroom spaces in the area between the Main Building and the Annex Building to support new or growing programs.



CAREER AND TECHNICAL EDUCATION HUB

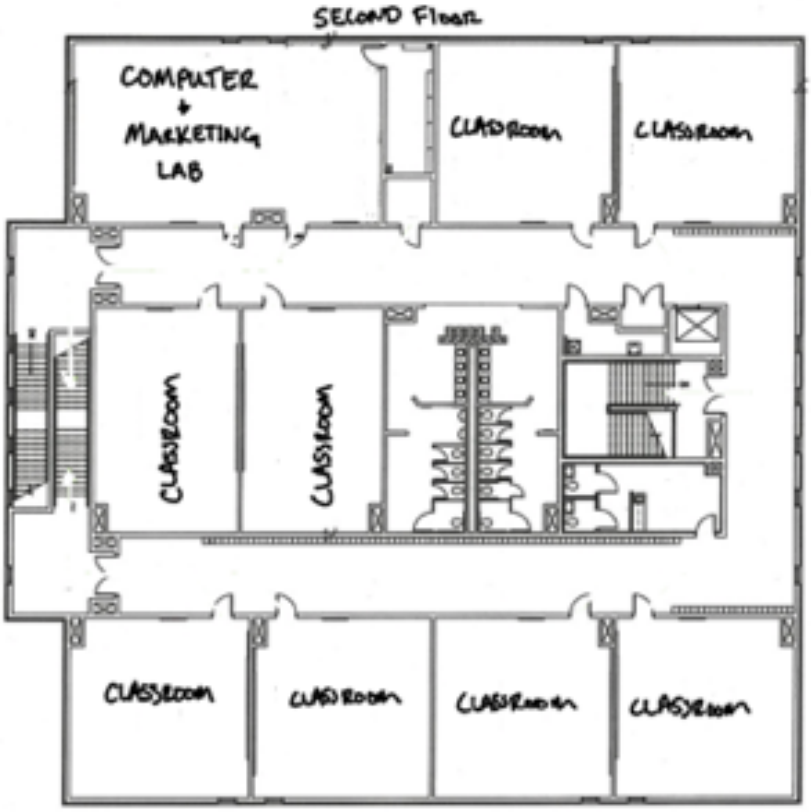
PHASE ONE: FIRST FLOOR





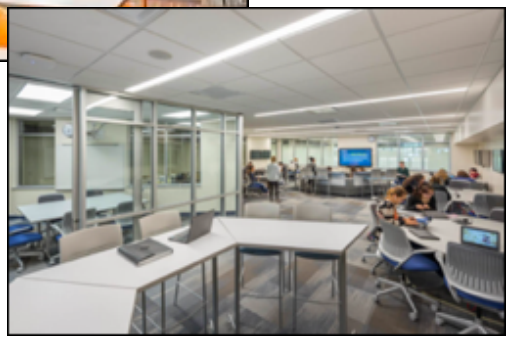


PHASE ONE: SECOND FLOOR







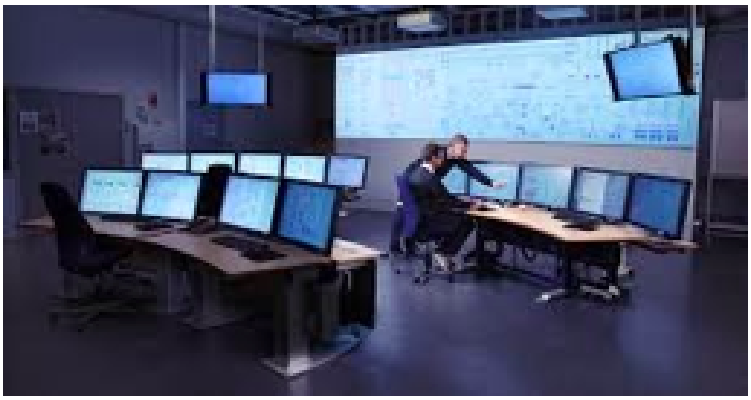


CAREER AND TECHNICAL EDUCATION HUB

PHASE TWO









PHASE THREE

Potential New Program

- Welding
- Supply Chain Management
- Digital Arts & Design
- Teaching as a Profession
- Early Childhood Education Careers
- Automotive Maintenance and Light Repair
- Aviation Flight
- Mechanical, Electrical, & Plumbing (MEP) Systems



CAREER AND TECHNICAL EDUCATION HUB

WHY CTE? - GMSD STRATEGIC PLAN

Overall District Growth & District Plan:



- **Vision** - This proposal meets the vision of Inspiring Personal Excellence by providing students with the best space to explore passions and making the best post-secondary choices for themselves.
- **Mission** - This proposal meets the mission of GMSD by providing students with elite level programming and spaces that invoke student wonder and curiosity.
- **Engaging, Challenging, and Innovative Academics** - By providing a premiere center for learning of Career and Technical Education, we can push closer to our goal of providing the best spaces for the best instruction for all students.
- **Whole Child** - Allowing students to explore different career clusters and hone their skills through different means takes them beyond the traditional classroom and inspires personal growth as they plan for their future.
- **Recruit and Retain Staff** - Teachers want to teach with the best equipment. Right now, we can't always offer them the spaces and equipment they need. This proposal could change that.
- **Resource Management** - As stated earlier, CTE has been a priority for our district, and this only strengthens that commitment and will help focus our mission in providing the best training possible for our students.
- **Community Partnerships** - As we establish more and more community partners for Work Based Learning Opportunities. We need additional spaces like this to facilitate the learning of skills necessary for those placements.