

Berkeley Unified School District

Career Technical Education Update

08/15/2018



CTE: Integrated and Experiential Academics



The expectation by the State of California is that:

“All students are able to make **appropriate choices** and pursue a full range of **realistic college and career and/or other educational options.**”
and that:

The school provides for **career exploration**, preparation for **postsecondary education**, and **pre-technical training** for all students.”

CTE Program Definition

Pride * Purpose * Passion



- CTE is **College and Career Preparation**
- Integrated **pathways** and **technical education** courses
- Programs of study offer **contextualized and applied** learning opportunities; increase probability of student **engagement**
- Development of **transferable skills**: core workforce competencies, work experience, time, resource, and project management,

CTE Program Components



- Curriculum anchored in **high skilled, high wage, high growth** regional opportunities in 6 industry sectors.
- Offers content **within and beyond the school day**
- Early **College Credit** opportunities (concurrent college enrollment + credited work experience)
- **Work-based Learning Opportunities:** internships, apprenticeships, mentorships, guest speakers, site visits and greatly expanded dual enrollment options - Doing instead of hearing about.

BUSD CTE Industry Sectors



Arrived at by state recommendation, advisory, and existing resources

Health Science & Medical Technology

Public Service

Arts Media & Entertainment

Information & Communication Technology

Engineering & Design

Building Trades & Construction

Ongoing State Funding for Career Technical Education

The 2018-19 State Budget includes \$300 million in ongoing funding for K-12 CTE in two components

\$150 million ongoing funding is allocated through the existing **Career Technical Education Incentive Grant program AB 1743**

- Retains the **2:1 local/state matching** grant requirement
- Requires a three-year maintenance of effort
- An applicant shall be eligible to receive a renewal grant if determined by the State Superintendent of Public Instruction (SPI) to meet eligibility standards and is deemed successful
- BUSD is **well positioned** for renewal – at same funding level our Round 3 Allocation was **\$335,000**

Ongoing State Funding for Career Technical Education

\$150 million ongoing funding to establish a new K-12 component in the **Strong Workforce program** to expand availability of “**high quality, industry-valued CTE**” Proposition 98

- An LEA shall work with its regional consortium based on its local community college district
- Funding is administered through the CA. Community College Chancellor's Office to the fiscal agent of each consortium based on:
- Unemployment rate (33%) Region's ADA for grades 7-12 (33%) Projected job openings (34%)

Requires **2:1 local state matching requirement** for LEA's

BUSD has joined the Bay Area Community College Consortium as we actively pursue Strong Workforce Funding

CTE Facilities Development



CTE classrooms that will house **Carpentry, Stagecraft Carpentry, Electronic Tech** and a **Fabrication Laboratory or “Maker Space”** are currently under construction and will open late next week!

Our burgeoning **Robotics Engineering** program will move into a portion of the space formerly occupied by BCM. Critically needed regular education classroom and teacher workspace will be created as well.

Biotechnology classroom upgrades to support **new technology**

BHS **Little Theater rigging** maintenance and new **sound and lighting equipment** to support Stagecraft, VAPA, and potential for expanded BHS use and theater rental

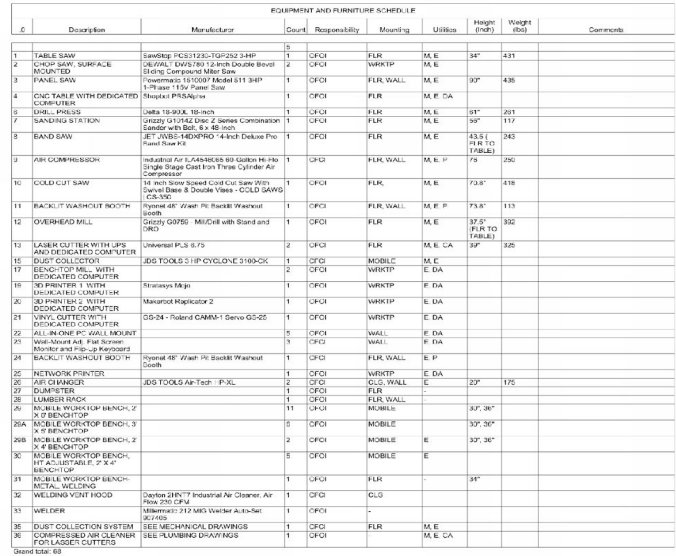
BAS Electronic Tech classroom to support **Mechatronics Engineering** Classes

We collaborated with our **industry & union partners** to develop program specific spaces, equipment lists, curriculum and teacher recruitment

Carpentry Shop & Fabrication Lab

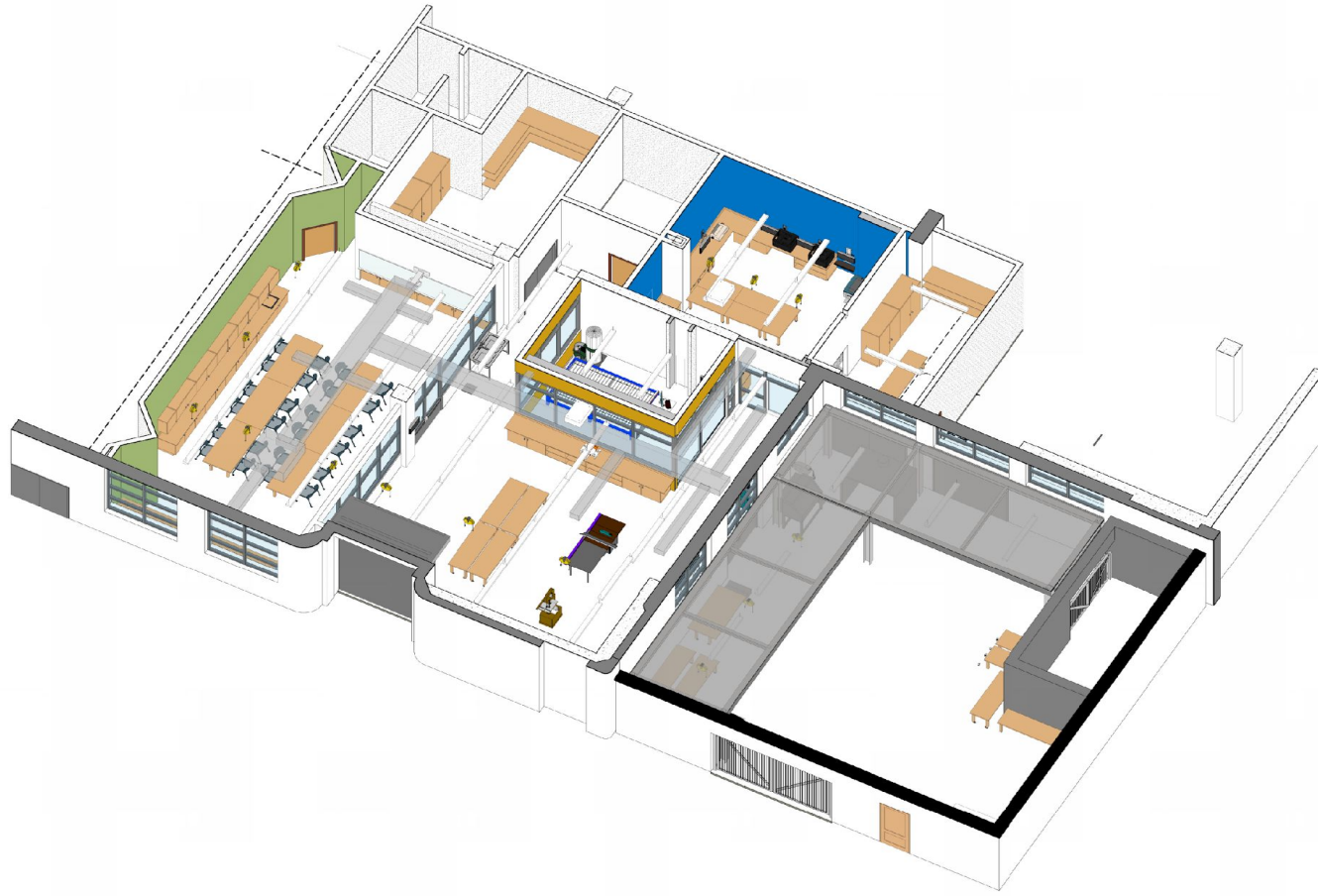
Berkeley High School G112 This project involves the remodel of the former auto shop (currently used as an art studio), patio and two storage spaces into a new workshop space for the Carpentry, Stagecraft, and Engineering Programs. In order to support the curriculum of the CTE program, the spaces within the scope of work are divided into 6 main areas:

1. **Workshop 1**, which supports heavy maker equipment.
2. **Workshop 2**, which supports a classroom environment including access to CAD and other design software in addition to the existing CTE AP Studio Art classes
3. **Workshop 3** is a cleaner, dust-free maker environment for equipment such as the laser and vinyl cutter, 3D printers and for other activities that need a dust-free environment.
4. The **CNC machine** is enclosed in a transparent room to help attenuate the sound from the equipment.
5. **Secure tool and materials storage**
6. A partially **covered patio** for additional workspace, includes a welding station and wash out booth as well as lumber storage



**BERKELEY
HIGH SCHOOL**





CTE 2: BHS AERIAL VIEW 1 (SOUTH WEST)





CTE 2: BHS 3D VIEWS – WORKSHOP 1



CTE 2: BHS 3D VIEWS – WORKSHOP 2/ CNC

Biotechnology Classroom Upgrade

Berkeley High School G309 The work in this classroom includes upgrades to the electrical and ventilation systems in order to accommodate some new "state of the art" equipment including:

- **Nanodrop** - full-spectrum, UV-Vis spectrophotometer used to quantify and assess purity of DNA, RNA, Protein
- **-80°C ultra low freezer** designed to protect samples
- A **laminar flow** cabinet or tissue culture **hood** is a carefully enclosed bench designed to prevent contamination of biological samples
- **Refrigerated Laboratory Centrifuge** Refrigeration constitutes an important added feature Refrigerated laboratory centrifuges temperature ranges as wide as -20C – 40C, making them perfect for DNA, RNA, PCR or antibody analysis - generously donated by Reset Therapeutics

Former BCM Space and Little Theater

BHS G107 & G109 Former Berkeley Community Media space - very minor maintenance performed. Will house **Robotics Engineering, FIRST Robotics**, provide a general education classroom, counselor & teacher workspace

BHS Little Theater **Rigging Maintenance** - expected completion 9/21
Upgraded Sound, Lighting (Including LED's) and projection equipment .
Greatly expanded technical capabilities will serve our **Technical Theater (Stagecraft)** and VAPA programs well as BHS general education and outside rentals

Electronic Tech Classroom

Berkeley Adult School This project involves the alteration of an existing classroom space to support the **Mechatronics Engineering** curriculum. The alteration includes new casework, new lighting fixtures, drop down electrical outlets to **support required equipment**, room exhaust, the refurbishment of the existing mechanical room ventilator, mobile workbenches in order to support a **lab based** curriculum that includes:

- AC/DC Electronic Fundamentals • Digital Electronic Fundamentals • Programing with Microcontrollers • Mechanical 3D Design & Printing • Programmable Logic Controllers • Electronics Theory and Hands on Labs • Ohms Law, Series and parallel circuit design • Motor mechanics and control • C++ Coding (Arduino) & Python Programing (Targeting Raspberry PI) • Computer aided design and programming



3 3D VIEW 1
A1.000



4 3D VIEW 2
A1.000

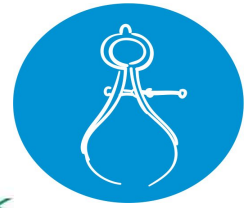
3D VIEWS



New CTE Courses



Engineering & Design



Engineering Technology Pathway

The Engineering Technology pathway provides learning opportunities for students interested in preparing for careers in the design, production, or maintenance of mechanical, electrical, electronics, or electromechanical products and systems

Mechatronics Engineering UCOP Laboratory Science ("d") Integrated Science

Mechatronics is a multidisciplinary field of science that includes a combination of electrical and mechanical engineering where students design, build, and program robotic mechanisms. This course was constructed in coordination with Los Medanos College and in partnership with EBMUD and other regional Utilities.

Robotics Engineering UCOP College-Preparatory Elective ("g") Laboratory Science – Physical Sciences

Robotics Engineering was launched last fall at BHS. **3 sections will be offered this fall.** This course is designed to give students an overview of many aspects of engineering and design relevant to robotics applications. This course uses the VEX Cortex curriculum developed by Carnegie Mellon to introduce students to robotics and the engineering process. Students are learning how to design, prototype, build, and program VEX EDR robots



Building Trades & Construction



Fundamentals of Carpentry: Design/Build Studio

With the Fall 2018 completion of a Carpentry shop and Fabrication Laboratory on the BHS campus we will launch the first course in this Pathway; The course covers construction and building design, performance, sustainability, the study of safety, hand and power tools, planning and design, applicable mathematics, blueprint reading, trade nomenclature, residential and commercial construction standards and other specialized skills. This course includes preparation for a Class B California License. (General Building Contractor) and the Carpenters Apprenticeship Program.

Stagecraft: Entertainment Technician UCOP College-Preparatory Elective ("g") Visual and Performing Arts

The proposed Entertainment Technician course introduces and develops students in four departments of entertainment technician expertise; **Rigging, Carpentry, Lighting and Audio-Video**. The course concentrates on fundamental and advanced elements of expertise an entertainment technician must have to succeed and thrive in the broad industry of presenting Performing Arts in its many forms

These pathways are being developed in partnership with Carpenters Local 713 and International Alliance of Theatrical Stage Employees, Local 107 and BHS VAPA Staff



Health Science and Medical Technology



Public and Community Health UCOP College-Preparatory Elective (“g”) Interdisciplinary - Public and Community Health

This Pilot course has been developed in collaboration with BUSD Cooking and Gardening Program, The Edible School Yard, The Ecology Center, City of Berkeley Public Health and the Willard Growing Leaders Program

Provides and overview of many aspects of public and community health with a **focus on diet related disease**. The emphasis of this course is to provide students with an engaging, project-based, community-focused learning experience . Through these projects students will cover topics including epidemiology, study design, community mapping, policy development, prevention effectiveness, and health education. Student in this course will have many **internship opportunities**.

This course will support student interest and industry demand for public health professionals, and connect the K- 8 Gardening and Cooking Program to the Academy of Medicine and Public Health.

BIS/BTA Pathway Development

CTE is working in collaboration with Berkeley Independent Study and Berkeley Technology Academy on the development of 2 potential pathways in the following **Industry Sectors**:

Education, Child Development, and Family Services

Pathway - Education

Health Science & Medical Technology

Pathway - Public Health

- BIS/BTA leadership and school community stakeholders will be included in the development process
- The UCB California Career Academy Support Network (CCASN) and ACOE have been engaged for support
- Exploring opportunity to recapture substantial CCPT 2 R4 Grant Funding
- Counseling 57 - likely dual enrollment course launch January 2019 in partnership with Berkeley City College

Berkeley Unified School District CTE Pathways

| CA Industry Sector | Pathway | 9 th Grade CTE | 10th Grade CTE | 11th Grade CTE | 12th Grade CTE | Community College | 4 Year College | Apprenticeship | Example Industry or Union Partner |
|-------------------------------------|--|--|--|--|--|---|----------------|----------------|---|
| Health Science & Medical Technology | Biotechnology | | | ROP Biotech 1/2 | ROP Biotech 3/4 | Berkeley City College & Laney College | CSUEB | | BAYER & City of Berkeley |
| | AMPS | Forensic Science | Counseling 57: Get Focused, Stay Focused | Bio Health Science & ROP Community Service Professions | BEST Applied Medical English | Berkeley City College | | | Children's Hospital, Kaiser, Alta Bates |
| Public Service | B-STEP | | | ROP Fire Science | EMT | SF City College & Contra Costa College | | | Berkeley Fire Department, IAFF,1227 |
| | Law & Social Justice | | | Law & Social Justice I | Law & Social Justice II | Berkeley City College | | | Berkeley Police Department, BPOA,DAJA, YDTL |
| Arts, Media, & Entertainment | Digital Media | Digital Photography, Art of Video Production Adv Studio Editing, Adv Digital Photo | | | | Berkeley City College | | | YouthRadio,PFA, BAMFA, BCM |
| | CAS | | Computer Arts | ROP Art of Video Production | Adv. Studio Editing & BEST & Adv Digital Photo | | | | |
| | AHA | AHA Creative Arts | AHA Advanced Creative Arts | AP-Studio Art | BEST | | | | KALA/BAMFA |
| Information Technology | Berkeley Technology Academy | Intro to Programming, Beginning IOS App Dev, Adroid Basic (JAVA) | | | | Diablo Valley College | | | |
| | BHS Computer Science | Computer Science SL, Computer Science HL2, AP C++ /JAVA | | | | | | | |
| Building Trades & Construction | Stagecraft | | | Stagecraft 1/2 | Stagecraft 3/4 | Berkeley City College & Laney College | | | IATSE Local 107 |
| | Carpentry | | | Construction 1/2 | Multi-Craft 1/2 | Laney College | | | Carpenters Local 713 |
| Engineering & Design | Electronic Tech | | | | Electronic Tech Math Class | Laney College or Los Medanos | | | Baywork & EBMUD |
| | Robotics Club | Robotics 1/2 | | Robotics 3/4 | | | | | |
| | Fab Lab | Robotics Club, NSBE jr.,Girls Who Code, SHPE | | | | Abbott Fund, The Brin Wojcicki Foundation, bDR, GeckoDrive Motor Controls, Kaman Industrial Technologies, DS Solidworks, Albany Steel, Vivid Hosting Gorilla Metals, Berkeley Screen Print Co., GHI Electronics, Hasselgren Engineering Inc., Mach 1 waterjet | | | |