

INNOVATION & AGILITY Secondary Pathway Handbook







INNOVATION & AGILITY MISSION

Our mission is to provide meaningful learning experiences for our students that have lifelong impacts. We do this through a holistic approach that supports students through academics, career, skills, health, individual character development, community, and innovation. By providing every student with engaging, relevant, and unique learning experiences, we prepare them to thrive as global citizens in a rapidly changing world and adapt to the future economy.



Supporting K-12 and Beyond Holistic Approach

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I. Career and Technical Education

What is Career and Technical Education? What are Career and Technical Education Programs of Study? What are NAF Pathways? Can Career and Technical Education students earn college credits while in high school? What are PAUSD's completable pathways?

II. Dual Enrollment

What is dual enrollment?
What is the dual enrollment registration process?
Does the grade the student gets in a Dual Enrollment course appear on their high school and college transcript?
How does the student get a copy of their college transcript?
What is the maximum number of units students can earn through Dual Enrollment?
Are Dual Enrollment courses letter grades or pass/no pass?
Can a student drop the Dual Enrollment class?
Are students expected to attend all Dual Enrolment classes?
What consequences does poor attendance have for the student's record in Dual Enrollment classes?
What if the student wants to take community college courses that are not offered at PAUSD though Dual Enrollment?

Fun Fact Sources

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SECTION I : OVERVIEW

Career Technical Education (CTE)

CTE is a term applied to schools, institutions, and educational programs that aligns academic standards with technical knowledge and skills to prepare students for careers in current or emerging occupations through various course offerings and further education. CTE course content is guided by California State CTE Model Curriculum standards as well as business and industry input directly from our PAUSD CTE Advisory Committee.

CTE Pathways

A pathway is defined as a two to three-year course sequence that consists of an introduction (optional), concentrator, and capstone courses, as determined by the CDE. The pathways are organized into fifteen high-employing industry sectors, selected by over 1,000 stakeholders from industry, secondary and postsecondary education.



*Paly Only

Gunn also offers courses in the following pathways: Food Science, Dietetics, and Nutrition; Fashion Design; Interior Design; Biotechnology; Sports Medicine; and Legal Practices.

Paly also offers courses in the following pathways: Business Management; Food Science, Dietetics, and Nutrition; Interior Design; and Sports Medicine.

Certifications

Pathways are designed to connect high school classes to college, industry certifications, and/or career. PAUSD offers several certifications through its CTE programs. See Section III for more information.

21st Century Skills Certification – Multiple Pathways



(Facilitated by our work experience coordinator. Please contact Rachael Kaci at rkaci@pausd.org)

Food Handling Certification – Food Science Pathway



NAF Business Pathway to Certification (Gunn)



*To accommodate COVID-19 pandemic restrictions, NAF is updating their internship requirement to 80 hours paid/unpaid internship through August 2023.

NAF Engineering Pathway to Certification (Paly)



(1 Year)

(1 Year)

*To accommodate COVID-19 pandemic restrictions, NAF is updating their internship requirement to 80 hours paid/unpaid internship through August 2023.

OnShape Certification – Engineering Pathway



CTC (Commission for Teacher Credentialing) Assistant Teaching Permit (Paly)





*Internship is in licensed childcare facility. Working 3+ hour a day for 50 days in junior or senior year.

Dual Enrollment

In addition to certifications, PAUSD students can choose to take Dual Enrollment courses that receive high school and college credit at the same time. PAUSD offers eight courses that articulate with fifteen college courses. See section IV for more information.

CTE Advisory (Stakeholder Group)

An advisory committee is a group of stakeholders which provides guidance and direction to educators on the design, development, implementation, evaluation, maintenance, and revision of career and technical education programs.

The purpose of our CTE advisory committee is to provide technical assistance and resources; revise career & technical training program curriculum to meet the needs of business, industry, labor, the professional, technical trades, and/or the community it is designed to serve; and that career and technical education program graduates are capable of performing entry-level skills in the occupation in which they are trained.

Successful advisory committees focus on innovative, quality programs that are equitable and inclusive. As required by the Perkins V grant, the CTE Advisory must involve a various and diverse group of stakeholders. Our CTE Advisory includes representatives from stakeholder groups and special populations. Because representatives on the committee have first-hand information concerning current business trends, technological demands and realistic job requirements, as well as stakeholder needs, their participation on the committee helps strengthen communication lines between education and the world of work.

Special populations, as defined by Perkins V are¹:

- 1. Individuals with disabilities
- 2. Individuals from economically disadvantaged families, including low-income youth and adults
- 3. Individuals preparing for nontraditional fields
- 4. Single parents, including single pregnant women
- 5. Out-of-workforce individuals
- 6. Homeless individuals
- 7. Youth who are in, or have aged out of, the foster care system
- 8. Youth with a parent who is a member of the armed forces and is on active duty
- 9. Individuals with other barriers to educational achievement, including individuals with limited English proficiency

¹ (2020, January 17). Special Populations - CDE - CA.gov. Retrieved March 26, 2020, from <u>https://www.cde.ca.gov/ci/ct/pk/pops.asp</u>

SECTION II : PATHWAY PROGRAMS

MIDDLE SCHOOL CAREER TECHNICAL EDUCATION









Arts, Media and Entertainment

Participate in daily news broadcast at your schoolLearn how to use video equipmentCreate a yearbook



Education, Child Development, and Family Services

(Includes Family Consumer Science) - Learn how to start a babysitting business



Engineering and Architecture

(Includes Industrial Technology) -Design and build furniture from scratch

-Create an electric car (and ride it too!)

-Use a 3D printer



Information and Communication Technologies

- -Design your own digital game or app
- -Create games using VR/AR
- -Manipulate & create images in Photoshop & Illustrator



Hospitality, Tourism, and Recreation

(Includes Culinary Science)

- -Learn how to make local and international foods
- -Cook food that is fit for royalty
- -Use professional kitchen appliances like Stand Mixers

HIGH SCHOOL CAREER TECHNICAL EDUCATION







ARTS, MEDIA, AND ENTERTAINMENT

Arts, Media and Entertainment is a California Department of Education industry sector program that requires both independent work and interdependent management skills for career success. New technologies are constantly reshaping the boundaries and skill sets of many arts career pathways. Consequently, core arts-sector occupations demand constantly varying combinations of artistic imagination, metaphoric representation, symbolic connections, and technical skills.





HIGH SCHOOL COURSES

GUNN

Beginning Journalism Advanced Journalism Broadcast Journalism Multimedia Journalism Video Production Advanced Digital Filmaking Audio Music Production Advanced Audio Music Production Media Leadership & Management Stage Technology & Design Advanced Stage Technology II

PALY

Photo Journalism

Broadcast Journalism

Advanced Journalism & Media Studies

Media Leadership & Management

Video Production - Digital Filmmaking I

Advanced Video Production - Digital Filmmaking II

Audio Music Production

Advanced Audio Music Production

Stage Technology & Design

Advanced Stage Technology II

SAMPLE OCCUPATIONS

- Composer, Music Arranger, Conductor
- Journalist
- Producer/Director
- Stage Manager/ Production Manager
- Talent Manager
- Theatrical and Broadcast Technician





FUN FACT: People spend 2.6 more time on website pages with video than without video.¹





Design, Visual, and Media Arts Pathway Courses

This pathway program includes the Journalism and Digital Filmmaking programs. Journalism students study journalistic writing styles, media analysis, layout/design, and digital and social media. Digital Filmmaking students study video production tools and techniques.



Media Arts Journalism Sub-Pathway

BEGINNING JOURNALISM

Students will learn to plan, write and revise news stories, profiles, personal experience, observational and persuasive writing. Students will acquire the skills of fact gathering and note-taking through interviews with primary sources and research of secondary sources. This course earns CTE credit at Gunn High School only.

ADVANCED JOURNALISM

This year-long course produces the student-run print and online publication, The Oracle. Students will acquire the technical skills needed for desktop publishing.

ADVANCED JOURNALISM & MEDIA STUDIES

This year-long course teaches students to employ various genres of journalistic writing to investigate topics of importance within their local community, and will work together to develop and circulate a regularly recurring journalistic publication or other media production to their school community, publishing in print, digital, audio, broadcast/streaming, and/or social media.

Multimedia Production Sub-Pathway

BROADCAST JOURNALISM

This year-long course is an intensive laboratory course in gathering, writing and producing news for High School based broadcast media.



*Paly Only

MEDIA LEADERSHIP & MANAGEMENT

This course is a capstone option in an extensive media and digital communication strand. This year-long course leads to a year of serving in a media leadership role in peer-editing and production teams for student media as well as studying college and career options. This course also has an **honors option** which requires students to submit additional work.

Film/Video Production Sub-Pathway

VIDEO PRODUCTION - DIGITAL FILMMAKING I

In this year-long course, students will investigate techniques of video production: directorial style, script development, camera technique, editing, etc. Students will write, shoot, and edit short films ranging from the traditional to the avant-garde. In order to produce original digital films, students will be trained in camera technique and in the uses of non-linear editing and audio creation software applications.

ADVANCED VIDEO PRODUCTION - DIGITAL FILMMAKING II

This year-long course provides students with opportunities to work on individual and small group video projects at the mastery level with industry grade equipment and software. This course also has an **honors option**. The honors option includes additional written, production presentation and exhibition work that may include, but is not limited to, genre analysis essay, script revision and portfolio, production journals, film analysis journals, a capstone end of class portfolio reflection and presentation.

Audio Production Sub-Pathway

AUDIO MUSIC PRODUCTION I

The Audio Music Production course focuses on the aesthetic qualities of sound production and analyzes the impact of digital audio technology as an inherent form of communication in today's society, including production, recording, composing and editing. Students will convey creative expression and develop ideas individually and within groups, write compositions, proposals, and budgets.

ADVANCED AUDIO MUSIC PRODUCTION

This CTE Audio Production capstone course builds on the skill sets of the Audio Production I course and further prepares students for a wide variety of careers in professional audio industries.

Production and Managerial Arts Pathway Courses

This pathway program includes the Stage Tech program. Students study the design and construction of sets, lighting, sound, and costumes, and apply their skills by developing design concepts and mounting productions from various theatrical genres.

Stage Technology



STAGE TECHNOLOGY AND DESIGN

In this year-long course, students will integrate theoretical and practical knowledge of stage technology and design, including the design and construction of sets, lighting, sound, and costumes, and apply their skills by developing design concepts and mounting productions from a variety of theatrical genres.

ADVANCED STAGE TECHNOLOGY II

In this year-long course, students will manage and supervise a design or construction crew while drawing on their knowledge of theater history, design aesthetics, and creative processes. The course offers a **dual enrollment option**. The dual enrollment version of the course requires additional work and rigor.

Performing Arts Pathway Courses

Additional Visual and Performing Arts (VAPA) courses can earn CTE credits at both High Schools under Arts, Media, & Entertainment pathway. Please refer to the current course catalog for more information.



BUSINESS AND FINANCE

Business and Finance is a California Department of Education industry sector program that helps students master basic business principles and procedures before proceeding to the career path specializations. Because almost every business and organization has a financial and management component, students will find that opportunities exist in many career paths in addition to those in business and finance.

INDUSTRY CERTIFICATION

Business Pathway Certification (OFFERED AT GUNN)



*To accommodate COVID-19 pandemic restrictions, NAF is updating their internship requirement to 80 hours paid/unpaid internship through August 2023.







HIGH SCHOOL COURSES

GUNN

Principles of Business

BEAM - Business, Entrepreneurship and Math

PALY

Business Law

SAMPLE OCCUPATIONS

- Chief Executive Officer
- Entrepreneur
- International Shipping Specialist
- Export Sales Representative
- Financial Analyst
- Accountant
- International Market Researcher









FUN FACT: 90% of US dollars and 8% of currency world-wide have no physical existence. They are purely digital.²

Business Management Pathway Courses



PRINCIPLES OF BUSINESS

This year-long, blended course introduces students to the study of Business Management, Economics, Personal Finance, Marketing, and Entrepreneurship.

BEAM - BUSINESS, ENTREPRENEURSHIP AND MATH

This year-long, blended course allows students to form private-public partnerships that replicate real-life business environments, which require application of mathematical principles.

WORK EXPERIENCE + NAFTRACK CERTIFICATION

In addition to pathway courses, students can pursue NAFTrack certification by completing 120 hours of paid internship(s) through the Work Experience program². Students are assessed on a broad range of skills during their internship(s) to earn certification.

ADDITIONAL ELECTIVES

BUSINESS LAW

This year-long course will expose students to an overview of our legal system and how it was formed. Topics include: law enforcement and the court systems, crimes and torts, contracts, insurance, property, personal injury laws, laws for minors, buying and selling goods, product liability, credit, bankruptcy, unions, wills and estate planning, labor law, consumer protection and how to create a business plan. This course is offered at Paly only.

² To accommodate COVID-19 pandemic restrictions, NAF is updating their internship requirements to 80 hours paid/unpaid internship through August 2023.



EDUCATION, CHILD DEVELOPMENT, AND FAMILY SERVICES

Education, Child Development and Family Services is a California Department of Education industry sector program that provides students with the skills and knowledge they need to pursue careers in child care and related fields.

INDUSTRY CERTIFICATION

CTC Assistant Teaching Permit (OFFERED AT PALY)







HIGH SCHOOL COURSES

GUNN

Early Childhood Development (ECD) I

PALY

Early Childhood Development (ECD) I Early Childhood Development (ECD) II Child Development







SAMPLE OCCUPATIONS

- Primary/Secondary School Teacher
- School Counselor
- Educational Administrator
- Clinical, Development or Social Psychologist
- Social Worker
- Speech Therapist
- Before/Afterschool Program Aide







FUN FACT: By 2027, it is estimated that the number of students in Elementary Schools could reach as high as 86 million.³

Child Development Pathway Courses

This pathway program prepares students to become competent in child development; fostering positive learning environments, trends, and issues in early childhood development; classroom management techniques; and professional standards. Students create lessons to demonstrate their knowledge of physical, cognitive and social-emotional development.



EARLY CHILDHOOD EDUCATION (ECD) I

This year-long course examines the major physical, psychosocial, and cognitive/language developmental milestones for children, both typical and atypical, from conception through early childhood. The course offers a **dual enrollment option**. The dual enrollment version of the course requires additional work and rigor.

EARLY CHILDHOOD EDUCATION (ECD) II

This year-long course examines the knowledge and skills related to providing appropriate curriculum and environments for infants and young children. The course offers a **dual enrollment option**. The dual enrollment version of the course requires additional work and rigor.

CHILD DEVELOPMENT

This year-long course examines developmental theory and hands on experience regarding the development of the child from middle childhood through adolescence. The course offers a **dual enrollment option**. The dual enrollment version of the course requires additional work and rigor.

WORK EXPERIENCE + ASSOCIATE TEACHER PERMIT

In addition to the three pathway courses, students can pursue an associate teacher permit by completing an internship for 50 days of 3+ hours per day at an early childhood facility through the Work Experience Program.³

³ Child Development Permit Matrix



ENGINEERING AND ARCHITECTURE

Engineering and Architecture is a California Department of Education industry sector program that is designed to provide a foundation in engineering and architecture occupations for students in California. Students are engaged in an instructional program that integrates academic and technical preparation and focuses on career awareness, career exploration, and career preparation in pathway programs that emphasize real-world, occupationally relevant experiences of significant scope and depth.

INDUSTRY CERTIFICATION

OnShape Certification



Engineering Pathway Certification (OFFERED AT PALY)



*To accommodate COVID-19 pandemic restrictions, NAF is updating their internship requirement to 80 hours paid/unpaid internship through August 2023.





HIGH SCHOOL COURSES

GUNN

Introduction to Engineering Design (PLTW)

Principles of Engineering & Robotics (PLTW)

ADDITIONAL ELECTIVES

Engineering Technology

Digital Electronics (PLTW)

PALY

Introduction to Engineering Design (PLTW)

Principles of Engineering (PLTW)

ADDITIONAL ELECTIVES

Engineering Technology

Computer Aided Design (CAD)

SAMPLE OCCUPATIONS

- Mechanical/Electrical Drafter
- Design Engineer
- Civil Engineer
- Manufacturing Design Engineer
- Structural Engineer
- Project Architect
- Building Surveyor
- Town Planner







FUN FACT: The world's tallest roller coaster "Kingda Ka" begins with a powerful launch that takes you 0 to 128 miles per hour in just 3.5 seconds. It reaches the maximum height of 457 feet (139 m). It was designed by a renowned German engineer Werner Stengel.⁴

Engineering Design Pathway Courses

This pathway program introduces students to basic concepts of design and engineering. Conceptual instruction begins with the design cycle, which students experience in all stages through hands-on skill development from brainstorming to prototyping to manufacturing and testing.



INTRODUCTION TO ENGINEERING DESIGN (PLTW)

This year-long course will introduce students to basic concepts of design and engineering. The course is based on the curriculum provided by Project Lead the Way (PLTW). This course also has an **honors option**. The honors option requires additional independent CAD study to earn an **Autodesk Inventor certification** (by passing an online Autodesk exam).

PRINCIPLES OF ENGINEERING & ROBOTICS (PLTW)

This year-long course will introduce basic engineering concepts to students who want to build and program their own mechanical inventions. The course is based on the curriculum provided by Project Lead the Way (PLTW). This course also has an **honors option**. The honors option requires additional independent on-line study to earn a **pre-engineering certification** (by passing an online exam administered by the REC Foundation).

COLLEGE BOARD AP + PLTW STUDENT CERTIFICATE OF PREPARATION:

Students who complete two PLTW courses and a STEM (math or science) AP class, with qualifying scores on course-related exams and assessments, earn a College Board AP + PLTW certificate of preparation for more advanced coursework in college.

ADDITIONAL ELECTIVES

ENGINEERING TECHNOLOGY

This year-long course is a hands-on course that will provide students real-life experience in mechanical design, machine shop skills, engineering project work and leadership. Students who wish to enroll in Engineering Technology must first be selected as members of the Gunn Robotics Team (GRT).

ENGINEERING TECHNOLOGY

This semester or year-long course is designed to inspire students to be engineering and technology leaders. By engaging them in exciting mentor-based programs, they build skills in science, engineering and technology. Innovation, creativity and problem-solving skills are encouraged. Students can participate in exciting national competitions such as USFIRST Robotics and the Silicon Valley Tech Challenge.

DIGITAL ELECTRONICS (PLTW)

This course will introduce basic analog and digital electronics concepts to students who want to explore how binary numbers and logic elements are used to implement complex digital circuits. Teamwork, problem-solving, and communication skills are developed through group projects.

COMPUTER AIDED DESIGN (CAD)

Students use high-speed computers to learn the industry standard in Computer Design Software. AutoCAD release 14 and 2000 along with 3D Studio Max release 3 provide the students the ability to create two- and three-dimensional drawings. Certification in AutoCAD, SolidWorks, and Adobe Software such as Photoshop and Dreamweaver, are also available.



FASHION AND INTERIOR DESIGN

Fashion and Interior Design is a California Department of Education industry sector program that provides students with the academic and technical preparation necessary to pursue high-skill, high-demand careers in these related and growing industries. The knowledge and skills are acquired within a sequential, standards-based pathway program that integrates hands-on projects, work-based instruction, and leadership development such as that offered through Family, Career and Community Leaders of America (FCCLA).











HIGH SCHOOL COURSES

GUNN

Fiber Arts and Fashion Design Interior Design PALY Interior Design 1

Interior Design 2

SAMPLE OCCUPATIONS

- Fashion Design and Merchandising
- Interior Design
- Corporate Designers
- Stylist
- Apparel Public Relations Specialist
- Apparel Inventory Planner







FUN FACT: In order to become a licensed interior designer in California, you will need to acquire a minimum of a two-year associate's degree in interior design with at least 40 semester hours, plus 4 years of work experience in the field under a licensed interior designer or architect.⁵

Fashion Design Elective Courses

FIBER ARTS AND FASHION DESIGN

This semester-long course is designed to allow students to work with many different fibers and material applications. Students learn fashion design basics - from repairing clothes, to repurposing thrift store finds and learning how to design and construct clothing.

Interior Design Elective Courses

INTERIOR DESIGN

This semester-long course is designed for students to learn architectural and furniture styles, line, design, form, color and texture and be able to combine them into the kind of living environment which best reflects their personality.



HEALTH SCIENCE AND MEDICAL TECHNOLOGY

Health Science and Medical Technology is a California Department of Education industry sector program that provides the academic and technical skills and knowledge students need to pursue a full range of career opportunities in health science and medical technology. Pathway programs teach students what workers need to know and be able to do to contribute to the delivery of safe and effective health care.









HIGH SCHOOL COURSES

GUNN

BioTechnology: Theory & Practices
ADDITIONAL ELECTIVES
Sports Medicine

PALY

Principles of BioMedical Science (PLTW) BioTechnology: Theory & Practices

ADDITIONAL ELECTIVES

Sports Medicine

SAMPLE OCCUPATIONS

- Physician/Surgeon/Anesthetist/ Nurse/Dentist
- Clinical Trials Research
- Coordinator
- Biostatistician
- Geneticist Lab Assistant
- Kinesiotherapist
- Respiratory Technician
- Hospital Administrator







FUN FACT: Experts predict that the biotech employment will grow by 5% in the period between 2019 and 2029, due to boosted demand for biological and technical research.⁶

Biotechnology Pathway Courses

This pathway program introduces students to the theoretical aspects of Biotechnology (Cell Biology, Microbiology, Molecular Biology, Immunology) and societal issues arising from this new technology. Students can complete a Biotechnology capstone project through AAR to complete the pathway.



PRINCIPLES OF BIOMEDICAL SCIENCE (PLTW)

In this introductory course of the Biomedical Science pathway program, students explore concepts of biology and medicine to determine factors that led to the death of a fictional person using curriculum from Project Lead the Way (PLTW). The activities and projects introduce students to human physiology, basic biology, medicine, and research processes while allowing them to design their own experiments to solve problems.

BIOTECHNOLOGY: THEORY & PRACTICES

This course will introduce students to the theoretical aspects of Biotechnology (Cell Biology, Microbiology, Molecular Biology, Immunology) and societal issues arising from this new technology. Hands-on laboratory activities will reinforce theoretical information and teach lab safety, data analysis, the scientific method, and related computer skills. This course may include topical speakers from biotechnology.

Sports Medicine Elective Courses

This pathway program, aligned to the state CTE standards for Patient Care, integrates knowledge and skills from several science disciplines and practical skills, including basic anatomy and physiology, care and prevention of injuries, protective taping and wrapping techniques, and overall wellness.

SPORTS MEDICINE

This year-long course is designed to emphasize athletic injury prevention through pre-participation physical exams, exercise programs, preventative taping, proper fitting of equipment, and protective braces. Basic injury recognition and emergency response of acute trauma. The course offers a **dual enrollment option**. The dual enrollment version of the course requires additional work and rigor.



HOSPITALITY, TOURISM, AND RECREATION

Hospitality, Tourism and Recreation is a California Department of Education industry sector program that provides students with the academic and technical preparation necessary to pursue high-skill, high-demand careers in the related and growing industries. The standards are designed to integrate academic and career technical concepts. The knowledge and skills are acquired within a sequential, standards-based pathway program that integrates hands-on projects, work-based instruction, and leadership development such as that offered through Family, Career and Community Leaders of America (FCCLA).



HIGH SCHOOL COURSES

GUNN

ELECTIVES

Introduction to Culinary Science Culinary Science - International & Regional Sports Nutrition

PALY

ELECTIVES

Introduction to Culinary Science

Culinary Science - International & Regional

Sports Nutrition







SAMPLE OCCUPATIONS

- Hotel General Manger
- Event Planner
- Executive Chef
- Beverage Manager
- Front Desk
- Concierge
- Cook
- Wedding Coordinator







FUN FACT: The market size of the catering sector in the United States reached \$11.35 billion in 2020. The sector was forecast to reach approximately \$12 billion in 2021.⁷

Food Science, Dietetics, and Nutrition Elective Courses

This pathway program gives students the opportunity to explore the diversity of U.S. regional and international cooking styles through hands-on experience. These courses help students develop an appreciation for a wider variety of foods and cultures through presentations, demonstrations, and laboratory experiences.

ELECTIVES

INTRODUCTION TO CULINARY SCIENCE

This semester-long course explores cooking as an art as well as a science. Good cooking rests on basic principles and skills that have been refined over centuries. These principles and skills are demonstrated and practiced in class in clear, easy steps.

CULINARY SCIENCE - INTERNATIONAL & REGIONAL

This semester-long course is a classroom tour of famous food of the regional United States, Asia, Europe, Africa and more. In addition to selecting, preparing, tasting and enjoying famous dishes typical to each region, you will learn about preparation methods, serving techniques and special equipment specific to the dishes made.

SPORTS NUTRITION

This semester-long course is all about empowering students with the knowledge to create nutritionally balanced meals that will enhance sports performance as well as overall good health.



INFORMATION AND COMMUNICATION TECHNOLOGIES

The Information and Communication Technologies industry offers high demand, high wages, and high skills and provides students with excellent opportunities for interesting work and good pay. Essential skills for careers in this sector include understanding systems that support the management and flow of data, the ability to work well and communicate clearly with people, and the ability to manage projects efficiently.











HIGH SCHOOL COURSES

GUNN

Functional & Object-Oriented Programming (FOOP) AP Computer Science A **AP Computer Science Principles Computer Science Capstone** ADDITIONAL ELECTIVES

Web Development

PALY

Functional & Object-Oriented

AP Computer Science A

AP Computer Science Principles

Computer Science Capstone

ADDITIONAL ELECTIVES

Web Development

SAMPLE OCCUPATIONS

- Computer and Information System Manager
- Computer User Support **Specialist**
- Database Administrator
- Document Management **Specialist**
- Business Intelligence Analyst









FUN FACT: In 2020, the gaming industry generated \$155 billion in revenue, By 2025, analysts predict the industry will generate more than \$260 billion in revenue.⁸

Games and Simulations Pathway Courses

This pathway program focuses on fostering students to be creative and encouraging students to apply creative processes when developing computational artifacts. Specific topics include conditionals, loops, functions, logic, recursion, top-down design, iteration, objects, arrays, sets, linked data structures, stacks, queues, pointers, binary trees, searching and sorting algorithms, computer systems and ethics.



FUNCTIONAL & OBJECT-ORIENTED PROGRAMING (FOOP)

This year-long course introduces the student to the functional and object-oriented programming paradigms. It includes concepts such as functions, conditionals, data abstraction, recursion, lambda, higher-order functions, lists, loops, arrays, interfaces, inheritance, and polymorphism.

AP COMPUTER SCIENCE A

This year-long course is designed to prepare students for the Advanced Placement Exam. The course includes top down design, iteration, procedures, functions, user-defined types, classes, arrays, files, sets, linked data structures, stacks, queues, pointers binary trees, searching and sorting algorithms. The students should be able to analyze code, in terms of functionality, efficiency, readability, reusability, modularity.

Software and Systems Development Pathway Courses



AP COMPUTER SCIENCE PRINCIPLES

This year-long course introduces students to the central ideas of computer science, inviting students to develop the computational thinking vital for success across multiple disciplines. The course is unique in its focus on fostering students to be creative and encouraging students to apply creative processes when developing computational artifacts.

COMPUTER SCIENCE CAPSTONE

This semester-long course allows students to apply their computational skills in a real-world context. Students will work in teams to use the design thinking process to identify a problem within their local community and then develop a possible solution.

ADDITIONAL ELECTIVES

WEB DEVELOPMENT

This course provides an in-depth, project-based investigation of how to create Web-based applications using modern, industry-standard technologies and design patterns.



PUBLIC SERVICES

HIGH SCHOOL COURSES

Public Services is a California Department of Education industry sector program that prepares students for careers in government service and related fields. Careers in public service are unique because they center on challenging issues that define the public agenda and involve the provision of vital services to the public—from local to international levels.











GUNN

ELECTIVES

SAMPLE OCCUPATIONS

- Law Enforcement Officer
- Animal Control Officer
- Correctional Officer
- Bailiff
- Transit Authority
- City Attorney
- Civil Rights Worker
- Immigrant Support Specialist
- Disability Services Worker









FUN FACT: From 2020 to 2026, overall Bay Region local government employment has an avarage annual openings of 2,849 jobs across various career clusters.⁹

Legal Practices Elective Courses

This pathway program takes students through the criminal justice system, criminal law, Constitutional law, procedural law, the adjudication process, and an in-depth look into landmark court cases. Students also examine the Bill of Rights and how it applies to law. Students learn about the workplace through a field trip to criminal court, expert guest speakers, debates, and mock trials.

ELECTIVES

CRIMINAL & CIVIL LAW

This semester-long course examines the types of crimes, legal rights, as well as the civil consequences faced after a crime. Criminal and Civil Law class also examines torts, individual rights and liberties, contract law and juvenile law.

LAW 1

This year-long course is designed to take students through the criminal justice system, criminal law, Constitutional law, procedural law, adjudication process and an in-depth look into landmark court cases.



TRANSPORTATION

Transportation is a California Department of Education industry sector program that provides a foundation in transportation services. Pathway programs within the Transportation industry sector emphasize real-world, occupationally relevant experiences of significant scope and depth in three areas: Operations, Structural Repair and Refinishing, and Systems Diagnostics, Service, and Repair.

PALY



HIGH SCHOOL COURSES

GUNN

Automotive Technology 1 Automotive Technology 2 Introduction to Automobile Automotive Technology 1 Automotive Technology 2





SAMPLE OCCUPATIONS

- Service Technician
- Maintenance Worker
- Shop Foreman
- Technical Writer
- Dispatcher
- Engineer
- Investigator/Inspector









FUN FACT: The automobile industry employs 9.9 million Americans, or about 5.1% of private-sector employment.¹⁰

Systems Diagnostics, Service, and Repair Pathway Courses

This pathway program allows students to learn the various systems of the automobile and how to repair and service them. The pathway program provides students with the opportunity to tear down cars and rebuild them in order to learn to repair their own vehicle. Students use the latest diagnostic equipment and procedures to repair most systems in an automobile. Welding, metal fabrication, and restoration techniques are also practiced.



INTRODUCTION TO THE AUTOMOBILE

This semester-long course is designed for a student to learn the basic understandings of how an automobile works. A hands-on approach will be used to learn basic maintenance procedures on their car.

AUTOMOTIVE TECHNOLOGY 1

This year-long course is designed for the student who has little or no previous knowledge of how an automobile works. The course takes students through a more in-depth, hands-on approach to learning the basics of how each system in an automobile is designed and works.

AUTOMOTIVE TECHNOLOGY 2

This year-long course is designed for the student who desires more information, experience and proficiency related to automotive operation, repair and maintenance.



MULTIPLE PATHWAY

Multiple Pathway programs are unique exploratory courses or programs that are not part of a specific pathway program. Instead, they support multiple pathway programs across the industry sectors.





GUNN

Advanced Authenthic Research (AAR) **AP** Capstone Social Justice Pathway (SJP) Work Experience Education (WEE)

PALY

Advanced Authenthic Research (AAR) **AP** Capstone

Social Justice Pathway (SJP)

Work Experience Education (WEE)



20

DISTRIBUTION OF SLEEP STAGES OVER A 24 HOUR PERIOD:

Data and F

STUDENT SAMPLE PROJECTS



How much has the Greenland Ice Sheet's retreat accelerated over the last 35 years within the vicinity of the Jakobshavn Glacier, and how does the vicinity to the fast moving glacier impact retreat nearby?

Initial Project: Lesson on **Racism and Speaking out**

æ

My initial project was to teach a live lesson to groups of children ages 5-10 about what racism was and how to recognize and deal with it if one saw or experienced it. I created a Peardeck and made two short stories for the children to read and discuss. I also planned to send out a survey to the parents about any changes they had noticed in their children after the lesson, and to bring positive data to the school district, ultimately proposing that they consider including topics of racial awareness into the elementary school curriculum.



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THE EFFICACY AND BARRIERS OF THE IMPLEMENTATION OF MUSIC THERAPY FOR ALZHEIMER'S PATIENTS IN CARE FACILITIES

INTRODUCTION

Alzheimer's disease (AD) currently poses a protound burden of disease, affecting one in ten people aged 65 and over (Gaugler et al, 2019). As the disease progresses, Alzheimer's patients maintain their music memorias despite losing other cognitive functions. Through various studies, music therapy (MT) has been proven to be a successful non-pharmacological treatment for AD. Given MT's effectiveness, this study aimed to use case studies to explore the previous of Ministry and a study and to use case studies to explore the previousnece of MT in care facilities with AD patients interviews were conducted to gather qualitative data on the underlying reasons. If any, behind resistance against MT in care facilities and determine the barriers of MT impler

Greenland **Ice Sheet**

MARGIN RETREAT DRIVEN BY MARINE OUTLET GLACIER ACTIVITY

Arunim Agarwal¹, Slawek M. Tulaczyk² Department of Earth and Planetary Sciences University of California, Santa Cru

MY RESEARCH QUESTION



¹Henry M. Gunn High School

(GrIS)

Advanced Authentic Research (AAR)

AAR is an adaptive course that can be taken as a standalone exploration or as a pathway capstone project. AAR provides a unique opportunity for students in grades 10-12 to explore and develop their interest, passion, curiosity, and perseverance as they investigate a topic of their own choosing. Students are paired with industry mentors in their chosen field of research, who provide context and professional expertise to support and facilitate each student's work. Student research is supported by the process-oriented curriculum developed by the AAR team. The recursive nature of the research process allows students to go back and forth between the different stages of inquiry as they encounter new information. The program innovatively adapts Career Technical Education (CTE) Foundation standards in conjunction with Next Generation Science Standards (NGSS) for science and engineering practices, and PAUSD's vision statement for students to explore topics in a wide variety of disciplines across all industry sectors.

AP Capstone

AP Capstone is a College Board program that equips students with the independent research, collaborative teamwork, and communication skills that are increasingly valued by colleges. The program cultivates curious, independent, and collaborative scholars and prepares them to make logical, evidence-based decisions. AP Capstone is comprised of two courses – AP Seminar and AP Research – and is designed to complement and enhance the discipline-specific study in other courses. Participating schools can use the AP Capstone program to provide unique research opportunities for current AP students, or to expand access to AP by encouraging students to master the argument-based writing skills that the AP Capstone program develops.

Social Justice Pathway (SJP)

SJP is an interdisciplinary pathway that cohorts 60 students with an English and History teacher for 3 years of study utilizing project-based learning and promoting leadership within the school and community. Students view the curriculum through a social justice lens, exploring who has access to rights and opportunities in our world and why; who is being given their due and whether or not that is fair; and deciding what to do about it all. SJP's seniors, working through the AAR course, conduct extensive research of the needs and impact of social justice issues within the greater community. The students design and propose action research projects addressing and ameliorating the social injustices evident within the community, then execute their plan by working with members of the community who impact or are impacted by these social injustices. As students execute their AAR projects, they collect data to analyze the impact of their program to make recommendations for further study and for further action to strengthen the Palo Alto community.

Work Experience Education (WEE)

WEE is a program that combines classroom instruction with part-time student employment. Students develop good work habits, attitudes, self-confidence, job skills, and a portfolio. Students can enroll in either Work Experience (paid employment) or Exploratory Experience (unpaid internship/ observation) and can attend class at either high school. The purpose of Exploratory Experience is to contribute to students' career guidance by affording them opportunities to explore careers of interest by systematically sampling—under school supervision and with school credit—a variety of work conditions. Work Experience and Exploratory Experience follow California Department of Education guidelines and cover the following curriculum: career exploration, job/work cycle, labor law, economic awareness/financial literacy, and 21st century skills.

SECTION III : CERTIFICATIONS

Certifications offer students the opportunity to show mastery in a certain field through industry recognized tests or course work, often providing essential career skills for specific professions and specialties. Students in PAUSD can earn certifications through qualifying CTE pathways in specialized fields or in multiple pathways. Pathways are designed to connect high school classes to college, industry certifications, and/or career. PAUSD offers several certifications through its CTE programs.



21st Century Skills Certification – Multiple Pathways

The 21st Century Success Skills standards represent the fundamental, yet critical, personal traits, knowledge, and skills that each person should possess to successfully transition from secondary education into the workforce and post-secondary education, and are to be continually developed throughout one's life. These skills and knowledge can be applied to any industry or subject matter.

(Facilitated by our work experience coordinator. Please contact Rachael Kaci @ rkaci@pausd.org) Precision Exam (90 minute exam)

efood Handlers®

eFood Handlers Certification – Food Science Pathway

eFoodHandlers is a national, ANSI-accredited food safety training provider. Training is an interactive program which includes videos and learning exercises to provide quality training for students. The certification is valid for 3 years.

(Facilitated by our CTE Department Instructional Leader & Culinary Sciences and Design. Please contact Cindy Peters at cpeters@pausd.org) Online Training & Exam (120 minutes)



NAF Business Pathway Certification (Gunn)

Experienced and beginning students have the opportunity to learn the wide varieties of business topics and apply the real-life scenarios. By successfully completing a business pathway and meeting NAF academy's requirements. Students will be NAFTrack certified and will have access to NAF resources.

*To accommodate COVID-19 pandemic restrictions, NAF is updating their internship requirement to 80 hours paid/unpaid internship through August 2023.





OnShape Certification – Engineering Pathway

Students taking Introduction to Engineering Design **Honors** PLTW have the opportunity to receive the OnShape Certification by taking a 180 minute exam. This exam will enable students to leverage their knowledge of Onshape, and with the successful completion of the examination, receive certification as an Onshape Certified Associate.

Intro. to Engineering Design Honors PLTW Gunn & Paly (8685)

(1 Year)

Onshape Exam (180 minute exam)



NAF Engineering Pathway Certification (Paly)

These courses will introduce students to basic concepts of design and engineering. The course is based on the curriculum provided by Project Lead the Way (PLTW). Topics include the process of design, technical sketching, CAD (computer-aided design), dimensional analysis, statistical analysis using Microsoft Excel, tolerances, reverse engineering, and 3D printing.

*To accommodate COVID-19 pandemic restrictions, NAF is updating their internship requirement to 80 hours paid/unpaid internship through August 2023.





CTC (Commission for Teacher Credentialing) Assistant Teaching Permit (Paly)

Authorizes the holder to care for and assist in the development and instruction of children in a child care and development program under supervision of an associate teacher, supervisor or director.





CTC (Commission for Teacher Credentialing) Associate Teaching Permit (Paly)

Authorizes the holder to provide service in the care, development, and instruction of children in a child care and development program, and supervise a CPD Assistant, and an aide.

*Internship is in licensed childcare facility. Working 3+ hour a day for 50 days in junior or senior year.



I. Career and Technical Education

1. What is Career and Technical Education?

A program of study that involves a multiyear sequence of courses that integrates core academic knowledge with technical and occupational knowledge to provide students with a pathway to postsecondary education and careers.⁴

2. What are Career and Technical Education Programs of Study?

Education Code Section 51226 provides legal authority to develop the CTE standards and framework. This legislation requires the development and adoption of CTE standards that incorporate the integration of career technical and academic education no later than June 1, 2005. The original CTE Model Curriculum Standards were adopted by the State Board of Education (SBE) on May 11, 2005. The standards, written for grades seven through twelve, specify learning goals in 58 career pathways organized around 15 industry sectors.⁵ Career Technical Education Programs of Study take these standards and organize them in a two year course sequence. These courses offer seamless progression towards meaningful business and industry training, encourages work-based learning and includes industry-valued credentials.⁶

3. What are NAF Pathways?

NAF pathways are structured as small, focused learning communities that fit within and enhance high school systems. NAF promotes open enrollment for its academies in order to maximize every student's chance at a successful future. NAF pathways consist of two years of study plus a paid internship component and culminates with NAFTrack certification. NAFTrack Certification demonstrates that a student has achieved the highest levels of college and career readiness through their NAF academy. Created by education and business leaders, it measures student performance through career-related coursework, internship performance, and successfully completing high school.

4. Can Career and Technical Education students earn college credits while in high school?

Yes. CTE offers several Dual Enrollment options in multiple pathways. Dual Enrollment therefore earning high school credits and college credits simultaneously. Students in dual enrollment courses will receive regular credit per course. For example, if a "regular" high school course earns five credits, the dual enrollment version of that course will earn five credits on the PAUSD transcript. Grades, upon completion of the course, will be weighted similarly to AP or Honors classes in weighted GPA calculations, as they are rigorous courses that have gone through an alignment process with the community college.

5. What are PAUSD's completable pathways?

All Career Technical Education courses earn CTE credit. PAUSD students must complete 10 units (or two semesters) of CTE credits in order to graduate. In addition to completing their CTE graduation requirements, students can elect to take an additional year of CTE courses in a specific pathway - which makes them pathway completers. Once a student is a pathway completer, they can earn additional industry-recognized certifications. Currently, PAUSD offers completable pathways in:

- Design, Visual, and Media Arts
- Production and Managerial Arts
- Performing Arts
- Business Management*
- Child Development*
- Engineering Design
- Biotechnology*
- Software and Systems Development
- Games and Simulations
- Systems Diagnostics, Service, and Repair (Auto)
- Multiple Pathways

*indicates a pathway that is only available at one high school site. Refer to page 4 for more information.

II. DUAL ENROLLMENT

1. What is dual enrollment?

Definition: Dual Enrollment courses refer to high-school courses that have gone through curricular alignment with a community college and whose students are enrolled in two institutions concurrently, therefore earning high school credits and college credits simultaneously.

Legal Background: AB 288 establishes the College and Career Access Pathways Act to authorize California Community College districts to enter into formal partnership agreements with local school districts to expand access to concurrent enrollment opportunities for high school students. The partnership agreement outlines the terms of their partnership, such as the schedule of eligible courses that can be offered, thresholds for the academic readiness of pupils, protocols for sharing, and joint facilities use. In the spring of 2019, PAUSD signed a Memorandum of Understanding with the Foothill - DeAnza Community College District.

PAUSD Reporting Practice:

Dual Enrollment: Students in dual enrollment courses will get regular credit per course. For example, if a "regular" high school course earns five credits, the dual enrollment version of that course will earn five credits.

GPA Calculation: Grades, upon completion of the course, will be weighted similarly to AP or Honors classes in weighted GPA calculations as they are rigorous courses that have gone through an alignment process with the Community College.

2. What is the dual enrollment registration process?

- 1. Students must sign-up for the PAUSD course during their regular course selection.
- 2. The course must be taught by instructor cleared by community college
 - a. Students must apply and register with the community college.
 - b. Complete application (void if they took classes last term and would like to continue in the coming term)
 - c. Submit High School Permit to enroll (must complete the special admit form each quarter, even if they took classes last term).
 - d. Attach unofficial transcript
 - e. Register for classes with the community college

NOTE: These steps are facilitated by the community college Dual Enrollment Coordinator and most often occur during class time.

3. Does the grade the student gets in a Dual Enrollment course appear on their high school and college transcript?

Yes. The Dual Enrollment information will be listed at the bottom of the PAUSD transcript following the currently existing model: [PAUSD Transcript Name] = Dual Enrollment: [Community College] course [Community college Transcript Name], course location.

4. How does the student get a copy of their college transcript?

Students must order a transcript from the community college directly.

5. What is the maximum number of units students can earn through Dual Enrollment?

Students cannot take more than 15 units of community college per semester.

6. Are Dual Enrollment courses letter grades or pass/no pass?

Courses are generally for a letter grade, but can be taken pass/no pass on a case by case basis. However, if a class is taken pass/no pass, it may not count for transfer credit.

7. Can a student drop the Dual Enrollment class?

Yes, they can drop the class but they need to go through the drop process both in the PAUSD system and the community college system. The PAUSD drop date can be found on the academic calendar. The drop date for the community college is available on their academic calendar.

8. Are students expected to attend all Dual Enrolment classes?

Regular and punctual attendance is an integral part of the learning process. As a Foothill student, students are expected to attend all scheduled classes in which you are enrolled. An instructor has the authority to drop a student who violates written attendance policies.

9. What consequences does poor attendance have for the student's record in Dual Enrollment classes?

Students with attendance problems may be moved to a non-dual enrollment section of this course, resulting in a "W" (for withdrawal) on the Foothill transcript.

10. What if the student wants to take community college courses that are not offered at PAUSD though Dual Enrollment?

That is considered bringing credit from another institution rather than Dual Enrollment, therefore Dual Enrollment rules do not apply.

11. What is the difference between AP classes and Dual Enrollment courses?

Dual Enrollment courses refer to high-school courses that have gone through curricular alignment with a community college. AP classes are courses that follow a specific curriculum designed to help them pass the AP test or portfolio requirements. They are similar in that they are both college-level courses and earn straight credit with weighted GPA calculations.

Fun Fact Sources

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This handbook is updated periodically as our programs are constantly evolving. If you have any feedback, please contact <u>cce@pausd.org</u>



THANK YOU

Thank you to our students, teachers, staff, mentors, parents, volunteers, community college partners, industry partners and sponsors, community, CTE advisory, Board members, and everyone who helped make our Innovation Agility programs possible. These programs, and the opportunities they offer students, would not be possible without this strong community support.

