



# 7 TIPS TO SUCCEED IN A CAREER TECHNICAL EDUCATION PROGRAM

## 1. BE SERIOUS

**From the very first day, take college seriously!**

College is expensive, you want to spend your time wisely. Avoid wrong turns down your path to success by working with a counselor every step of the way.

## 2. ENTRANCE ASSESSMENTS

**Prior to your first year you are required to take assessment exams.**

Place as high as you can on your assessment tests. Spend time working on the practice exams and go to your assessment test appointment ready, well rested, and focused.

## 3. ORIENTATION

**You are also required to attend your school's orientation.**

Pay attention during your orientation. This will be your first chance to learn about college and the steps you will need to follow to reach your goal.

## 4. STUDENT EDUCATION PLAN

**During your first year of college it's important to develop a student education plan.**

A counselor can make sure you are taking the appropriate college classes based on your assessment scores and academic level. They can also help guide you through your major and career decision-making process. Be sure to also visit the Career Center on your campus, which is an additional resource where you can find what careers fit your personality, lifestyle expectations, and meets the timeframe you want to devote to your education and training.

## 5. RESOURCES

**Take advantage of all college resources.**

There are many available to support your plans to complete your goals without interruptions. Tutoring, Learning Communities, and student support programs are at your college to help you earn the highest grades possible.

## 6. WORK EXPERIENCE & INTERNSHIPS

**It's never too soon to get work experience or to find an internship.**

Look for work experience and internships as soon as you feel ready to apply the skills that you have been learning in your program of study. Having a complete resume with relevant experience when pursuing your first entry-level position will make you a top candidate for any career you are seeking.

## 7. COMMUNICATION

**Don't be afraid to communicate with your instructors.**

Your instructors can be one of the best resources you have in order to do well in your classes. They can give you feedback if you are having trouble understanding the course material, need assistance preparing for tests, or simply just want to check up on your grades. If you do well in the class, you can ask them for letters of recommendation or to be used as a reference for future internships or jobs.

# GETTING STARTED

## DEAR EDUCATOR,

Preparing students to be “college and career ready” gives you the opportunity to help students identify not only their academic strengths but also personal interests as it relates to career readiness choices. Our goal for students is to start narrowing career opportunities to plan their high school into postsecondary pathways. You can use this guide to help students match their academic strengths and interests with in demand industry careers.

In the back of the guide are tables of the community colleges’ various CTE programs. In addition, there are helpful websites so you can access career exploration and toolkits to plan the coursework preparation needed to complete pathways offered by your site or district. Thank you for your commitment to the education of our future workforce!



# AGRICULTURE & NATURAL RESOURCES

Agriculture is California's most important economic industry and careers in Agriculture and Natural Resources are many and varied. Careers range from turf management at municipal golf courses, operating avocado ranches, working as fish and game wardens to researchers in Biological Sciences. Employees in this industry might work in a lab, on a farm, ranch, dairy, orchard, greenhouse, plant nursery, or in a veterinarian office.



## CAREER PATHWAYS

### TRAITS AND SKILLS NECESSARY FOR SUCCESS IN THIS INDUSTRY

#### Are you?

- Interested in the environment
- A critical thinker
- Good at math and science
- Good with animals
- Interested in Biological Sciences
- Interested in the relationship between humans, the environment and natural resources
- Interested in developing, producing and maintaining nursery, landscaping, and floral industry- related products
- Interested in diagnosing, testing, and repairing large equipment using complex technology

#### Do you?

- Enjoy working outdoors
- Want to protect the environment
- Like working with people
- Have a green thumb
- Prefer practical, hands-on problems and solutions.

### EDUCATION LEVEL AND RELATED OCCUPATIONS

**High School** – Farm Equipment Operator, Veterinary Hospital Assistant, Park Ranger Aide

**Certificate and/or AA degree** – Farm Accountant, Animal/Plant Lab Technician, Landscape Contractor

**Bachelors+** – Agriculture Mechanics Teacher, Biotech Specialist, Landscape Architect

Description	2016 - 2021 Openings	Median Hourly Earnings
Agriculture & Natural Resources		
Farmers, Ranchers, and Other Agricultural Managers	520	\$14.55
Environmental Science and Protection Technicians, Including Health	420	\$23.07
Forest and Conservation Technicians	184	\$19.12
Floral Designers	228	\$15.89
Veterinary Technologists and Technicians	575	\$20.20
Veterinary Assistants and Laboratory Animal Caretakers	1,588	\$14.16
Landscaping and Groundskeeping Workers	10,721	\$12.91
Farmworkers and Laborers, Crop, Nursery, and Greenhouse	4,183	\$11.24

# CAREER PATHWAYS



## AGRICULTURAL BUSINESS

In the Agricultural Business pathway, you learn about agricultural business operation and management. Topics include accounting, finance, economics, business organization, marketing, and sales.

### Sample occupations associated with this pathway:

- Agriculture Inspector
- Farm and Ranch Manager
- Sales Representative
- Business Controller
- Agricultural Credit Manager

## AGRICULTURAL MECHANICS

The Agricultural Mechanics pathway prepares students for careers related to the construction, operation, and maintenance of equipment used by the agriculture industry.

### Sample occupations associated with this pathway:

- Agriculture Equipment Operator
- Farm Equipment Mechanic and Service Technician
- Agricultural Engineer
- Welder
- Equipment Fabricator

## AGRISCIENCE

In the Agriscience pathway you will study agriculture, agricultural business, agricultural technologies, natural resources, and animal, plant, and soil sciences.

### Sample occupations associated with this pathway:

- Research Assistant/Associate
- Water Quality Specialist
- Plant Scientist
- Agriscience Teacher
- Entomologist

## ANIMAL SCIENCE

In the Animal Science pathway, you will learn about large, small, and specialty animals. Students explore the necessary elements, such as diet, genetics, habitat, and behavior, to create humane, ecologically, and economically sustainable animal production systems. This pathway includes the study of animal anatomy and physiology, nutrition, reproduction, genetics, health and welfare, animal production, technology, and the management and processing of animal products and by-products.

### Sample occupations associated with this pathway:

- Veterinarian Technician
- Animal Caretaker/Kennel Operator
- Animal Breeder
- Ranch Manager
- Feed Nutritionist

## FORESTRY AND NATURAL SCIENCE

The Forestry and Natural Resources pathway helps students understand the relationships between California's natural resources and the environment. Topics include energy and nutrient cycles, water resources and management, soil conservation, wildlife preservation and management, forest and fire management, and lumber production. In addition, students study the outdoor recreation industry and multiple-use management.

### Sample occupations associated with this pathway:

- Forestry Technician
- Park Ranger
- Fish Hatchery Technician
- Logging Operation Inspector
- Biological Science Technician

## ORNAMENTAL HORTICULTURE

The Ornamental Horticulture pathway prepares students for careers in the nursery, landscaping, and floral industries. Topics include plant identification, plant physiology, soil science, plant reproduction, nursery production, and floriculture, as well as landscaping design, installation, and maintenance.

### Sample occupations associated with this pathway:

- Florist/Floral Designer
- Landscape Design/Architect
- Hydroponics Grower
- Botanical Specialist
- Nursery/Greenhouse Manager

## PLANT AND SOIL SCIENCE

The Plant and Soil Science pathway covers topics such as plant classification, physiology, reproduction, plant breeding, biotechnology, and pathology. In addition, students learn about soil management, water, pests, and equipment, as well as cultural and harvest practices.

### Sample occupations associated with this pathway:

- Soil Conservationist
- Environmental Analyst
- Plant and Soil Scientist
- Crop Consultant
- Pest Control Advisor

# ARTS, MEDIA & ENTERTAINMENT



Those with a passion for music, painting, drawing, dancing or performing can tap into the opportunities in the Arts, Media and Entertainment industry. This Sector offers careers in front of or behind the scenes. In addition, companies need multimedia production and graphic designers to create websites and game designers and programmers to keep gamers playing.

Of all the career industries, the Arts, Media, and Entertainment sector requires perhaps the greatest cross-disciplinary interaction because the work in this sector has a propensity to be largely project-based, requiring both independent work and interdependent management skills for career success. New technologies are also 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. Successful career preparation involves both broad and in-depth academic and technical preparation as well as the cultivation of twenty-first-century skill assets, such as flexibility, problem-solving abilities, and interpersonal skills. Careers in the Arts, Media, and Entertainment sector fall into four general pathways: Design, Visual, and Media Arts; Performing Arts; Production and Managerial Arts; and Game Design and Integration.

## CAREER PATHWAYS

### TRAITS AND SKILLS NECESSARY FOR SUCCESS IN THIS INDUSTRY

#### Are you?

- Independent, self-reliant, and inventive
- Creative and enjoy project-based assignments

#### Do you?

- Have an active imagination
- Like to paint, draw or perform, sculpt, write
- Play an instrument or dance
- Feel comfortable expressing feelings
- Love the energy of creativity and the excitement of performance
- Manage your own time
- Meet strict deadlines
- Like learning new technologies

### EDUCATION LEVEL AND RELATED OCCUPATIONS

**High School** – Film Loader/Animation Assistant, Actor/Announcer, Camera Loader

**Certificate and/or AA degree** – Videographer/Special Effects Coordinator, Radio/TV Broadcaster, 1st Assistant Camera Operator/Gaffer

**Bachelors+** - Sound Engineer/Script Writer, Film Composer, Line Producer/Visual Effects Coordinator

Description	2016 - 2021 Openings	Median Hourly Earnings
Arts, Media & Entertainment		
Meeting, Convention, and Event Planners	921	\$23.62
Web Developers	1,204	\$29.42
Multimedia Artists and Animators	364	\$23.66
Graphic Designers	1,902	\$23.08
Actors	456	\$16.38
Music Directors and Composers	324	\$23.75
Photographers	1,103	\$15.96

# CAREER PATHWAYS



## DESIGN, VISUAL AND MEDIA ARTS

The Design, Visual, and Media Arts pathway includes those occupations that use visual art, digital media, and Web-based tools and materials as the primary means of communication and expression. In addition to an understanding of current workplace practice, this career pathway requires the development of knowledge and skills in both visual art concepts as well as new and emerging digital processes by which individuals are able to create and communicate complex concepts in a broad range of occupations and professions.

### Sample occupations associated with this pathway:

- Digital Animator
- Artistic Director
- Commercial Artist
- Web Designer
- Museum Curator

## PERFORMING ARTS

The Performing Arts pathway focuses on the direct creation of art and entertainment by the individual artist instead of through a secondary physical medium. Performing artists are themselves the medium of creative expression.

### Sample occupations associated with this pathway:

- Composer, Music Arranger, Conductor
- Actor (e.g., Stage, Film, Video), Performing Artist
- Singer, Dancer, Musician
- Voiceover Artist, Narrator

## PRODUCTION AND MANAGERIAL ARTS

Whatever the form or medium of creative expression, all careers in the Arts, Media, and Entertainment sector require “publication” or a public presentation in one way or another. Consequently, the Production and Managerial Arts pathway focuses on both the technical skills and the organizational and managerial knowledge necessary to bring arts, media, and entertainment to the public.

### Sample occupations associated with this pathway:

- Event Planner
- Producers/Directors for Theater, Television, Concerts, and Motion Picture
- Stage Manager/Production Manager
- Talent Management
- Theatrical and Broadcast Technician

## GAME DESIGN AND INTEGRATION

Students who follow the Game Design and Integration pathway prepare for careers within the game design industry and in related technical fields. Students will develop foundational knowledge in game design, animation, graphics, and computer software and hardware. They will apply skills in Mathematics, Physics, English Language Arts, Social Science, and Entrepreneurship. Most importantly, students will learn the twenty-first century skills of creativity, critical thinking, communication, collaboration, and technical expertise, which will increase employment capacity across the job market.

### Sample occupations associated with this pathway:

- 2-D/3-D Animator
- Computer Game Designer/Developer
- Electronic Simulation Consultant

# BUILDING & CONSTRUCTION TRADES



The Building and Construction Trades industry needs people who can work with their heads and hands to design and build office buildings, hospitals, shopping malls and housing communities. Once architects come up with a design, it takes a team of skilled trades people like plumbers, electricians, masons, roofers, framers and more to turn it into a finished structure. Craftsmen in this industry sector need a strong math background, good technology skills, and solid on-the-job experience.

The sector encompasses four career pathways: Cabinetry, Millwork, and Woodworking; Engineering and Heavy Construction; Mechanical Systems Installation and Repair; and Residential and Commercial Construction. These pathways emphasize processes, systems, and the way in which structures are built.

## CAREER PATHWAYS

### TRAITS AND SKILLS NECESSARY FOR SUCCESS IN THIS INDUSTRY

#### Are you?

- Good at math
- Interested in building things
- Comfortable working with tools
- A team player

#### Do you?

- Have a passion for handcrafted precision
- Dream of creating a city skyline
- Want to build massive infrastructures that connect and support our world
- Want to create the machines that will build our future
- Follow directions
- Prefer working outdoors
- Work on a project until all the pieces fit together
- Work with your hands

Description	2016 - 2021 Openings	Median Hourly Earnings
Building & Construction Trades		
Carpenters	5,653	\$23.75
Cement Masons and Concrete Finishers	772	\$25.24
Electricians	4,531	\$30.47
Plumbers, Pipefitters, and Steamfitters	3,802	\$25.79
Construction and Building Inspectors	679	\$33.97
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	1,721	\$27.57
Welders, Cutters, Solderers, and Brazers	1,942	\$23.95
Cabinetmakers and Bench Carpenters	401	\$17.08

### EDUCATION LEVEL AND RELATED OCCUPATIONS

**High School** – Machine Operator, Apprentice Engineer, Construction, Mechanical Construction Instructor

**Certificate and/or AA degree** – CNC Technician, Contractor/Electrician/Heavy Construction, HVAC Technician

**Bachelors+** - Designer/Engineer, Engineering & Heavy Construction, Carpentry Instructor

# CAREER PATHWAYS



## CABINETRY, MILLWORK AND WOODWORKING

The Cabinetry, Millwork, and Woodworking pathway provides learning opportunities for students interested in preparing for careers in cabinet construction, millwork, finish carpentry, and furniture making for both production and custom products.

### Sample occupations associated with this pathway:

- Cabinetmaker
- Cabinet Installer
- Woodworking Machinery Operator
- Custom Millwork Project Estimator
- Woodworking Engineer/Drafter (CAD)

## ENGINEERING AND HEAVY CONSTRUCTION

The Engineering and Heavy Construction pathway provides learning opportunities for students interested in preparing for careers in engineering and heavy industrial construction (roads, highways, subdivisions). The pathway includes instruction in the way in which these structures are built (Class A California License).

### Sample occupations associated with this pathway:

- Cement Mason
- Heavy Equipment Operator
- Iron Worker
- Welder
- Civil Engineer

## MECHANICAL SYSTEMS INSTALLATION AND REPAIR

The Mechanical Systems Installation and Repair pathway provides students with competencies fundamental for preparing for employment or advanced training in heating, ventilation, air-conditioning (HVAC) and appliance installation, maintenance, and repair. The pathway includes preparation for a Class C California License and EPA certification.

### Sample occupations associated with this pathway:

- HVAC Installation and Maintenance Specialist
- Plumbing Installer
- Sheet Metal Fabricator
- Mechanical Engineer/Technician
- Mechanical Construction Field Manager

## RESIDENTIAL AND COMMERCIAL CONSTRUCTION

The Residential and Commercial Construction pathway provides learning opportunities for students interested in preparing for careers in construction and building design, performance, and sustainability. The focus is on the manner in which residential and commercial structures are designed and built (Class B California License).

### Sample occupations associated with this pathway:

- Plumber
- Electrician
- Building Inspector
- Estimator
- Carpenter

# BUSINESS & FINANCE



It does not matter what a company makes, sells or services, every company needs people to account for and manage their money and their business. A career in Business and Finance offers exciting challenges, good pay, and a solid future. Education and training in this industry will help students acquire many marketable, real world skills. If students are good with numbers, enjoy working with the public, and want opportunities to advance in today's global workplace, check out options in this Sector.

Persons trained in fields such as business management, international trade, and various financial services specialties (e.g., accounting, banking, and investing) will find that their skills are highly marketable. Students master basic business principles and procedures before proceeding to the career path specializations. The specializations emphasize concepts of accounting and finance, including computer applications, taxes, investments, and asset management as well as pathways in international business and business management. 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.

## CAREER PATHWAYS

### TRAITS AND SKILLS NECESSARY FOR SUCCESS IN THIS INDUSTRY

#### Are you?

- Comfortable with numbers (accounting)
- Good at math
- Conscientious and reliable
- Culturally sensitivity
- Good with computer applications, taxes, business, investments, geography and asset management

#### Do you?

- Like to read business/financial information
- Follow the stock market
- Like to travel for business
- Recognize opportunity when you see it that others may not
- Want to create, organize and manage a business
- Believe in yourself
- Have an idea for a product or service that is unique

### EDUCATION LEVEL AND RELATED OCCUPATIONS

**High School** – Account Clerk, Bank Teller, Claims Clerk/Insurance, Customer Service Representative

**Certificate and/or AA degree** – Tax Preparer, Loan Specialist, Logistics Specialist, International Sales Representative

**Bachelors+** - Accountant, International Marketing Coordinator, Finance Director/Financial Planner, Appraiser

Description	2016 - 2021 Openings	Median Hourly Earnings
Business & Finance		
Human Resources Specialists	2,561	\$31.32
Loan Officers	1,142	\$37.16
Tax Preparers	631	\$22.19
Paralegals and Legal Assistants	1,566	\$30.79
Real Estate Brokers	928	\$30.92
Real Estate Sales Agents	2,300	\$17.77
Bookkeeping, Accounting, and Auditing Clerks	9,549	\$21.01
Legal Secretaries	1,439	\$22.58

# CAREER PATHWAYS



## BUSINESS MANAGEMENT

Management consists of planning, leading, and controlling an organization or effort to accomplish a goal. In the Business Management pathway, students learn entrepreneurship and business fundamentals, goal-setting, resource allocation, organizational structure and management techniques, economics, financial data, risk management, information technology, and supply chain management.

### Sample occupations associated with this pathway:

- Human Resources Specialist
- Education Administrator
- Purchasing Agent
- Office Manager
- Chief Financial Officer

## FINANCE SERVICES

Financial services are an essential aspect of every business institution and organization. Students in this pathway investigate the field of financial management, including how it is impacted by industry standards as well as economic, financial, technological, international, social, legal, and ethical factors. Students formulate and interpret financial information for use in financial management decision making, such as compliance and risk management. This pathway may include programs of study for accounting, banking, securities and investments, and other financial specializations.

### Sample occupations associated with this pathway:

- Accounts Payable Clerk
- Investment Consultant
- Tax Preparer
- Auditor
- Accountant

## INTERNATIONAL BUSINESS

The relative ease of travel and the use of electronic communication have seemingly diminished the size of the globe, yet the interdependence of countries for goods and services causes this marketplace to grow, thrive, and become increasingly more competitive. Students focusing on the occupational area of international trade develop an understanding of the global business environment and the interconnectedness of cultural, political, legal, historical, economic, and ethical systems.

### Sample occupations associated with this pathway:

- International Shipping Specialist
- Export Sales Representative
- Customs Broker
- Customs Inspector
- International Market Researcher

# EDUCATION, CHILD CARE & FAMILY SERVICES



Those who choose careers in the Education, Child Care and Family Services Pathway are motivated to do so by their desire to teach and help others. The caring, capable and committed professionals who work in this industry educate students, help get young children off to a great start, and offer a helping hand to those in need. Because this sector grows as quickly as the population expands, the demand for qualified people will remain strong.

The Education, Child Development, and Family Services sector provides students with the academic and technical preparation to pursue high-skill, high-demand careers in these related and growing industries. The sector encompasses four distinct, yet interrelated, career pathways: Child Development, Consumer Services, Education, and Family and Human Services. The Child Development pathway provides students with the skills and knowledge they need to pursue careers. In child care and related fields, and the Education pathway emphasizes the preparation of students to become teachers. The Consumer Services pathway gives students the employment and management skills needed in careers that involve helping consumers. The Family and Human Services pathway provides students with skills needed for careers related to family and social services.

## CAREER PATHWAYS

### TRAITS AND SKILLS NECESSARY FOR SUCCESS IN THIS INDUSTRY

#### Are you?

- A good communicator
- Enthusiastic and optimistic attitude

#### Do you?

- Like helping people
- Enjoy teaching/working with others
- Plan and organize activities
- Affect others as your favorite teacher affected you
- Like opportunities for advancement now and in the future
- Make a difference in people's lives unique

### EDUCATION LEVEL AND RELATED OCCUPATIONS

**High School** – Child Care Provider, Preschool Aide, Customer Service Representative, Teacher's Aide

**Certificate and/or AA degree** – Parent Educator, Preschool Teacher, Public Relations Representative, Preschool Director/Supervisor

**Bachelors+** – Child Protection Services Worker, Product & Development Researcher; Elementary, Secondary or Postsecondary Teacher

Description	2016 - 2021 Openings	Median Hourly Earnings
Education, Child Care & Family Services		
Child, Family, and School Social Workers	1,479	\$25.79
Mental Health and Substance Abuse Social Workers	632	\$23.35
Preschool Teachers, Except Special Education	2,366	\$14.43
Teacher Assistants	6,944	\$14.91
Occupational Therapists	552	\$44.12
Occupational Therapy Assistants	352	\$34.80
Childcare Workers	9,514	\$12.23

# CAREER PATHWAYS



## CHILD DEVELOPMENT

The Child Development pathway is designed to prepare students to pursue a career in the field of childcare and development for infants, toddlers, and young children. Students study child growth and development, safety and emergency procedures, nutrition and health practices, positive interaction and guidance techniques, learning theories, and developmentally appropriate practices and curriculum activities. Students apply this knowledge in a variety of early childhood programs, such as child development laboratories, public and private preschools, family day care settings, and recreational facilities. Students completing the program may apply for the Child Development Assistant Permit from the California Commission on Teacher Credentialing.

### Sample occupations associated with this pathway:

- Child Care Worker
- Child Development Specialist
- Child Psychologist
- Family Service Advocate

## CONSUMER SERVICES

The Consumer Services pathway focuses on a broad-based curriculum designed to prepare students for careers helping customers, including credit counselors, consumer reporters, writers, and consumer affairs directors. Students learn employment, entrepreneurial, and management skills that include business structure; consumer rights and responsibilities; testing and demonstration of products; consumer

communications; and energy, environment, and resource management.

### Sample occupations associated with this pathway:

- Media Product Demonstrator
- Customer Service Representative
- Personal Financial Advisor
- Accountant
- Credit Counselor

## EDUCATION

The Education pathway is designed to prepare students for professional or learning support positions in education, prekindergarten through grade twelve. Students study human development; standards, regulations, and codes; positive guidance and counseling techniques; age-appropriate and grade-appropriate learning strategies; learning theories; and standards-based curriculum and instructional design. Students can apply and practice their knowledge and skills at a variety of elementary and secondary education sites.

### Sample occupations associated with this pathway:

- Before/Afterschool Program Aide
- Primary/Secondary School Teacher
- School Counselor
- Educational Administrator
- Speech Therapist

## FAMILY AND HUMAN SERVICES

Employment growth in the Family and Human Services pathway will likely be driven by an increasing demand for family assistance. Students learn employment and management skills, such as positive guidance, professional behavior and standards, and laws and regulations related to the field. Students also learn about nutrition, health, aging, and safety.

### Sample occupations associated with this pathway:

- Sample occupations associated with this pathway:
- Personal Care Assistant
- Human Services Program Specialist
- Social Outreach Director Community
- Organizational Director

# ENERGY, ENVIRONMENT & UTILITIES



With the increase in public investments in renewable energy, clean energy generation, energy efficiency and the Smart Grid, career opportunities in the Energy, Environment, and Utilities industry will continue to grow. In fact, jobs in energy and the environment could triple over the next decade. Energy employers need skilled workers for traditional energy jobs as well as future energy-related positions.

People are obsessed with energy...how to make it more available, how to make it less expensive, how to use it more efficiently, and how to use it without hurting the environment. There are four circuits to this pathway: Electromechanical Installation and Maintenance, Energy and Environmental Technology, Public Utilities, and Residential and Commercial Energy and Utilities. These four options lead to hundreds of exciting careers - everything from installing the wiring in a new high-rise to maintaining the electrical grid for the entire state. The Energy Efficiency & Utilities (EE&U) sector employs technicians in electrical, mechanical, and construction jobs as well as architects, engineers, business managers, sales/marketing professionals, and public policy specialists.

## CAREER PATHWAYS

### TRAITS AND SKILLS NECESSARY FOR SUCCESS IN THIS INDUSTRY

#### Are you?

- Interested in the environment
- A good problem solver

#### Do you?

- Like to work outdoors
- Adapt to change
- Like math and science
- Want to help the environment
- Want to reduce emissions and address climate change

Description	2016 - 2021 Openings	Median Hourly Earnings
Energy, Environment and Utilities		
Environmental Science and Protection Technicians, Including Health	420	\$22.62
Hazardous Materials Removal Workers	253	\$21.60
Telecommunications Equipment Installers and Repairers, Except Line Installers	1,775	\$26.67

### EDUCATION LEVEL AND RELATED OCCUPATIONS

**High School** - Waste Management Worker, Electrical Worker, Utilities Worker, Meter Reader

**Certificate and/or AA degree** - Waste Management Technician, Utility Technicians, Environmental Pollution Technician, Powerline Technician

**Bachelors+** - Waste Management Engineer, Energy Management Engineer, Utilities Engineer, Facilities Design Engineer



## ENVIRONMENTAL SERVICES

The Environmental Resources pathway prepares students for employment, postsecondary education, and/or training in a variety of environmental industries.

### Sample occupations associated with this pathway:

- Air Quality Technician
- Climatologist
- Environmental Biologist/Technician/Scientist
- Environmental Health and Safety Officer
- Hazardous Waste Operations and Emergency Response Technician

## ENERGY AND POWER TECHNOLOGY

The Energy and Power Technology pathway provides learning opportunities for students interested in preparing for careers in the energy and power industries.

### Sample occupations associated with this pathway:

- Energy Efficiency Evaluation Specialist
- Energy Engineer
- Energy Generation/Power Distribution, Maintenance, Inspection, and Repair Technicians
- Energy/Building Retrofit Specialist
- Plant/Field Weatherization Installer

## TELECOMMUNICATIONS

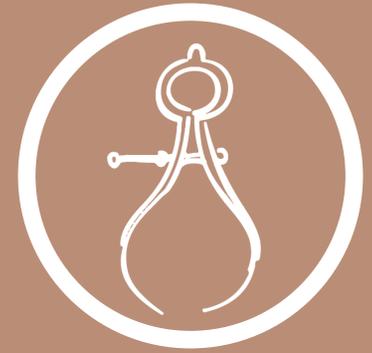
The Telecommunications pathway prepares students for employment and postsecondary education and training in the wireless and fixed-line communications industries. The sharing of information is essential for personal, commercial, educational, government, and military functions. Information is stored, sent, and accessed primarily via the telecommunications industries.

### Sample occupations associated with this pathway:

- Cable/Telecommunications Installation and Maintenance Technicians
- Line Workers
- Network Operators, Technicians, Designers, and Managers
- Network Security Administrator
- Satellite Systems Installation/Engineers

# ENGINEERING & ARCHITECTURE

The world's future will be propelled by ideas that will be developed by those working in the Engineering & Architecture industry sector. As the population continues to grow, engineers and architects will be called upon to imagine the future and turn it into reality. This sector is designed to provide a foundation in engineering, architecture, and design. There are four pathways that emphasize real-world, occupationally relevant experiences of significant scope and depth: Architectural Design; Engineering Technology; Engineering Design; and Environmental Engineering.



## CAREER PATHWAYS

### TRAITS AND SKILLS NECESSARY FOR SUCCESS IN THIS INDUSTRY

#### Are you?

- Good at math (*creating new designs, new ideas*)
- A good problem solver (*analytical skills*)

#### Do you?

- Like to work collaboratively
- Have innovative ideas
- Pay attention to detail
- Like to work as part of a team and have a strong work ethic

### EDUCATION LEVEL AND RELATED OCCUPATIONS

**High School** - CAD Technician, Drafting Apprentice, Apprentice Electrician, Design/Drafting Apprentice

**Certificate and/or AA degree** - Drafter/Designer Estimator, Computer Networking Technician, Drafter/Designer

**Bachelors+** - Architect, Civil Engineer, Computer Engineer, Structural Engineer

Description	2016 - 2021 Openings	Median Hourly Earnings
Engineering and Architecture		
Architects, Except Landscape and Naval	646	\$35.68
Architectural and Civil Drafters	616	\$27.61
Electrical and Electronics Drafters	239	\$27.25
Engineering Technicians, Except Drafters, All Other	586	\$31.26
Structural Iron and Steel Workers	496	\$30.87
Structural Metal Fabricators and Fitters	454	\$21.79

# CAREER PATHWAYS



## ARCHITECTURAL DESIGN

The Architectural Design pathway provides learning opportunities for students interested in preparing for careers in such areas as architecture, industrial design, and civil engineering.

### Sample occupations associated with this pathway:

- Drafter
- Architect
- Structural Designer
- Building Department Plan Examiner
- City Planner

## ENGINEERING TECHNOLOGY

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.

### Sample occupations associated with this pathway:

- Surveyor
- Research and Development Analyst
- Engineering Technologist
- Field Engineer
- Operations Engineer

## ENGINEERING DESIGN

The Engineering Design pathway provides learning opportunities for students interested in preparing for careers in the design and production of visual communications.

### Sample occupations associated with this pathway:

- Mechanical/Electrical Drafter
- Design Engineer
- Manufacturing Design Engineer
- Project Architect

## ENVIRONMENTAL ENGINEERING

The Environmental Engineering pathway includes design and development processes, equipment, and systems that are used to create, monitor, prevent, or correct environmental events and conditions.

### Sample occupations associated with this pathway:

- Environmental Safety Technician
- Environmental Specialist
- Environmental Analyst Environmental Scientist
- Air Pollution Control Engineer

# FASHION & INTERIOR DESIGN

Interior designers enhance the function, safety, and aesthetics of interior spaces. They work with colors, textures, furniture, lighting, and space planning for both public and private buildings. Fashion designers study fashion trends, sketch designs, select colors and fabrics, and oversee the final production of the clothing and accessories they create.



For people with a great sense of style and a strong creative drive, this pathway can take you to amazing places. If you dream about designing clothing or starting your own fashion line, you may want to check out Fashion Design, Manufacturing and Merchandising to see if it suits your style. On the other hand, if you see yourself designing stunning living spaces, Interior Design, Furnishings and Maintenance may be where you can see yourself.

## CAREER PATHWAYS

### TRAITS AND SKILLS NECESSARY FOR SUCCESS IN THIS INDUSTRY

#### Are you?

- Creative
- Interested in manufacturing, marketing, and distribution
- Interested in creating computerized pattern-making and/or product data management

#### Do you?

- Like to draw, paint, or sew
- Follow fashion/decorating trends
- Like to decorate own space
- Have an eye for color
- Create fashion statements and styles

Description	2016 - 2021 Openings	Median Hourly Earnings
Fashion Merchandising		
Fashion Designers	144	\$28.18
Interior Designers	760	\$24.75
Barbers	352	\$17.43
Hairdressers, Hairstylists, and Cosmetologists	4,982	\$11.54
Manicurists and Pedicurists	2,460	\$10.01

### EDUCATION LEVEL AND RELATED OCCUPATIONS

**High School** - Sales Associate, Design Assistant, Set Decorator

**Certificate and/or AA degree** - Visual Merchandiser, Stylist, Facility and Space Planner, Assistant Designer

**Bachelors+** - Fashion Designer, Fashion Merchandising Manager, Interior Designer, Lighting Specialist



## FASHION DESIGN AND MERCHANDISING

The Fashion Design and Merchandising pathway focuses on the major aspects of the fashion industry and prepares students for careers and/or postsecondary education in this rapidly growing field. Students pursuing this career pathway have in-depth, hands-on experiences that focus on industry awareness, sustainable practices, elements and principles of design, history of fashion, fashion forecasting, textiles and textile products, product knowledge, apparel merchandising, and garment production.

### Sample occupations associated with this pathway:

- Display or Sales Associate
- Merchandising Manager
- Fashion Designer

## INTERIOR DESIGN

The Interior Design pathway is designed to prepare students for careers and/or postsecondary education in this rapidly growing field. Students pursuing this career pathway study the principles and elements of design along with presentation skills. They gain knowledge of materials and products, including but not limited to furnishings, fabrics, fixtures and treatments, sourcing products, space planning, specifications, and interior systems. Students will also be exposed to state-of-the-industry, computer-aided design and the emerging field of sustainability.

### Sample occupations associated with this pathway:

- Set Decorator
- Certified Kitchen and Bath Specialist
- Interior Designer

## PERSONAL SERVICES

Students who follow the Personal Services pathway develop the essential concepts, knowledge, principles, and skills to be successful in the career opportunities in this industry. Careers or subjects in this field include barbering, cosmetology, makeup artistry, and manicuring, with the emphasis on client consultation, health/safety, service/treatment protocols, product/equipment knowledge, marketing/promotion, management, and business practices.

### Sample occupations associated with this pathway:

- Barber
- Esthetician
- Hair Stylist
- Makeup Artist
- Manicurist

# HEALTH SCIENCE & MEDICAL TECHNOLOGY



Caring students looking for a “recession-proof” career path will want to explore healthcare opportunities available in Health Science and Medical Technology. Surprisingly doctors and nurses comprise less than 40% of healthcare professionals, while allied health professionals make up an estimated 60% of the US healthcare workforce. Because almost all health professions are experiencing shortages, careers in this Pathway offer promising futures.

That means the demand for healthcare professionals is strong...and getting stronger every day. If you're the kind of person who enjoys caring for other people, now is the perfect time to check out the Health Science and Medical Technology career pathway. This pathway can lead you to many different specialties, including Nursing, Biotechnology Research and Development, Diagnostic Services, Health Informatics (using cutting-edge technology to store and retrieve medical data), Support Services, and Physical Therapy.

## CAREER PATHWAYS

### TRAITS AND SKILLS NECESSARY FOR SUCCESS IN THIS INDUSTRY

#### Are you?

- A problem solver
- Interested in science
- Comfortable in health care setting
- Compassionate, committed and caring

#### Do you?

- Like working on a team
- Pay attention to detail
- Like science and math

### EDUCATION LEVEL AND RELATED OCCUPATIONS

**High School** – Biotechnology Assistant, Medical Lab Aide, Health Unit Coordinator

**Certificate and/or AA degree** – Biotechnology Technician, Medical Lab Technician, Medical Transcriptionist

**Bachelors+** - Biotechnology Scientist, Radiologist, Hospital/Nursing Home Administrator

Description	2016 - 2021 Openings	Median Hourly Earnings
Health Science & Medical Technology		
Respiratory Therapists	405	\$36.76
Registered Nurses	8,894	\$43.83
Dental Hygienists	991	\$43.89
Cardiovascular Technologists and Technicians	118	\$30.14
Diagnostic Medical Sonographers	276	\$44.62
Radiologic Technologists	631	\$34.30



## BIOTECHNOLOGY

The standards for the applications of the Biotechnology pathway relate to occupations and functions relevant for understanding and solving biomedical problems and creating products to improve the quality of human life.

### Sample occupations associated with this pathway:

- Clinical Trials Research Coordinator
- Forensic Pathologist
- Biostatistician
- Geneticist Lab Assistant

## PATIENT CARE

The standards for the Patient Care pathway apply to occupations or functions involved in the prevention, treatment, and management of illness and the preservation of mental and physical well-being through the services offered by the medical and allied health professions.

### Sample occupations associated with this pathway:

- Kinesiotherapist
- Nurse Anesthetist
- Respiratory Therapist
- Radiologic Technician
- Dental Hygienist

## HEALTH CARE ADMINISTRATIVE SERVICES

Health care administrative workers include site administrators, managers, attorneys, receptionists, secretaries, billing and coding specialists, health informatics technicians, accountants, managers, and other knowledge workers that support the process of patient care. Health care administrative workers are the invisible backbone of health care; without appropriately skilled workers in these fields, health care systems simply could not function.

### Sample occupations associated with this pathway:

- Clinical Data Specialist
- Ethicist
- Medical Illustrator
- Health Care Administrator

## HEALTH CARE OPERATIONAL SUPPORT SERVICES

The standards for the Operational Support Services pathway apply to occupations or job functions necessary to provide an environment and support systems for the delivery of health care. Careers could include central supply, facility maintenance, food services, interior decorating, housekeeping, biomedical engineering, epidemiology, social worker, biomedical technician and others.

### Sample occupations associated with this pathway:

- Clinical Simulator Technician
- Central Service Technician
- Hospital Management Engineer
- Materials Manager

## PUBLIC AND COMMUNITY HEALTH

The standards for the Public and Community Health pathway apply to occupations or functions involved primarily in environmental health, community health and health education, epidemiology, disaster management, and geriatrics.

### Sample occupations associated with this pathway:

- Community Health Worker
- Epidemiologist
- Health Educator
- Advocate
- Environmentalist

## MENTAL AND BEHAVIORAL HEALTH

The standards for mental and behavioral health relate to occupations that assist clients on their journey toward better health. Collaborating with other departments as members of interdisciplinary teams of mental health professionals, such as psychiatrists, psychologists, registered nurses, and other disciplines, they assist with delivery of appropriate, quality treatment to patients with behavioral health concerns, psychological crises, and other biopsychological problems.

### Sample occupations associated with this pathway:

- Mental Health Therapist
- Outreach Coordinator
- Psychologist
- Psychiatric Technician
- Mental Health Researcher

# HOSPITALITY, TOURISM & RECREATION

California is a top destination for people from around the globe. They come to visit the state's mountains and beaches, wine country, and unique entertainment destinations. Consequently, there are many and varied career opportunities in this sector. From chef or concierge, tour guide or park ranger, travel agent or museum director this industry offers job opportunities with a passion for food, travel, sports, or nutrition.



If you like the idea of mixing business and pleasure, you can follow this path to a rewarding career where you'll literally create excitement for a living. The Hospitality, Tourism and Recreation pathway leads to three different journeys. For people interested in the healthy side of eating, there's Food Science, Dietetics and Nutrition; for those who'd rather focus on the fun side of food, there's Food Service and Hospitality; and for people who want to help folks enjoy their holiday, there's Hospitality, Tourism and Recreation.

## CAREER PATHWAYS

### TRAITS AND SKILLS NECESSARY FOR SUCCESS IN THIS INDUSTRY

#### Are you?

- Friendly, outgoing, people oriented
- Energetic and creative
- OK with working long hours

#### Do you?

- Have a good customer service attitude
- Like travel/new experiences

### EDUCATION LEVEL AND RELATED OCCUPATIONS

**High School** - Dietary Aide, Food Product Tester, Line Cook, Front Desk Worker

**Certificate and/or AA degree** - Dietetic Technician, Personal Chef, Caterer, Event/Wedding Planner

**Bachelors+** - Registered Dietician, Food Scientist, Sous/Executive Chef, Manager hotel/club/resort

Description	2016 - 2021 Openings	Median Hourly Earnings
Hospitality, Tourism & Recreation		
Food Service Managers	2,818	\$24.86
Chefs and Head Cooks	1,314	\$19.89
Cooks, Restaurant	13,838	\$12.23
Food Preparation Workers	10,950	\$11.05
Food Preparation and Serving Related Workers, All Other	1,235	\$11.00
Concierges	336	\$16.18
Hotel, Motel, and Resort Desk Clerks	2,782	\$12.64
Legal Secretaries	1,439	\$22.58



## FOOD SCIENCE, DIETETICS AND NUTRITION

The Food Science, Dietetics, and Nutrition pathway focuses on three specializations centered on the science of food and its relationship to the health and well-being of individuals. Students pursuing this career pathway learn about industry awareness; food safety and sanitation; workforce and organizational management; food, fitness, and wellness; nutritional requirements and processes; food chemistry and technology; research and product development; and marketing and public relations.

### Sample occupations associated with this pathway:

- Food Demonstrator
- Certified Fitness Nutritionist
- Nutritionist
- Registered Dietitians

## FOOD SERVICE AND HOSPITALITY

The Food Service and Hospitality pathway focuses on the key aspects of the industry. Students pursuing this career pathway have in-depth, hands-on experiences that emphasize industry awareness; sanitation and safe food handling; food and beverage production; nutrition; food service management; and customer service.

### Sample occupations associated with this pathway:

- Food Expeditor
- Restaurant Manager
- Banquet and Catering Director
- Research Chef
- Executive Chef

## HOSPITALITY, TOURISM, AND RECREATION

The Hospitality, Tourism, and Recreation pathway integrates various facets of the hospitality industry: lodging, travel, and tourism; event planning; theme parks, attractions, and exhibitions; and recreation. Students engaged in this pathway have broad experiences related to the specific industry segments, including: industry awareness; organizational management; customer service; sales and marketing; facilities management; lodging; travel destinations; and reservations, ticketing, and itineraries.

### Sample occupations associated with this pathway:

- Guest Services Agent
- Director of Conference Services
- Certified Meeting/Event Planner
- Theme Park Director

# INFORMATION & COMMUNICATION TECHNOLOGY



From conquering disease to eliminating hunger, from improving education to protecting the environment- information technology is key to finding positive solutions. Information and Communication Technology spans almost all areas of business and qualified Information and Communication Technology professionals are in high demand. Computers are everywhere in our professional and personal lives, and people who can help those computers communicate with us- and with each other- are in high demand. If you want to know computers inside and out, the Information Technology Industry career pathway might be perfect for you.

Information and Communication Technologies (ICT) have expanded the need for employees who can understand, manage, and support all rapidly emerging, evolving, and converging computer, software, networking, telecommunications, Internet, programming, and information systems. Essential skills for careers in the ICT 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. The ICT sector meets national criteria for high demand, high wages, and high skills and provides students with excellent opportunities for interesting work and good pay. More than 70 percent of jobs in this sector will require a bachelor's degree or higher by 2018.

## CAREER PATHWAYS

### TRAITS AND SKILLS NECESSARY FOR SUCCESS IN THIS INDUSTRY

#### Are you?

- Orderly and organized
- Good at solving puzzles
- Interested in tinkering with electrical equipment
- Comfortable in a fast-paced work environment

#### Do you?

- Enjoy playing video games
- Like working on creative teams to develop cutting-edge products and solutions
- Keeping computer and networks operating in a variety of industries including healthcare, education, finance and entertainment
- Enjoy explaining technology to non-technology users.

### EDUCATION LEVEL AND RELATED OCCUPATIONS

**High School** - Administrative Assistant, Computer Operator, Web Page Developer, Network Systems Assistant, Administrator

**Certificate and/or AA degree** - Desktop Publisher, Computer Graphic Artist, Web Designer, Software/Hardware Installer

**Bachelors+** - Software Engineer, Graphic Designer, Web Architect, Network Manager

Description	2016 - 2021 Openings	Median Hourly Earnings
Information & Communication Technologies		
Computer Programmers	1,001	\$36.53
Software Developers, Applications	4,034	\$51.23
Software Developers, Systems Software	3,118	\$55.64
Network and Computer Systems Administrators	1,265	\$39.63
Computer Network Architects	487	\$50.65
Computer User Support Specialists	2,605	\$27.21
Computer Network Support Specialists	730	\$31.16



## INFORMATION SUPPORT AND SERVICES

Students in the Information Support and Services pathway prepare for careers that involve the implementation of computer services and software, support of multimedia products and services, provision of technical assistance, creation of technical documentation, and the administration and management of information and communication systems. Mastery of information and communication technologies is the foundation for all successful business organizations today. Persons with expertise in information and communication technologies support and services are in high demand for a variety of positions in business and industry.

### Sample occupations associated with this pathway:

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

## NETWORKING

Students in the Networking pathway prepare for careers that involve network analysis, planning, and implementation, including the design, installation, maintenance, and management of network systems. The successful establishment, maintenance, and securing of information and communication technologies infrastructure is critical to the success of every twenty-first-century organization. Employment continues to grow for persons with expertise in networking.

### Sample occupations associated with this pathway:

- Computer Security Specialist
- Network Technician
- Network Engineer
- Network Administrator
- Telecommunication Specialist

## SOFTWARE AND SYSTEMS DEVELOPMENT

Students in the Software and Systems Development pathway prepare for careers related to computer science that involve the design, development, implementation, maintenance, and management of systems that rely on software programs to satisfy the operational needs of modern business organizations. Persons with expertise in systems development and programming are critical to support operations like electronic commerce, medical records management, retail sales and inventory management, digital entertainment, and use of energy.

### Sample occupations associated with this pathway:

- Computer Programmer
- Software Developer/Applications
- Information Security Analyst
- Web Developer
- E-Business/E-Commerce Specialist

## GAMES AND SIMULATION

Students in the Game and Simulation pathway learn relevant technical knowledge and skills to prepare for further education and careers such as Game/Simulation Designer, Game Programmer, and Game Software Developer. Game and simulation design requires that students have a solid foundational understanding of game design, hardware, graphics, and animation. Persons with expertise in game and simulation design have had practical experiences in game/simulation conceptualization, design, storyboarding, development methodologies, essential programming techniques, working with a team, and implementation issues.

### Sample occupations associated with this pathway:

- Game/Simulation Designer
- Game Programmer
- Game Software Developer
- Game Producer
- Multimedia Artist and Animator

# MANUFACTURING & PRODUCT DESIGN

From cars to contact lenses, lipstick to bicycles this industry sector creates some of the best products and highest paying skilled jobs in the workforce. While some manufacturing jobs are declining, high-tech manufacturing is hard at work creating products to solve many of today's most challenging problems. Because robots and automation take care of the repetitive work, today's manufacturing employees have more challenging and interesting job assignments.

No matter which one gets you fired up, you can turn your skill and creativity into a great career by following the Manufacturing and Product Development pathway.

Once you've learned the core knowledge and skills on this pathway, you'll have the chance to follow one of four different branches: Machine Tools, Welding, Graphic Communications and Graphic Design.



## CAREER PATHWAYS

### TRAITS AND SKILLS NECESSARY FOR SUCCESS IN THIS INDUSTRY

#### Are you?

- Curious about how things work
- At ease in the mechanical world

#### Do you?

- Like to work with your hands
- Follow assembly instructions
- Enjoy computer/technical magazines
- Like to work with computers/machines
- Use math skills
- Grasp how complicated equipment works
- Apply scientific and technical principles to structures and manufacturing processes

### EDUCATION LEVEL AND RELATED OCCUPATIONS

**High School** - Network Installer Educator Special Effects Animator, Maintenance Mechanic, Welder

**Certificate and/or AA degree** - Production Manager, Special Effects Editor, Machine Technician, Composite Fabricator

**Bachelors+** - Industrial and Technology Multimedia Author, Manufacturing Engineer, Quality Control Inspector

Description	2016 - 2021 Openings	Median Hourly Earnings
Manufacturing & Product Design		
Mobile Heavy Equipment Mechanics, Except Engines	330	\$25.90
Structural Metal Fabricators and Fitters	454	\$21.79
Machinists	2,232	\$23.98
Welders, Cutters, Solderers, and Brazers	1,942	\$23.22
Metal Workers and Plastic Workers, All Other	169	\$13.03



## GRAPHIC PRODUCTION TECHNOLOGIES

The Graphic Production Technologies pathway provides students with an understanding of printing and manufacturing processes and systems common to careers in the graphic arts and printing technology industries. Representative topics include the principles of design composition, graphic design and layout, typography, image generation and file preparation, photography, digital imaging, prepress preparation, printing and screen printing technologies, binding and finishing processes, multimedia blending, and business and entrepreneurship principles.

### Sample occupations associated with this pathway:

- Animator
- Commercial Photographer
- Digital/Graphic Artist
- Printing Press Operator
- Production Assistant

## MACHINING AND FORMING TECHNOLOGIES

The Machine and Forming Technologies pathway provides students with an understanding of manufacturing processes and systems common to careers in machine tool and materials forming industries. Representative topics include trade vocabulary; shop math; basic material identification; proper use of hand and machine tools; reading

precision measuring tools within .001” and the interpretation of machined and formed-part prints; the cutting, shaping, fastening, and finishing of machined parts; fixtures: forging, molding (casting), cold forming, and shearing processes.

### Sample occupations associated with this pathway:

- CAD/CAM Specialist
- CNC Machinist
- Manufacturing Engineer
- Materials/Supply Management Specialist
- Quality Assurance Technician

## WELDING AND MATERIALS JOINING

The Welding and Materials Joining pathway provides students with an understanding of manufacturing processes and systems common to careers in welding and related industries. The following pathway standards are based on, but not limited to, well established American Welding Society (AWS) EG2.0 Guidelines for the Entry Level Welder. Representative topics include the interpretation and layout of welded and assembled-part prints, cutting, mechanical bonding, joining, cohesive bonding, adhesive bonding, and mechanical fastening.

### Sample occupations associated with this pathway:

- Metal Fabricator
- Sales
- Welders, Cutters, and Fitters
- Welding Inspector/Welding Engineer

## PRODUCT INNOVATION AND DESIGN

The Product Innovation and Design pathway provides students with an understanding of the design and manufacturing technologies common to careers in the fields of product design and manufacturing. Representative topics include the product design and development process, the principles of design, computer aided design, fabrication and manufacturing processes, sustainability, and the principles of business, entrepreneurship, and global design.

### Sample occupations associated with this pathway:

- Commercial/Industrial Designer
- CAD Designer
- Model Maker
- Product Developer
- Product Manager

# MARKETING, SALES & SERVICE

The job of the Marketing, Sales and Service industry is to advertise and promote products so customers want to buy them. People who work in this industry use their creativity, imagination, and persuasive skills to get people to want and purchase the products they seek to sell. Using today's diverse and powerful communication tools and improved transportation systems, it is now possible to market, service and sell products to anyone anywhere in the world.



The Marketing, Sales, and Services sector is designed to align career-path course work with current and projected employment opportunities. There is a basic business foundation in this sector: marketing and innovation are two major competitive issues for business today. Marketing includes the processes and techniques of identifying, promoting, and transferring products or services to consumers and is a function of almost every business. It exists within an environment of rapidly changing technology, interdependent nations and economies, and increasing demands for ethical and social responsibility.

## CAREER PATHWAYS

### TRAITS AND SKILLS NECESSARY FOR SUCCESS IN THIS INDUSTRY

#### Are you?

- Persuasive
- Outgoing and friendly

#### Do you?

- Have creative ideas
- Like making presentations
- Have an entrepreneurial mindset
- Shop for yourself and others
- Sell the merits of a product or idea
- Use your ability to analyze and respond to emerging trends

### EDUCATION LEVEL AND RELATED OCCUPATIONS

**High School** – Sales Representative, Shipping and Receiving Clerk, Customer Service Representative, Small Business Entrepreneur, Office Buyer

**Certificate and/or AA degree** – Route Salesperson, Warehouse Manager, Marketing Manager, Retail/Wholesale

**Bachelors+** - Economist, International Distribution Manager, Account Executive, Chief Executive

Description	2016 - 2021 Openings	Median Hourly Earnings
Marketing, Sales & Service		
Marketing Managers	1,354	\$69.11
Advertising Sales Agents	807	\$25.27
Insurance Sales Agents	2,800	\$24.55
Travel Agents	360	\$19.02
Sales Representatives, Services, All Other	7,380	\$24.59
Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	2,107	\$35.73
Customer Service Representatives	14,215	\$17.52



## MARKETING

Using both creative and systems processes, develop marketing concepts and principles and their practical application in marketing and management. Subject matter includes market research, economics, marketing budgets, creative development and design, and marketing foundations/ functions with emphasis on public relations, advertising, branding, promotion, product/service management, pricing and distribution. Specialized programs of study in this field may include sports marketing, hospitality marketing, advertising or market research.

### Sample occupations associated with this pathway:

- Advertising Account Representative
- Advertising Sales Manager
- Market Research Analyst
- Marketing Manager
- Public Relations Specialist

## PROFESSIONAL SALES

Develop knowledge and skills in the theory and practice of sales designed to provide a professional foundation to those involved in personal selling careers, including the fundamentals of personal selling with an emphasis on customer behavior, persuasive presentation of ideas, products and services, and developing sales goals.

### Sample occupations associated with this pathway:

- Customer Service Representative
- Retail Salesperson
- Sales Manager
- Real Estate Broker
- Fashion Buyer

## ENTREPRENEURSHIP/ SELF-EMPLOYMENT

Develop knowledge and skills common to entrepreneurs and entrepreneurship, including the human characteristics vital for entrepreneurial thinking in a twenty-first-century global world. Entrepreneurial students learn the business knowledge and skills required for entrepreneurs, as well as intangible skills and knowledge such as creativity and innovation skills.

### Sample occupations associated with this pathway:

- Business Owner
- Consultant
- Insurance Broker
- Meeting/Event Planner
- Travel Agent

# PUBLIC SERVICES

Public Service are those services provided by government to its citizens, regardless of a person's income. Those who work in this sector help operate schools, parks, hospitals, airports, water and power utilities, and more. They collect taxes and spend public funds on projects and programs designed to benefit citizens. Careers in the Public Services Pathway include public officials and police and fire personnel. Careers in this field generally offer good benefits and job security.



A public service is one that is provided by government to its citizens, either directly or through the financing of another entity to provide that service. 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. Public service professions offer many career opportunities, including the following career pathways: Public Safety, Emergency Response, and Legal Practices.

If you're that kind of person, you may find the career of your dreams on the Public Services Industry pathway. There are a huge number of careers along this pathway, but they all start with three different branches: Human Services, Legal and Government Services and Protective Services.

## CAREER PATHWAYS

### TRAITS AND SKILLS NECESSARY FOR SUCCESS IN THIS INDUSTRY

#### Are you?

- Interested in current affairs
- Good at helping people solve problems
- Comfortable with community outreach

#### Do you?

- Have excellent references
- Want job security
- Like to help people solve problems
- Enjoy volunteering
- Want to provide community outreach
- Want to serve the public interest
- Want to improve the community

### EDUCATION LEVEL AND RELATED OCCUPATIONS

**High School** - Child Care Aide, Elected Official, Armed Forces, Emergency Medical Technician

**Certificate and/or AA degree** - Residential Counselor, Legal Clerk, Crime Scene Technician, Firefighter/Paramedic, Police Officer, Fire Captain/Chief

**Bachelors+** - Social Worker, Attorney, FBI Agent, Police Lieutenant/Captain/Chief

Description	2016 - 2021 Openings	Median Hourly Earnings
Public Services		
Probation Officers and Correctional Treatment Specialists	314	\$36.38
Paralegals and Legal Assistants	1,566	\$30.79
Emergency Medical Technicians and Paramedics	1,145	\$13.87
Firefighters	1,236	\$29.28
Correctional Officers and Jailers	1,242	\$33.83
Police and Sheriff's Patrol Officers	2,122	\$39.41



## PUBLIC SAFETY

The Public Safety pathway prepares students with a broad-based foundational knowledge in careers that involve public safety. The educational foundation will assist students who wish to pursue related professional training at the postsecondary level. The evolving integration of state public safety organizations, their connections with federal and state intelligence and security agencies, interoperability and coordination of effort, and the shared mission to protect the public in a post-9/11 world are areas of emphasis for the pathway. The careers included in this pathway primarily address law enforcement services, homeland and cyber security services, and correctional services.

### Sample occupations associated with this pathway:

- Animal Control Worker
- Correctional Officer/Probation Officer
- Law Enforcement Officer
- Loss Prevention Specialist
- Military Service

## EMERGENCY RESPONSE

The Emergency Response pathway encompasses standards for designing student coursework in preparation for a number of careers in this field. The standards provide the foundation for further professional education and training at a postsecondary level, leading to certification and employment. By mastering these standards, students gain critical knowledge and skills through classroom and job-site experiences, simulations, and other learning modalities. Careers in this pathway include those in fire services, emergency medical services, wildland services, and emergency management.

### Sample occupations associated with this pathway:

- Firefighter I, Firefighter II, Wildland Firefighter
- Emergency Medical Technician (EMT)
- Fire Prevention Technician
- Emergency Response Dispatcher
- Fire Management Officer

## LEGAL PRACTICES

The Legal Practices pathway prepares students with a broad-based foundation of knowledge pertaining to the various types of law and of legal practice and provides a foundation of basic skills necessary at all levels in the legal professions.

### Sample occupations associated with this pathway:

- Paralegal
- Court Reporter
- Law Librarian
- Legal Researcher
- Lawyer

# TRANSPORTATION



The Transportation industry is responsible for ensuring that people and things get to the right place, at the right time, for the right price. Using new technologies like Global Positioning Systems (GPS) and Radio Frequency Identification (RFID) tags, people in this industry are called on to move people and products from point A to point B by air, land and sea. It takes people with all different talents, skills, and training to keep things moving. ATRE (Advanced Transportation and Renewable Energy) represents an array of clean energy technologies that reduce climate change impact, reduce dependency on foreign energy, help grow a robust green economy and allow California to remain competitive in a global market. Renewable Energy is the fastest growing segment of the energy market.

Like any growing industry, there is an array of occupations and job opportunities that range from technical to managerial to research and innovation. This sector is designed to provide a foundation in transportation services for all industrial technology education students in California. There are eight focus areas that fall under the Transportation sector, each with different career opportunities. The focus areas are On-Road; Off-Road; Stationary; Rail; Water/Sea; Air; Space; and Small Engines and Specialty Equipment. Fortunately, some people seem to have a knack for making vehicles run smoothly. If you're one of those people, you should steer your way down the Transportation Industry career path.

You'll find three pathways in this sector: Aviation and Aerospace Transportation Services, Collision Repair and Refinishing, and Vehicle Maintenance, Service and Repair. Pick any of these branches and you'll learn transportation vehicles inside and out.

## CAREER PATHWAYS

### TRAITS AND SKILLS NECESSARY FOR SUCCESS IN THIS INDUSTRY

#### Are you?

- Good at operating tools/machinery

#### Do you?

- Enjoy travel
- Like to read maps/figure out routes
- Want to fly planes and operate trains and trucks
- Like to tinker with machines/motors
- Like electronics, computers & high technology

### EDUCATION LEVEL AND RELATED OCCUPATIONS

**High School** - Flight Attendant, Collision Repair Intern, Vehicle Maintenance Tech

**Cert and/or AA degree** - Airframe and Power Plant Tech, Collision Repair Technician, Smog Technician

**Bachelors+** - Pilot, Insurance Claims Adjuster, Parts & Service Manager

Description	2016 - 2021 Openings	Median Hourly Earnings
Transportation		
Transportation, Storage, and Distribution Managers	456	\$41.90
Claims Adjusters, Examiners, and Investigators	1,167	\$31.23
Cost Estimators	1,563	\$32.26
Technical Writers	377	\$38.90
Dispatchers, Except Police, Fire, and Ambulance	1,289	\$18.79
Production, Planning, and Expediting Clerks	2,313	\$22.02
Laborers and Freight, Stock, and Material Movers, Hand	12,718	\$12.39



## OPERATIONS

The Operations pathway prepares students for postsecondary employment and education in a variety of career opportunities in the transportation industry, including but not limited to harbors, ports, warehousing, marine applications, airplanes, trains, vehicles, and specialty equipment.

### Sample occupations associated with this pathway:

- Warehouse Worker/Dispatcher
- Production, Planning, and Expediting Clerk
- Storage, Warehouse, and Distribution Manager
- Container Crane Operator
- Inspectors and Planners

## STRUCTURAL REPAIR AND REFINISHING

The Structural Repair and Refinishing pathway prepares students for postsecondary education and employment in the transportation industry, including but not limited to body and frame straightening, estimating, painting, and refinishing (included but not limited to airplanes, trains, vehicles, and equipment).

### Sample occupations associated with this pathway:

- Estimator
- Claims Adjuster
- Technician
- Insurance Company/Manufacturer's Representative Investigator/Inspector

## SYSTEMS DIAGNOSTICS, SERVICES AND REPAIR

The Systems Diagnostics, Service, and Repair pathway prepares students for postsecondary education and employment in the transportation industry, which includes but is not limited to motor vehicles, rail systems, marine applications, and small-engine and specialty equipment.

### Sample occupations associated with this pathway:

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

# COLLEGES OFFERING PROGRAMS IN FEATURED SECTORS

<b>Agriculture and Natural Resources</b>	<b>Arts, Media, and Entertainment</b>	<b>Building and Construction Trades</b>	<b>Business and Finance</b>
Cuyamaca, Imperial Valley, MiraCosta, Palomar, SD City, SD Cont Ed, SD Mesa, SD Miramar, Southwestern	Cuyamaca, Grossmont, Imperial Valley, MiraCosta, Palomar, SD City, SD Cont Ed, SD Mesa, SD Miramar, Southwestern	Cuyamaca, Imperial Valley, MiraCosta, Palomar, SD Mesa, Southwestern	Cuyamaca, Grossmont, Imperial Valley, MiraCosta, Palomar, SD City, SD Cont Ed, SD Mesa, SD Miramar, Southwestern
<b>Education, Child Development, and Family Services</b>	<b>Energy, Environment, and Utilities</b>	<b>Engineering and Architecture</b>	<b>Fashion and Interior Design</b>
Cuyamaca, Grossmont, Imperial Valley, MiraCosta, Palomar, SD City, SD Cont Ed, SD Mesa, SD Miramar, Southwestern	Cuyamaca, Imperial Valley, Palomar, SD City, SD Cont Ed	Cuyamaca, MiraCosta, Palomar, SD City, SD Mesa, Southwestern	SD Mesa, Palomar
<b>Health Science and Medical Technology</b>	<b>Hospitality, Tourism, and Recreation</b>	<b>Information and Communication Technologies</b>	<b>Manufacturing and Product Development</b>
Grossmont, Imperial Valley, MiraCosta, Palomar, SD City, SD Cont Ed, SD Mesa, SD Miramar, Southwestern	Cuyamaca, MiraCosta, Palomar, SD City, SD Cont Ed, SD Mesa, SD Miramar, Southwestern	Cuyamaca, Grossmont, Imperial Valley, MiraCosta, Palomar, SD City, SD Cont Ed, SD Mesa, SD Miramar, Southwestern	Cuyamaca, Grossmont, Imperial Valley, MiraCosta, Palomar, SD City, SD Cont Ed, SD Mesa, SD Miramar, Southwestern
<b>Marketing Sales and Service</b>	<b>Public Services</b>	<b>Transportation</b>	
Grossmont, MiraCosta, Palomar, SD Mesa	Cuyamaca, Grossmont, Imperial Valley, MiraCosta, Palomar, SD City, SD Cont Ed, SD Mesa, SD Miramar, Southwestern	Cuyamaca, Imperial Valley, MiraCosta, Palomar, SD City, SD Cont Ed, SD Miramar, Southwestern	

# California's Career Technical Education:

## Preparing Students for the 21st Century and Beyond

"We seek the day when every enterprise in California—public and private—has access to a pool of talent that both attracts the world's leading businesses and hastens the development and success of new ones, creating opportunities for all."

—Gov. Ronald Reagan, Department of Public Resources

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**Engineering and Architecture**

- Architectural Design
- Engineering Technology
- Engineering Design
- Environmental Engineering

**Building and Construction Trades**

- Cabinetry, Millwork, and Woodworking
- Engineering and Heavy Construction
- Mechanical Systems Installation and Repair
- Residential and Commercial Construction

**Transportation**

- Operations
- Structural Repair and Refinishing
- Systems Diagnostics, Service, and Repair

**Fashion and Interior Design**

- Fashion Design and Merchandising
- Interior Design
- Personal Services

**Education, Child Development, and Family Services**

- Child Development
- Consumer Services
- Education
- Family and Human Services

**Hospitality, Tourism, and Recreation**

- Food Science, Dietetics, and Nutrition
- Food Service and Hospitality
- Hospitality, Tourism, and Recreation

**Marketing, Sales, and Services**

- Marketing
- Professional Sales
- Entrepreneurship/Self-Employment

**Arts, Media, and Entertainment**

- Design, Visual, and Media Arts
- Performing Arts
- Production and Managerial Arts
- Game Design and Integration

**Energy, Environment, and Utilities**

- Environmental Resources
- Energy and Power Technology
- Telecommunications

**Health Science and Medical Technology**

- Biotechnology
- Patient Care
- Health Care Administrative Services
- Health Care Operational Support Services
- Public and Community Health
- Mental and Behavioral Health

**Manufacturing and Product Development**

- Graphic Production Technologies
- Machining and Forming Technologies
- Welding and Materials Joining
- Product Innovation and Design

**Business and Finance**

- Business Management
- Financial Services
- International Business

**Information and Communication Technologies**

- Information Support and Services
- Networking
- Software and Systems Development
- Games and Simulation

**Agriculture and Natural Resources**

- Agricultural Business
- Agricultural Mechanics
- Agriscience
- Animal Science
- Forestry and Natural Resources
- Ornamental Horticulture
- Plant and Soil Science

**Public Services**

- Public Safety
- Emergency Response
- Legal Practices



<http://www.cde.ca.gov/ci/ct/st/ctemstandards.asp>

# ADDITIONAL RESOURCES



## Dec 5th, 2017 Counselor Conference: Career First

Links to breakout session handouts, PowerPoints, and community college CTE websites  
[www.myworkforceconnection.org/counselor-resources/](http://www.myworkforceconnection.org/counselor-resources/)



## California Community Colleges Workforce and Economic Development

Regional interactive resource map, top 10 sector priority handouts, career pathways and guided pathways toolkits and more  
[www.doingwhatmatters.cccco.edu](http://www.doingwhatmatters.cccco.edu)



## CTE Model Curriculum Standards

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.  
[www.cde.ca.gov/ci/ct/](http://www.cde.ca.gov/ci/ct/)



## California Career Zone

Career exploration and planning system designed especially for students. Jobseekers, educators, and counselors will benefit from the wealth of information on 900 occupations from the Occupational Information Network (O\*Net) database  
[www.cacareerzone.org](http://www.cacareerzone.org)



## California Career Café

A virtual career center for California community college students  
[www.cacareercafe.com/](http://www.cacareercafe.com/)



## Statewide Career Pathways

Creating School to College Articulation provides a statewide framework to assist high school and college faculty to collaborate and develop programs of study that include articulation of high school coursework.  
[www.statewidepathways.org/](http://www.statewidepathways.org/)



## Who Do U Want 2B?

Info on California high school and community college courses, career options and financial assistance.  
[www.whodouwant2b.com/](http://www.whodouwant2b.com/)







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