

Fire Science Occupations Labor Market Information Report

Prepared by the San Francisco Bay Center of Excellence
For Labor Market Research
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Recommendation

Based on all available data, there appears to be an undersupply of Fire Science workers compared to the demand for this cluster of occupations in the Bay region and in the Mid-Peninsula sub-region (San Francisco and San Mateo Counties). The gap is about 143 students annually in the Bay region and 51 annually in the Mid-Peninsula sub-region.

This report also provides student outcomes data on employment and earnings for programs on TOP 2133.00 - Fire Technology in the state and region. It is recommended that this data be reviewed to better understand how outcomes for students taking courses on this TOP code compare to potentially similar programs at colleges in the state and region, as well as to outcomes across all CTE programs at City College of San Francisco and in the region.

Introduction

This report profiles Fire Science Occupations in the 12 county Bay region and in the Mid-Peninsula sub-region for a proposed new certificate program at City College of San Francisco.

- **Firefighters (SOC 33-2011):** Control and extinguish fires or respond to emergency situations where life, property, or the environment is at risk. Duties may include fire prevention, emergency medical service, hazardous material response, search and rescue, and disaster assistance.
Entry-Level Educational Requirement: Postsecondary nondegree award
Training Requirement: Long-term on-the-job training
Percentage of Community College Award Holders or Some Postsecondary Coursework: 61%
- **Forest Fire Inspectors and Prevention Specialists (SOC 33-2022):** Enforce fire regulations, inspect forest for fire hazards and recommend forest fire prevention or control measures. May report forest fires and weather conditions.
Entry-Level Educational Requirement: High school diploma or equivalent
Training Requirement: Moderate-term on-the-job training
Percentage of Community College Award Holders or Some Postsecondary Coursework: 52%
- **Fire Inspectors and Investigators (SOC 33-2021):** Inspect buildings to detect fire hazards and enforce local ordinances and State laws, or investigate and gather facts to determine cause of fires and explosions.
Entry-Level Educational Requirement: Postsecondary nondegree award
Training Requirement: Moderate-term on-the-job training
Percentage of Community College Award Holders or Some Postsecondary Coursework: 52%

Occupational Demand

Table 1. Employment Outlook for Fire Science Occupations in Bay Region

Occupation	2017 Jobs	2022 Jobs	5-Yr Change	5-Yr % Change	5-Yr Openings	Annual Openings	10% Hourly Wage	Median Hourly Wage
Firefighters	6,915	7,352	437	6%	2,747	549	\$22.80	\$40.25
Forest Fire Inspectors and Prevention Specialists	92	100	8	9%	56	11	\$27.68	\$37.23
Fire Inspectors and Investigators	188	205	17	9%	115	23	\$29.37	\$51.68
Total	7,195	7,657	462	6%	2,918	584	\$23.03	\$40.51

Source: EMSI 2018.2

Bay Region includes Alameda, Contra Costa, Marin, Monterey, Napa, San Benito, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano and Sonoma Counties

Table 2. Employment Outlook for Fire Science Occupations in Mid-Peninsula Sub-Region

Occupation	2017 Jobs	2022 Jobs	5-Yr Change	5-Yr % Change	5-Yr Openings	Annual Openings	10% Hourly Wage	Median Hourly Wage
Firefighters	1,834	2,006	173	9%	794	159	\$27.92	\$43.79
Forest Fire Inspectors and Prevention Specialists	<10	<10			<10	Insf. Data	Insf. Data	Insf. Data
Fire Inspectors and Investigators	73	80	7	9%	45	9	\$35.68	\$66.26
TOTAL	1,907	2,086	179	9%	839	168	\$28.22	\$44.65

Source: EMSI 2018.2

Mid-Peninsula Sub-Region includes San Francisco and San Mateo Counties

Job Postings in Bay Region and Mid-Peninsula Sub-Region

Table 3. Number of Job Postings by Occupation for latest 12 months (Sept 2017 - Aug 2018)

Occupation	Bay Region	Mid-Peninsula
Fire Inspectors (33-2021.01)	90	19
Municipal Firefighters (33-2011.01)	82	13
Forest Fire Inspectors and Prevention Specialists (33-2022.00)	47	17
Forest Firefighters (33-2011.02)	14	7
Fire Investigators (33-2021.02)	1	1
Total	234	57

Source: Burning Glass

Table 4. Top Job Titles for Fire Science Occupations for latest 12 months (Sept 2017 - Aug 2018)

Common Title	Bay	Mid-Peninsula	Common Title	Bay	Mid-Peninsula
Firefighter	68	12	Book Writing Ranger, Writing	5	3
Alarm Inspector	15		Fire Technician	4	3
Specialist	12	4	Medic	4	
Fire Inspector	9	1	Technician	4	2
Ranger	8		Tree Utility Forester	4	2
Equipment Operator	6		Alarm Specialist	3	2
Sprinkler/Inspector	6	1	Fire Prevention Specialist I	3	

Source: Burning Glass

Industry Concentration

Table 5. Industries hiring Fire Science Workers in Bay Region

Industry – 6 Digit NAICS (No. American Industry Classification) Codes	Jobs in Industry (2017)	Jobs in Industry (2022)	% Change (2017-22)	% in Industry (2017)
Local Government, Excluding Education and Hospitals (903999)	7,144	7,680	8%	91.3%
State Government, Excluding Education and Hospitals (902999)	136	149	10%	1.7%
Federal Government, Military (901200)	111	110	(1%)	1.4%
All Other Support Services (561990)	100	90	(10%)	1.3%
Convention and Trade Show Organizers (561920)	81	95	17%	1.0%
Federal Government, Civilian, Excluding Postal Service (901199)	81	83	2%	1.0%
Packaging and Labeling Services (561910)	47	57	21%	0.6%
Security Guards and Patrol Services (561612)	11	12	9%	0.1%

Source: EMSI 2018.3

Table 6. Top Employers Posting Fire Science Occupations in Bay and Mid-Peninsula Sub-Region (Sept 2017 - Aug 2018)

Employer	Bay	Employer	Bay	Employer	Mid-Peninsula
US Army	16	National Testing Network	4	National Testing Network	4
Johnson Controls Incorporated	14	Capstone Fire & Safety Management	3	Adventures In Writing Camp	3
Adventures In Writing Camp	7	City Oakland	3	Commercial Fire Protection Incorporated	3
Department Army	6	Contra Costa County	3	Ringtail Learning Inc	3
Equity Lifestyle Properties	6	Daily Dispatch	3	Salesforce	3
Commercial Fire Protection Incorporated	5	Hue & Cry, Inc	3	Sfmta	3
Vmware Incorporated	5	Jensen Hughes, Inc	3	Presidio Incorporated	2
state of california	5	Presidio Incorporated	3	Restoration Management Company	2
City Fremont	4	Restoration Management Company	3	San Francisco Public Utilities Commission	2
Davey Resource Group	4	Ringtail Learning Inc	3	San Francisco State University	2

Source: Burning Glass

Educational Supply

There are eight community colleges in the Bay Region issuing 441 awards annually on TOP 2133.00 - Fire Technology and two colleges in the Mid-Peninsula sub-region issuing 117 awards annually.

Table 7. Awards on TOP 2133.00 - Fire Technology in the Bay Region

College	Sub-Region	Headcount	Associates	Certificates	Total
Cabrillo	Santa Cruz & Monterey	1,402	20	2	22
Chabot Hayward	East Bay	220	12	2	14
Las Positas	East Bay	202	10	11	21
Los Medanos	East Bay	312	24	63	86
Mission	Silicon Valley		27		27
Monterey	Santa Cruz & Monterey	653	2	2	5
San Francisco	Mid-Peninsula		14	56	70

San Mateo	Mid-Peninsula		24	23	47
Santa Rosa	North Bay	619	32	102	134
Solano	North Bay	183	10	5	16
Total Bay Region		3,591	175	266	441
Total Mid-Peninsula Sub-Region			38	79	117

Source: IPEDS, Data Mart and Launchboard

NOTE: Headcount of students who took one or more courses is for 2016-17. The annual average for awards is 2014-17 unless there are only awards in 2016-17. The annual average for other postsecondary is for 2013-16.

Gap Analysis

Based on the data included in this report, there is a large labor market gap in the Bay region with 584 annual openings for the Fire Science occupational cluster and 441 annual awards for an annual undersupply of 143. In the Mid-Peninsula sub-region, there is also a gap with 168 annual openings and 117 annual awards for an annual undersupply of 51.

Student Outcomes

Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 2133.00 - Fire Technology

2015-16	Bay (All CTE Programs)	City College of San Francisco (All CTE Programs)	State (213300)	Bay (213300)	Mid- Peninsula (213300)	City College of San Francisco (213300)
% Employed Four Quarters After Exit	74%	72%	72%	85%	84%	84%
Median Quarterly Earnings Two Quarters After Exit	\$10,310	\$10,794	\$17,186	\$21,815	\$18,523	\$20,129
Median % Change in Earnings	46%	46%	34%	31%	41%	33%
% of Students Earning a Living Wage	63%	55%	72%	78%	79%	84%

Source: Launchboard Pipeline (version available on 9/19/18)

Skills, Certifications and Education

Table 9. Top Skills for Fire Science Occupations in Bay Region (Sept 2017 - Aug 2018)

Skill	Postings	Skill	Postings	Skill	Postings
Fire Protection	69	Technical Training	14	Satisfaction Failure Correction	9
Repair	58	Inspection of Safety Equipment and/or Alarm Systems	13	Schematic Diagrams	9
Fire Suppression	44	Building Codes	12	Training Programs	9
Cardiopulmonary Resuscitation (CPR)	24	Inspection Records	11	Visual Signals	9
Customer Service	23	Scheduling	11	Basic Mathematics	8
Emergency Medical Care	22	Empower	10	Data Entry	8
Emergency Services	19	Prevention Activities	10	Electrical Systems	8
Life Support	19	Teaching	10	Life-Safety Systems	8
HAZMAT	17	Wiring	10	Salesforce	8

Fire Science Occupations in 12 County Bay Region and in Mid-Peninsula Region, 2018

Predictive / Preventative Maintenance	17	Advanced Cardiac Life Support (ACLS)	9	Ansible	7
Equipment Operation	15	Cleaning	9	Hydraulics	7
Hand Tools	15	Customer Contact	9	Medical Emergencies	7
Technical Inspections	15	Lesson Planning	9	Plumbing	7
Equipment Moving	14	Network Access Control (NAC)	9	Power Tools	7
Public Health and Safety	14	Safety Codes	9	Python	7

Source: *Burning Glass*

Table 10. Certifications for Fire Science Occupations in the Bay Region (Sept 2017 - Aug 2018)

Note: 63% of records have been excluded because they do not include a certification. As a result, the chart below may not be representative of the full sample.

Certification	Postings	Certification	Postings
Driver's License	90	Certified Financial Planner (CFP)	5
Emergency Medical Technician (EMT)	53	Driver/Operator Mobile Water Supply	5
Firefighter	32	HazMat Operations	5
Firefighter I	28	HazMat Technician	5
Certified Patient Account Technician	18	Hazardous Materials Technician	5
First Aid CPR AED	18	NICET II	5
Paramedic Certification	16	Wildland Firefighter	5
Firefighter II	13	Fire Instructor I	4
National Registry of Emergency Medical Technicians (NREMT)	13	Fire Officer	4
Fire Inspector	11	American Heart Association Certification	3
Fire Inspector I	11	Fire Inspector II	3
CDL Class D	9	HazMat Awareness	3
Aerial Rescue and Fire Fighting (ARFF)	7	Medical Examiner's License	3
Airport Firefighter	7	Asbestos Worker	2
Driver/Operator Pumper	7	Basic Cardiac Life Support Certification	2
Security Clearance	7	Environmental Protection Agency Certification	2

Source: *Burning Glass*

Table 11. Education Requirements for Fire Science Occupations in Bay Region

Note: 56% of records have been excluded because they do not include a degree level. As a result, the chart below may not be representative of the full sample.

Education (minimum advertised)	Latest 12 Mos. Postings
High school or vocational training	79 (76%)
Associate Degree	3 (3%)
Bachelor's Degree or Higher	22 (21%)

Source: *Burning Glass*

Methodology

Occupations for this report were identified by use of skills listed in O*Net descriptions and job descriptions in Burning Glass. Labor demand data is sourced from Economic Modeling Specialists International (EMSI) occupation data and Burning Glass job postings data. Educational supply and student outcomes data is retrieved from multiple sources, including CTE Launchboard and CCCCCO Data Mart.

Sources

O*Net Online

Labor Insight/Jobs (Burning Glass)

Economic Modeling Specialists International (EMSI)

CTE LaunchBoard www.calpassplus.org/Launchboard/

Statewide CTE Outcomes Survey

Employment Development Department Unemployment Insurance Dataset

Living Insight Center for Community Economic Development

Chancellor's Office MIS system

Contacts

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