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Degree: A.A. - Fire Technology
Certificate: Fire Technology

Fire Technology Degree and Certificate

Firefighting is a public safety profession that requires special knowledge of safety, rescue, emergency medical operations, and hazardous materials. The Fire Technology A.A. degree focuses on the preparation for a career in the fire service. It includes educational opportunities for those currently employed within the fire service and those within volunteer fire agencies. Courses include those required for transfer to four-year colleges, those required to meet eligibility requirements for employment, and those required for incentive salary increases.

Student Learning Outcomes

Upon completion of this program, the student will be able to:

- complete the duties of an entry level firefighter
- identify the fundamentals of the Incident Command System and assess how it is used by fire departments at emergencies
- compare and contrast the make up of a moderate size fire department with a large fire department and a fully paid department with a volunteer fire department
- describe the components of Firefighting Personnel Protective Equipment (PPE)
- compare and contrast modern PPE with antiquated PPE
- analyze simulated fire situations for indicators of flashover versus backdraft potential and prescribe mitigation measures to prevent them from occurring
- assess the fundamentals of physical science as they relate to the fire services: measurements; energy and work theories; power and transfer of heat principals; the laws of matter and the conservation of energy; and the chemical reaction called fire
- classify and compare the various types of municipal water systems
- describe the fundamentals of building construction and apply this knowledge to fire situations where forcible entry and overhaul evolutions may weaken the already fire-weakened structure
- compare and contrast fire prevention versus fire suppression efforts
- draft a pre-fire plan
- evaluate and analyze the rate of fire spread in a structure fire
- explain the physical and chemical properties of fire

Career Opportunities

A variety of career opportunities are open to students who successfully complete specific portions of this program of study. Employment opportunities may be found in areas such as firefighter-paramedic, fire investigation, fire prevention, hazardous materials, public education, and firefighting.

Requirements for Degree or Certificate **29 Units**

FT 300	Fire Protection Organization	3
FT 301	Fire Prevention Technology	3
FT 302	Fire Protection Equipment and Systems	3
FT 303	Building Construction for Fire Protection	3
FT 304	Fire Behavior and Combustion	3

And a minimum of 14 units from the following: ..... 14[1]

PMED 100	Emergency Medical Technician - Basic (5)
FT 130	Fire Company Organization and Management (3)
FT 170	Fire Investigation (3)
FT 180	Rescue Practices (3)
FT 190	Fire Tactics and Strategy (3)
FT 192	Wildland Fire Control (3)
FT 310	Fire Service Hydraulics (3)
FT 320	Hazardous Materials (3)

[1]Most fire departments in the State of California require that an applicant be at least a certified EMT, when appling for a firefighter position.

Associate Degree Requirements: The Fire Technology Associate in Arts (A.A.) Degree may be obtained by completion of the required program, plus general education requirements, plus sufficient electives to meet a 60-unit total. See ARC graduation requirements.

Fire Technology

FT 110 Fire Apparatus 3 Units
Advisory: FT 300
Hours: 54 hours LEC
This course covers various aspects of fire apparatus. Topics include design, typing, specifications, construction, performance capabilities, and maintenance. Also included are warning devices and the utilization of apparatus in fire service emergencies.

FT 130 Fire Company Organization and Management 3 Units
Advisory: Fire 1090 or FT 300; ENGWR 51 and ENGRD 15; OR ESLR 310 and ESLW 310
Hours: 54 hours LEC
This course explores the organization and management of a fire department and the relationship of government agencies to the fire service. The emphasis of this course is on fire service leadership from the perspective of the company officer. Topics include ethical conduct, challenges of supervision, organizational structure, communication, human resource management functions, and administrative functions.

FT 170 Fire Investigation 3 Units
Advisory: FT 300
Hours: 54 hours LEC
This course introduces the general practices involved in fire investigation. Topics include determining the cause of fires (accidental, suspicious and incendiary); types of fires; related laws; introduction to incendiary fires; motives for starting fires; recognizing and preserving evidence; interviewing witnesses and suspects; arrest, detention, and court procedures.

FT 180 Rescue Practices 3 Units
Advisory: FIRE 1090 or FT 300; ENGWR 51 and ENGRD 15; or ESLR 310 and ESLW 310
Hours: 54 hours LEC
This course focuses on the identification and management of rescue situations, such as proper utilization and awareness of equipment, tools, and techniques to handle various rescue situations. Topics include vehicle extrication, water rescue, vertical rescue, building collapse, radiation hazards, hazardous materials rescue, fire situations including rapid intervention awareness, and other emergency situations.

FT 190 Fire Tactics and Strategy 3 Units
Advisory: FT 300
Hours: 54 hours LEC
This course of instruction is a basic requirement of all fire suppression personnel. Topics include the principles of fire control, utilization of staffing, equipment and placement, extinguishing agents, and fire control methods on the fireground.

FT 192 Wildland Fire Control 3 Units
Advisory: FT 300
Hours: 54 hours LEC
This course covers all aspects of wildland fire fighting and introduces advances in technology for wildland fire suppression. Topics include fire behavior, weather conditions, topography factors, safety, prevention, extinguishing methods, initial attack, Incident Command System (ICS), communications, aircraft assistances, hand crews, and bulldozer operation.

FT 200 Emergency Medical Technician I 5 Units
Same As: PMED 100
Prerequisite: HEED 323 with a grade of "C" or better
Enrollment Limitation: Not open to students with a current EMT - Basic certificate.
Hours: 72 hours LEC; 72 hours LAB
This course is designed to provide instruction to the level of Emergency Medical Technician - Basic. Topics include skills necessary to provide emergency medical care at a basic life support level with a fire, ambulance, or other specialized service. This course is conducted in compliance with Title 22, Division 9, Chapter 2 of the California Code of Regulations and Emergency Medical Technician - Basic (EMT-I). A "C" or better is required for certification as Emergency Medical Technician - Basic. Field trips are required. This course may be taken four times for credit.

FT 300 Fire Protection Organization 3 Units
Course Transferable to CSU
Hours: 54 hours LEC
This course provides an introduction to fire protection, career opportunities and related fire service fields. Topics include philosophy and history of fire protection, fire loss analysis, organization and function of public and private fire protection services, fire departments as part of local government, laws and regulations affecting the fire service, fire service nomenclature, specific fire protection functions, basic fire chemistry and physics, introduction to fire protection systems, and introduction to fire strategy and tactics.

FT 301 Fire Prevention Technology 3 Units
Corequisite: FIRE 1090 or FT 300.
Course Transferable to CSU
Hours: 54 hours LEC
This course provides fundamental information regarding the history and philosophy of fire prevention. Topics include organization and operation of a fire prevention bureau, use of fire and building codes, fire investigation, identification and correction of fire hazards, plan review, report and record keeping, and duties and responsibilities of a fire prevention officer.

FT 302 Fire Protection Equipment and Systems 3 Units
Corequisite: FIRE 1090 or FT 300.
Course Transferable to CSU
Hours: 54 hours LEC
This course provides information relating to sprinkler design and the operation of fire detection and alarm systems. Topics include fire cause and effect, heat and smoke control systems, special protection and sprinkler systems, water supply for fire protection, standpipe systems, and portable fire extinguishers.

FT 303 Building Construction for Fire Protection 3 Units
Corequisite: FIRE 1090 or FT 300.
Course Transferable to CSU
Hours: 54 hours LEC
This course is the study of the components of building construction that relate to fire safety. Specific focus is on elements of construction and the design of structures that are shown to be key factors when inspecting buildings, pre-planning fire operations and emergency operations at fires. Topics include wood, ordinary, steel, and concrete construction, principles of fire and smoke growth, and fire resistance construction.

FT 304 Fire Behavior and Combustion 3 Units
Corequisite: FT 300
General Education: AA/AS Area IV (effective Summer 2011)
Course Transferable to CSU
Hours: 54 hours LEC
This course provides the theories and fundamentals of how and why fires start, spread and are controlled. Topics include an in-depth study of fire chemistry and physics, fire characteristics of materials, extinguishing agents, and fire control techniques.

FT 310 Fire Service Hydraulics 3 Units
Advisory: FT 300 and MATH 32
Course Transferable to CSU
Hours: 54 hours LEC
This course covers the theory of water hydraulics, hydraulic distribution systems, hydraulic practices, and extinguishing agents used with fire service hydraulics. Topics include the properties of water at rest and in motion, water velocity and discharge, distribution systems, fire service pumps, friction loss calculations, engine and nozzle pressures, and fire streams. Other topics focus on standpipe systems, automatic sprinkler systems, and foam systems.

FT 320 Hazardous Materials 3 Units
Advisory: FIRE 1090 or FT 300; ENGWR 102 and ENGRD 116; or ESLR 310 and ESLW 310
Course Transferable to CSU
Hours: 54 hours LEC
This course is an introduction to hazardous materials, including physical properties, uses in industry, and characteristics when involved in spills, fires, and accidents. It covers emergency procedures, legal requirements, and compliance with regulations. Topics include flammable and combustible liquids, flammable and non-flammable compressed gases, flammable solids and combustible metals, oxidizing agents, poison gases and liquids, radioactive substances, and corrosive materials.