

# FIRE SCIENCE TECHNOLOGY (FS)

## FS 10 PROFESSIONAL SKILLS FOR EMPLOYMENT IN THE FIRE SERVICE 3 UNITS

Pass/No Pass or Grade is Allowed  
Lecture 2.50 hours, laboratory 1.50 hour  
Offered: ALL

Builds self-confidence and gives the students information to be competitive in the fire service. Includes simulated testing procedures and experience in the testing challenges of fire departments. Recommended for students participating in the entrance exam given by fire departments. [D]

## FS 12 FIRE SERVICE HYDRAULICS 3 UNITS

Grade Only  
Prerequisite: MATH 35 or equivalent.  
Lecture 3 hours  
Offered: ALL

Introduces students to hydraulics laws and formulas as they relate to fire service. Includes calculations to assure adequate water pressures and volumes at fire department operations. Emphasizes principles of fluid pressure, fire pump operation and design, hose line construction and capability, and community water supply capabilities. [D]

## FS 20 FIRE APPARATUS AND EQUIPMENT 3 UNITS

Pass/No Pass or Grade is Allowed  
Recommended Preparation: MATH 35 or equivalent.  
Lecture 3 hours  
Offered: ALL  
Emphasizes driving laws, driving technique, construction and operation of pumping engines, ladder trucks, aerial platforms, specialized equipment, apparatus maintenance, and theoretical hydraulic calculations. [D]

## FS 30 EMERGENCY SERVICES PHYSICAL FITNESS AND NUTRITION 5.5 UNITS

Grade Only  
Lecture 4 hours, laboratory 5 hours  
Offered: ALL  
Covers key aspects of the theory and application of physical fitness for emergency services personnel. Introduces a comprehensive presentation of nutritional topics to develop positive lifetime health behaviors and to improve personal wellness. Provides the necessary skills to pass both fire department physical candidate exams and fire academies. [D]

## FS 32 PRE-ACADEMY FIRE, POLICE, AND EMS FITNESS AND NUTRITION 3 UNITS

Pass/No Pass Only  
Fee: \$25  
Lecture 2 hours, laboratory 3 hours  
Offered: ALL  
Explores the theory and application of cardiovascular fitness and strength training for individuals wanting to get physically and mentally prepared to attend a Police or Fire Academy or for a career in Emergency Medical Services (EMS). Includes an introduction to nutrition and wellness. [D] (Same as: AJ 32; EMT 32)

## FS 33 FIREFIGHTING, BASIC SKILLS AND TECHNIQUES 3 UNITS

Grade Only  
Lecture 2 hours, laboratory 3 hours  
Offered: ALL  
Introduces the applied operation and maintenance of basic rescue and fire suppression apparatus and equipment. Includes topics in forcible entry techniques, search and rescue, physical fitness training and the use of ropes, ladders and other equipment. Intended for students majoring in the field of fire technology or those interested in fire service careers. [D]

## FS 40 FIRE SERVICE SKILLS 1-1.5 UNITS

Pass/No Pass Only  
Limitation on Enrollment: Enrollment is limited to students who are firefighters from contracted agencies.  
Laboratory 5 hours  
Offered: FALL, SPRING  
Covers special topics as on-going education to fire service personnel for required skills maintenance. Includes duties and responsibilities of the fire service in order to maintain a state of readiness. [D]

## FS 101 FIRE PROTECTION ORGANIZATION 3 UNITS

Pass/No Pass or Grade is Allowed  
Lecture 3 hours  
Offered: ALL  
Introduction to the following: career opportunities in fire protection and related fields; 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; introduction to fire strategy and tactics. [D; CSU]

## FS 102 FIRE BEHAVIOR AND COMBUSTION 3 UNITS

Pass/No Pass or Grade is Allowed  
Recommended Preparation: FS 101 or equivalent.  
Lecture 3 hours  
Offered: FALL, SPRING  
Introduces theory and fundamentals of how and why fires start, spread, and are controlled. Provides in-depth study of fire chemistry and physics, fire characteristics of materials, extinguishing agents, and fire control techniques. [D; CSU]

**FS 103**  
**FIRE PREVENTION TECHNOLOGY**  
**3 UNITS**

Grade Only  
 Lecture 3 hours  
 Offered: FALL, SPRING  
 Provides fundamental information regarding the history and philosophy of fire prevention, organization, and operation of a fire prevention bureau. Includes the use of fire codes, identification and correction of fire hazards. Emphasizes the relationships of fire prevention with built-in fire protection systems, fire investigation and fire and life safety education. [D; CSU]

**FS 104**  
**FIRE PROTECTION EQUIPMENT AND SYSTEMS**  
**3 UNITS**

Grade Only  
 Recommended Preparation: FS 101 or equivalent.  
 Lecture 3 hours  
 Offered: FALL, SPRING  
 Provides information relating to the features of design and operation of fire detection and alarm systems, heat and smoke control systems, special protection and sprinkler systems; water supply for fire protection, and portable fire extinguishers. [D; CSU]

**FS 106**  
**BUILDING CONSTRUCTION FOR FIRE PROTECTION**  
**3 UNITS**

Grade Only  
 Recommended Preparation: FS 101 or equivalent.  
 Lecture 3 hours  
 Offered: FALL, SPRING  
 Provides the components of building construction that relate to fire safety. Focuses on firefighter safety. Demonstrates that elements of construction and design of structures are key factors when inspecting buildings, preplanning fire operations, and operating at emergencies. [D; CSU]

**FS 108**  
**FIRE FIGHTER SAFETY AND SURVIVAL**  
**3 UNITS**

Grade Only  
 Recommended Preparation: FS 101 or equivalent.  
 Lecture 3 hours  
 Offered: FALL, SPRING  
 Provides contemporary firefighter students insight into safety concepts, guiding regulations, codes, laws, and standards. Includes reading buildings and smoke, risk analysis, and firefighter decision making. Emphasizes the duties of an Incident Safety Officer in structure firefighting, wildland firefighting, and other hazardous incidents. [D]

**FS 110**  
**HAZARDOUS MATERIALS**  
**3 UNITS**

Grade Only  
 Recommended Preparation: FS 101 or equivalent.  
 Lecture 3 hours  
 Offered: ALL  
 Provides instruction on how to recognize and respond to hazardous materials and terrorism incidents, how to implement basic incident command systems, and how to perform basic rescue techniques and decontamination procedures. Allows the student to take certification exams as first responder operational level, terrorism awareness level, California Specialized Training Institute (CSTI), and Centers for Domestic Preparedness (CDP). [D; CSU]

**FS 144**  
**BASIC WILDLAND FIREFIGHTING ACADEMY**  
**8 UNITS**

Pass/No Pass or Grade is Allowed  
 Lecture 6 hours, laboratory 6 hours  
 Offered: ALL  
 Explores theory, principles, and manipulative application for wildland and structural firefighting operations. Emphasizes firefighter safety through academic and physical testing of fire recruits. Upon completion fire recruits will have met the National Wildfire Coordinating Group and State Fire Training Wildland FFI skills testing standards. Recruits are eligible to receive the following Certifications: NWCG S-190 Introduction to Wildland Fire Behavior; NWCG S-130 Firefighter Training; NWCG L-180 Human Factors on the Fireline; FEMA-Incident Command System(ICS)100; FEMA,NIMS IS-700 and 800; CSTI Hazardous Material First Responder Operational(FRO); SFT Confined Space Awareness. [D; CSU]

**FS 146**  
**ADVANCED WILDLAND FIREFIGHTING ACADEMY**  
**3 UNITS**

Pass/No Pass or Grade is Allowed  
 Prerequisite: FS 144 or equivalent.  
 Lecture 2 hours, laboratory 3 hours  
 Offered: ALL  
 Provides theory and application of advanced wildland firefighting covering wildland fire behavior, fire suppression, fire safety, and field experience. Students who successfully complete this course will be qualified to suppress wildfires. Students are eligible to receive the following certifications from the National Wildfire Coordinating Group (NWCG), making them eligible for employment with State and Federal Wildland Fire Agencies: S-131 Firefighter Type 1 and S-133 Look Up, Look Down, Look Around. [D; CSU]

**FS 150A****INTRODUCTION TO FIRE SUPPRESSION AND MAINTENANCE  
MANIPULATIVE TASKS (BEGINNING)****1.5 UNIT**

Pass/No Pass or Grade is Allowed

Prerequisite: FS 10 or equivalent.

Corequisite: EMT 101 (may be taken previously) or equivalent; EMT 109 (may be taken previously) or equivalent.

Laboratory 4.50 hours

Offered: FALL

Introduces the applied operation and maintenance of basic rescue and firefighting skills according to the State Fire Training (SFT) Firefighter I Skills Exam. Includes topics such as personal protective equipment, self-contained breathing apparatus, hose lays, and physical fitness training. This course is intended for students majoring in the field of fire technology or those interested in a career in the fire service. [D; CSU]

**FS 150B****INTRODUCTION TO FIRE SUPPRESSION AND MAINTENANCE  
MANIPULATIVE TASKS (INTERMEDIATE)****1.5 UNIT**

Pass/No Pass or Grade is Allowed

Prerequisite: FS 150A or equivalent.

Laboratory 4.50 hours

Offered: FALL

Provides intermediate-level instruction in the operation and maintenance of fire service equipment according to the State Fire Training (SFT) Firefighter I Skills Exam. Includes topics such as extinguishers and protective equipment; hose, nozzles, and fittings; hose evolution; fire service ladders; and salvage and overhaul procedures. Designed at an intermediate level within the guidelines of training for Firefighter I Certification as specified by California Fire Service Training and Education Division of the Office of the state Fire Marshal. [D; CSU]

**FS 150C****INTRODUCTION TO FIRE SUPPRESSION AND MAINTENANCE  
MANIPULATIVE TASKS (ADVANCED)****1.5 UNIT**

Pass/No Pass or Grade is Allowed

Prerequisite: FS 150B or equivalent.

Laboratory 4.50 hours

Offered: SPRING

Provides advanced instruction in the operation and maintenance of fire service equipment according to the CA State Fire Training Firefighter I Skills requirement standard. Includes topics such as search and rescue, simulated fire attack, wildland review and hazardous materials skills using appropriate protective equipment. Designed at an advanced level to facilitate students' qualification for the manipulative training portion of Firefighter I as specified by the California Fire Service Training and Education Division of the State Fire Marshal's Office. Intended for students majoring in the field of fire technology or those interested in a career in the fire service. [D; CSU]

**FS 150D****TRUCK COMPANY OPERATIONS****1.5 UNIT**

Pass/No Pass or Grade is Allowed

Prerequisite: FS 150C or equivalent.

Laboratory 4.50 hours

Offered: SPRING

Introduces students to the planning and operation of truck companies at fires and other emergencies. Includes topics such as truck company equipment; personnel requirements; and truck company responsibilities that relate to the strategies, tactics, and specialized skills required for truck company operations. Intended for students majoring in Fire Technology and is required for completing the alternative Firefighter 1 on campus delivery model as part of the Entry Level Firefighter Degree and Certificate of Achievement. [D; CSU]

**FS 160****WILDLAND FIRE CONTROL****3 UNITS**

Pass/No Pass or Grade is Allowed

Prerequisite: FS 150B or equivalent.

Lecture 1.50 hour, laboratory 4.50 hours

Offered: SPRING

Provides students with a fundamental knowledge of the factors affecting wildland fires including fuel, weather, topography, prevention, fire behavior, and public education. Covers control techniques common to all agencies involved in wildland fire control. Includes certification in S-130 and S-190; students are required to complete manipulative wildland training sessions to certify in S-130. Emphasizes the requirements of the California State Board of Fire Services Certified Firefighter I training (Wildland), International Fire Service Accreditation Congress standards and Professional Qualifications (ProBoard) requirements. Intended for students majoring in Fire Technology. [D; CSU]

**FS 161****CONFINED SPACE AWARENESS****1 UNIT**

Pass/No Pass or Grade is Allowed

Lecture 1 hour

Offered: SUMMER

Provides an introduction to the hazards, equipment, and operational positions of safe, and legal confined space entry. Includes a review of California Division of Occupational Safety, and Health (Cal-OSHA) regulations with regard to permit-required confined spaces. Intended for personnel with confined spaces within their areas of responsibility, including current or future public safety personnel. [D; CSU]

**FS 162****FIREFIGHTER SURVIVAL****1 UNIT**

Pass/No Pass or Grade is Allowed

Prerequisite: FS 150A or equivalent.

Lecture 1 hour

Offered: SPRING

Provides information, skills, and techniques designed to assist in avoiding fatal errors on the fireground. Teaches students how to avoid situations that could cause them to become lost, trapped, or injured at a fire scene. Includes firefighter survival terminology, survival attitude, situational awareness, and problem-solving techniques intended to provide self-reliance in an emergency. Course instruction includes the use of case studies to analyze common factors in line-of-duty deaths (LODDs). [D; CSU]

**FS 163****HAZMAT EMERGENCY RESPONSE FIRST RESPONDER OPERATIONAL  
1.5 UNIT**

Pass/No Pass or Grade is Allowed

Lecture 1.50 hour, laboratory 0.50 hours

Offered: SUMMER

Provides students with a fundamental knowledge of the factors affecting operating procedures at a hazardous materials (hazmat) incident. Improves the capabilities of the First Responder to respond to a hazmat event in a safe and competent manner, within the typical resource and capability limits at the "operational" level. Emphasizes the requirements of the California State Board of Fire Services Certified Firefighter I training (Hazmat Operations), International Fire Service Accreditation Congress (IFSAC) standards, and Professional Qualifications (ProBoard) requirements. Meets the First Responder Operational Hazmat Emergency Response certified course requirements of California Code of Regulations (CCR) Title 19, Division 2, Chapter 1, Subchapter 2, Sections 2510-2560. This course is intended for current or future public safety personnel. [D; CSU]

**FS 164****BASIC INCIDENT COMMAND SYSTEM  
0.5 UNITS**

Pass/No Pass or Grade is Allowed

Lecture 0.50 hours

Offered: SPRING

Covers the first two levels of Incident Command System (ICS) training: ICS 100 and 200. ICS 100 introduces the ICS and provides the foundation for higher level ICS training. ICS 100 topics include the history, features, principles, and organizational structure of the ICS as well as the relationship between the ICS and the National Incident Management System (NIMS). ICS 200 prepares students to operate efficiently during an incident or event within the ICS, including functioning in an ICS supervisory position. This course is intended for students majoring in Fire Technology and those preparing for entrance to a Firefighter I fire training academy. [D; CSU]

**FS 165****BEHAVIORAL HEALTH AND CANCER AWARENESS 1A  
0.5 UNITS**

Pass/No Pass or Grade is Allowed

Lecture 0.50 hours

Offered: SPRING

Provides awareness-level information on behavioral health and cancer for front-line responders. Describes and identifies the impacts of stress and stressors and demonstrates practices for resilience. Includes the types, prevalence, and causes of cancer. Describes exposure to carcinogenic chemicals, and demonstrates minimizing exposure and risk to cancerous contaminants.

**FS 201****WILDLAND FIRE BEHAVIOR  
3 UNITS**

Grade Only

Lecture 3 hours

Offered: ALL

Provides students with information necessary to understand basic wildland fire behavior, wildland fire predictions, and wildland fire operation safety. Covers wildland fire environmental factors and the tools required to monitor weather and fire behavior as it relates to wildland fire predictions. [D; CSU]

**FS 202****WILDLAND FIREFIGHTER SAFETY AND SURVIVAL  
3 UNITS**

Grade Only

Lecture 3 hours

Offered: ALL

Provides students with information necessary to understand occupational safety and hazards associated with wildland firefighting operations. Emphasizes situational awareness, protective measures, accident avoidance procedures, and the risk management process. Reviews fire ground near misses, entrapments, and fatalities. [D; CSU]

**FS 203****WILDLAND FIRE OPERATIONS (GROUND AND AIR)  
3 UNITS**

Pass/No Pass or Grade is Allowed

Lecture 3 hours

Offered: ALL

Provides students with information necessary to understand ground and air operations associated with wildland firefighting operations. Emphasizes incident command system use, strategy, tactics, hazards, resource typing, management, and safety procedures during wildland fire incidences. [D; CSU]

**FS 204****WILDLAND FIRE INVESTIGATION, PREVENTION , AND PUBLIC  
INFORMATION  
3 UNITS**

Pass/No Pass or Grade is Allowed

Lecture 3 hours

Offered: ALL

Provides students with information and skills necessary to understand the roles and functions of the Public Information Officer (PIO, S203), Fire Prevention Education Team Member (PETM, P-101), and the Wildland Fire Investigator (INVF,FI-110). Includes various wildland fire associated class projects that challenge students' public speaking, report, report writing, and presentation skills. This course meets or exceeds National Wildfire Coordinating Group (NWCG) requirements. [D; CSU]

**FS 205****WILDLAND FIRE LOGISTICS, FINANCE, AND PLANNING  
3 UNITS**

Pass/No Pass or Grade is Allowed

Lecture 3 hours

Offered: ALL

Provides students with information necessary to understand the responsibilities and functions of the logistics, finance, and planning sections of the Incident Command System (ICS). Emphasizes how the different ICS sections are organized and utilized during wildfire incidents. [D; CSU]

**FS 280****CALFIRE BASIC WILDLAND FIREFIGHTER ORIENTATION COURSE  
2 UNITS**

Pass/No Pass or Grade is Allowed

Prerequisite: EMT 101, Basic Wildland Firefighter Certificate of Achievement, EMT 109, FS 10, FS 150A, FS 150B, FS 160, FS 161, FS 162, FS 163, and FS 164.

Lecture 2 hours

Offered: SPRING

Serves as a "bridge" course between Southwestern College's Basic Wildland Firefighter Certificate of Achievement and the requirements to test for CAL FIRE Basic Wildland Firefighter. This is a stand-alone course and does not apply to any COA/AS degree. [ND]

**FS 281F****REGIONAL FIREFIGHTER I ACADEMY  
15-16 UNITS**

Grade Only

Lecture 11 hours, laboratory 16 hours

Offered: ALL

Provides students with the theory, techniques, and psychomotor skills needed to be a firefighter. Includes topics such as the fire service's role in society, principles of fire behavior, firefighter health and safety, fire equipment operation and maintenance, and fire fighting tasks and techniques. Emphasizes the requirements of the California State Board of Fire Services Certified Firefighter I training, International Fire Service Accreditation Congress (IFSAC) standards, and National Board on Fire Services Professional Qualifications (ProBoard) requirements. FS 281F and FS 281G satisfies all training requirements for the IFSAC Firefighter I certification and is intended for students currently employed or seeking employment as firefighters. [D; CSU]

**FS 281G****FIREFIGHTER I ACADEMY SKILLS REVIEW AND CERTIFICATION  
1 UNIT**

Grade Only

Laboratory 4 hours

Offered: ALL

Reinforces, combines, and integrates the skills learned in the basic fire academy in accordance with the State Fire Marshal Firefighter 1 curriculum. Provides the opportunity to take the National Capstone tests for International Fire Service Accreditation Congress (IFSAC) and National Board on Fire Services Professional Qualifications (ProBoard) certifications. Successful completion of this course provides the student with the opportunity to apply for employment as a firefighter in the state of California and outside of California with those states that offer reciprocity. This course is intended for students currently employed or seeking employment as firefighters. [D; CSU]

**FS 290****FIRE SCIENCE COOPERATIVE WORK EXPERIENCE I  
2-4 UNITS**

Grade Only

Recommended Concurrent Enrollment: Enrollment in one other class directly related to the Fire Science major in order to apply learned theory in a practical hands-on setting through an internship class.

Prerequisite: FS 101 or equivalent.

Limitation on Enrollment: Declared Fire Science major.

Laboratory 12 hours

Offered: ALL

Introduces principles and skills acquired in the Fire Science majors to on-the-job assignments. One unit of credit is granted for every 54 hours of work experience. Credit may be accrued at the rate of 2 to 4 units per semester for a maximum of fourteen units. The job supervisor and instructor will evaluate each student's job performance. [D; CSU]

**FS 291****FIRE SCIENCE COOPERATIVE WORK EXPERIENCE II  
2-4 UNITS**

Grade Only

Recommended Concurrent Enrollment: Enrollment in one other class directly related to the Fire Science major in order to apply learned theory in a practical hands-on setting through an internship class.

Prerequisite: FS 290 or equivalent.

Limitation on Enrollment: Declared Fire Science major.

Laboratory 12 hours

Offered: ALL

Applies beginning-level principles and skills acquired in the Fire Science majors to on-the-job assignments. One unit of credit is granted for every 54 hours of work experience. Credit may be accrued at the rate of 2 to 4 units per semester for a maximum of fourteen units. The job supervisor and instructor will evaluate each student's job performance. [D; CSU]

**FS 292****FIRE SCIENCE COOPERATIVE WORK EXPERIENCE III  
2-4 UNITS**

Grade Only

Recommended Concurrent Enrollment: Enrollment in one other class directly related to the Fire Science major in order to apply learned theory in a practical hands-on setting through an internship class.

Prerequisite: FS 291 or equivalent.

Limitation on Enrollment: Declared Fire Science major.

Laboratory 12 hours

Offered: ALL

Provides intermediate-level principles and skills acquired in the Fire Science majors to on-the-job assignments. One unit of credit is granted for every 54 hours of work experience. Credit may be accrued at the rate of 2 to 4 units per semester for a maximum of fourteen units. The job supervisor and instructor will evaluate each student's job performance. [D; CSU]

**FS 293**

**FIRE SCIENCE COOPERATIVE WORK EXPERIENCE IV**

**2-4 UNITS**

Grade Only

Recommended Concurrent Enrollment: Enrollment in one other class directly related to the Fire Science major in order to apply learned theory in a practical hands-on setting through an internship class.

Prerequisite: FS 292 or equivalent.

Limitation on Enrollment: Declared Fire Science major.

Laboratory 12 hours

Offered: ALL

Covers advanced-level principles and skills acquired in the Fire Science majors to on-the-job assignments. One unit of credit is granted for every 54 hours of work experience. Credit may be accrued at the rate of 2 to 4 units per semester for a maximum of fourteen units. The job supervisor and instructor will evaluate each student's job performance. [D; CSU]

**FS 299**

**INDEPENDENT STUDY**

**1-3 UNITS**

Pass/No Pass or Grade is Allowed

Limitation on Enrollment: Eligibility for independent study.

Lecture 3 hours

Offered: ALL

Independent study or research in some area of fire science of particular interest to the student and not included in regular courses of the college. (Same course as County FS X- 65.) [D; CSU]