

# Fire Technology

## Program Description

This program was established under direction of Solano County fire protection agencies and offers both an intensive training course culminating in a Certificate of Achievement and a well-rounded educational program leading to the Associate in Science Degree. Instructors in this program are experienced members of the fire service field. In addition, a Fire Technology Academy for recently recruited fire service personnel and pre-service students is conducted periodically. The curriculum consists of courses selected from the regular fire technology course offerings.

## Associate in Science Degree

A Certificate of Achievement can be obtained upon completion of the 30-unit major with a grade of "C" or better in each course. The Associate in Science Degree can be obtained upon completion of a total of 60 units, including the major, the general education requirements, and electives. All courses in the major must be completed with a grade of C or better or a P if the course is taken on a Pass/No Pass basis.

## Program Outcomes

Students who complete the Fire Technology Certificate of Achievement/ Associate Degree will be able to:

1. Identify minimum qualifications and entry-level skills for fire fighter hiring.
2. Demonstrate knowledge of fire service history, culture, and diversity.
3. Demonstrate the ability to analyze, appraise and evaluate fire and emergency incidents and identify components of emergency management and fire fighter safety.
4. Identify and comprehend laws, regulations, codes, and standards that influence fire department operations, and identify regulatory and advisory organizations that create and mandate them, especially in the areas of fire prevention, building codes and ordinances, and firefighter health and safety.
5. Analyze the causes of fire; determine extinguishing agents and methods; differentiate the stages of the fire and fire department; and compare methods of heat transfer.
6. Calculate flow requirements for fire apparatus; diagram a pump and plumbing schematic for fire apparatus; and apply mathematic formulae to hydraulics problems.
7. Identify and describe common types of building construction and conditions associated with structural collapse and fire fighter safety.
8. Differentiate between fire detection and fire suppression systems; design and diagram a wet and dry fire protection system; and identify alarm system components and their operations.

| REQUIRED COURSES                                    | Units     |
|---|-----------|
| FIRE 050 * Principles of Emergency Services         | 3         |
| FIRE 051 Fire Behavior & Combustion                 | 3         |
| FIRE 053 Fire Prevention                            | 3         |
| FIRE 054 Fire Protection Systems                    | 3         |
| FIRE 055 Fundamentals of Fire Service Operations    | 3         |
| FIRE 056 Building Construction For The Fire Service | 3         |
| Select 12 units from electives                      | 12        |
| <b>Total Units</b>                                  | <b>30</b> |

| Select 12 units from the following electives: | Units |
|---|-------|
| FIRE 102 * Fire Service Safety Practices      | 3     |
| FIRE 114 Fire Apparatus Maintenance           | 3     |
| FIRE 140 Fire Technology Academy              | 24    |
| IT 120 Electrical Safety                      | 3     |
| OCED 090 Occupational Work Experience         | 1 - 8 |

**Fire service personnel may take Fire Technology electives in lieu of these courses providing they are a current EMT and CPR card holder.**

## Information on State Fire Marshal Certification

The following Solano College courses satisfy the *course* requirements for the indicated

State Fire Marshal Certification:

*Investigator I* –FIRE 145 & 146

*Public Education Officer I* –FIRE 134 & 135

*Fire Instructor I* –FIRE 170 & 171

*Prevention Officer I* –FIRE 134, 135, & 136

*Prevention Officer II* –FIRE 174, 196, 176

*Chief Officer* –FIRE 165, 166, 167, 168, 185, 186, 187, 188, 189

This is a Gainful Employment Program. For additional information, please visit [http://www.solano.edu/gainful\\_employment/](http://www.solano.edu/gainful_employment/) and select "Fire Technology."

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**FIRE 050** **3.0 Units**  
**Fire Protection Organization**

*Course Advisory: SCC minimum English standard.* This course provides an overview of fire protection; career opportunities in the fire service and related fields; history of fire service and fire protection; fire organization and management; function of public and private protection services; fire departments as part of local government; fire prevention and investigation; building construction; specific fire protection functions; fire and emergency service apparatus and facilities; and introduction to fire protection systems. This is a Fire Technology core course and must be completed with a final grade of C or better in order to receive an Associate Degree or Certificate of Achievement in Fire Technology. *Three hours lecture.*

**FIRE 051** **3.0 Units**  
**Fire Behavior & Combustion**

*Course Advisory: SCC minimum English standard.* Provides the student with fundamental information and knowledge of the physical and chemical characteristics of matter, fire, hazardous materials, weapons of mass destruction identification and basic extinguishment theory. This is a Fire Technology core course and must be completed with a final grade of C or better in order to receive an Associate Degree or Certificate of Achievement in Fire Technology. Field Trip may be required. *Three hours lecture.*

**FIRE 053** **3.0 Units**  
**Fire Prevention Applications**

*Course Advisory: SCC minimum English standard.* This course provides fundamental information regarding the history and philosophy of fire prevention, organization and operation of a fire prevention bureau. It will also discuss the use of fire codes, identification and correction of fire hazards, and the relationship of fire prevention with fire safety education and detection and suppression systems. This is a Fire Technology core course and must be completed with a final grade of 'C' or better in order to receive an Associate Degree or Certificate of Achievement in Fire Technology. *Three hours lecture.*

**FIRE 054** **3.0 Units**  
**Fire Protection Systems**

*Course Advisory: SCC minimum English standard.* This course will provide information relating to the features of design and operation of fire detection and alarm systems and heat and smoke control systems. It will discuss special protection and sprinkler systems, water supply for fire protection, and portable fire extinguishers. This is a Fire Technology core course and must be completed with a final grade of 'C' or better in order to receive an Associate Degree or Certificate of Achievement in Fire Technology. *Three hours lecture.*

**FIRE 056** **3.0 Units**  
**Building Construction as it Relates to the Fire Service**

*Course Advisory: SCC minimum English and Math standards.* This course is intended to provide basic information about how buildings are designed and constructed. Through a basic understanding of building construction, the student will acquire an understanding of how buildings will behave under fire conditions. This course will aid in decision making related to fire prevention and fire control with the goal of successful fire ground operations. This course must be completed with a final grade of 'C' or better in order to receive an Associate Degree or Certificate of Achievement in Fire Technology. *Three hours lecture.*

**FIRE 101** **3.0 Units**  
**Principles of Fire and Emergency Services Safety and Survival**

*Course Advisory: English 001 and SCC minimum Math standard.* This course introduces the basic principles and history related to the firefighter life safety initiatives, focusing on the need for cultural and behavior change throughout the emergency services. *Three hours lecture.*

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**FIRE 102** **3.0 Units**  
**Fire Service Safety Practices**

*Course Advisory: Eligibility for ENGL 001.* Designed to provide basic skills in assessing environmental and fire dangers in the home, at the fire station, on the fire ground, on wildland fires, or while operating a fire vehicle. Successful students will receive a NWCG Fire Safety Officer Certificate. *Three hours lecture.*

**FIRE 114** **3.0 Units**  
**Fire Apparatus Maintenance**

*Course Advisory: Eligibility for English 001 and SCC minimum Math standard.* Introduces fire technology students to basic fire apparatus maintenance and troubleshooting techniques typically associated with the lubrication, coolants, drive train, engine, tires, batteries, and other moving parts of a piece of firefighting apparatus. *Three hours lecture.*

**FIRE 128** **3.0 Units**  
**Emergency Medical First Responder for the Fire Service**

*Course Advisory: SCC minimum English and Math standards.* Intended as a prerequisite for the stand alone EMT 212 course and as a prerequisite for EMT 212 included as part of Fire 113A the Wildland Fire Academy, Fire 128 provides the student with the basic, pedagogical emergency care procedures for sick and injured victims as a first responder including but not limited to: cuts, abrasions, broken bones, trauma injuries, burns and respiratory / cardiovascular emergencies. *Two and one-half hours lecture, one and one-half hours lab.*

**FIRE 132** **2.0 Units**  
**Pump Operation and Fire Hydraulics**

*Course Advisory: SCC minimum English standard.* Presents the principles of hydraulics as they relate to pumps used in fire fighting and appurtenant manipulative skills that accompany these principles. *Thirty-two hours lecture, eight hours lab (1-week course).*

**FIRE 140** **24.0 Units**  
**Fire Technology Academy**

*Prerequisite: FIRE 050 with a minimum grade of C and FIRE 083 or KINE 083 with a minimum grade of C, or a passing grade on the CPAT or PACK test as evidenced by a certificate of completion.* A course containing the contents of FIRE 115, 123, 124, 125, 126, 127, 129, 130, 131, and 83 and Certification of State Fire Marshal courses of I-200, Fire Control I, Fire Control 3B, Water /Swiftwater Rescue Awareness, Confined Space Awareness, Rescue Systems I, Trench Rescue, Low Angle Rescue, American Red Cross EMS First Responder for the Professional, and State Fire Marshal Certified wildland courses of S-190, S-130, S-131, S-134, L-180 and CALFIRE 67 Hour Basic Course. Successful students who maintained at least an 80% score on each unit and subject covered in this course may become eligible for certification by the State Fire Marshal as a Firefighter I pending a required internship with a recognized fire entity. The Solano College Fire Technology Program and its appurtenant Firefighter I Academy is a California State Fire Marshal Accredited Regional Training Program. Students enrolling in FIRE 140 are required to complete a mandatory information session prior to the course (see Schedule of Classes for the information session date and time.) *Fourteen hours lecture, thirty hours lab.*

**FIRE 153** **1.0 Unit**  
**Rescue Systems I**

*Prerequisite: Low Angle Rope Rescue. Dean approval based on State Fire Marshals guidelines.* *Course Advisory: SCC minimum English and Math standards.* Provides the required knowledge and manipulative skills necessary to safely and effectively perform rescues from elevated and subterranean surfaces. Formerly FIRE 148T. *Twelve hours lecture, twenty-eight hours activity (1-week course).*