

# FIRE SCIENCE

Firefighters are first responders who specialize in preventing and suppressing wildfire and residential and commercial structure fires. Firefighters also help people in health care emergencies. Fire Science provides the courses, programs, and support to launch a firefighting career.

See the [Fire Science](#) page for program and contact information.

## Programs

### Career and Technical Education

#### Associate of Applied Science

- [Fire Science - Associate of Applied Science \(AAS\)](#)

### Transfer

#### Associate of Science

- [Fire Service Administration \(EOU Transfer\) - Associate of Science \(AS\)](#)

## Courses

#### FIRE 103 Fire and EMS College Success (1 Credit)

Provides broad overview of college and life success strategies related to the fire, emergency medical services, and academic fields.

#### FIRE 104 Introduction to Emergency Services (4 Credits)

Provides overview of fire protection and emergency medical services. Includes philosophy, history, organization, nomenclature, and function of public and private agencies. Meets Fire and Emergency Services Higher Education core requirement and is equivalent to National Fire Academy C0273.

#### FIRE 105 Firefighter Safety & Survival (3 Credits)

Introduces the basic principles and history related to the national firefighter life safety initiatives, focusing on the need for culture and behavior change through the fire and emergency services. Meets Fire and Emergency Services Higher Education core requirement and is equivalent to National Fire Academy C0281.

#### FIRE 110 Building Construction for Fire Personnel (3 Credits)

**Prerequisites with concurrency:** FIRE 114.

**Recommended to be taken with:** FIRE 112.

Introduces the relationship of building construction to firefighter and life safety. Explores the elements of construction and design of structures, key factors when inspecting buildings, preplanning fire operations, and operating at emergencies. This course is a FESHE core requirement and is equivalent to NFA C0275.

#### FIRE 112 Public Education and Fire Prevention (3 Credits)

**Recommended to be taken with:** FIRE 114.

Provides fundamental knowledge relating to the field of fire prevention. Topics include: history and philosophy of fire prevention; organization and operation of a fire prevention bureau; use and application of codes and standards; plans review; fire inspections; fire and life safety education; and fire investigation. This course is a FESHE core requirement and is equivalent to NFA C0286.

#### FIRE 114 Fire Codes and Ordinances (3 Credits)

**Recommended to be taken with:** FIRE 110 and FIRE 112.

Introduces the International Fire and Building Code (IFC) and laws promulgated by the Office of the State Fire Marshal relating to fire safety and prevention. Provides the students with fundamental knowledge of the role of code enforcement in a comprehensive fire prevention program. This course is a FESHE Fire Prevention model curriculum.

#### FIRE 120 Fire Protection Systems (3 Credits)

**Recommended preparation:** FIRE 104 and FIRE 105.

Introduces features of design and operation of fire alarm systems, water-based fire suppression systems, special hazard fire suppression systems, water supply for fire protection, and portable fire extinguishers. Apply concepts in field exercises. Fire and Emergency Services Higher Education (FESHE) core requirement equivalent to NFA C0288.

#### FIRE 121 Fire Law (1 Credit)

**Recommended preparation:** FIRE 104 and FIRE 105.

Introduces the modern legal system with emphasis on cases related to fire service. Reviews case law affecting modern fire service agencies and explores laws relating to medical treatment of patients, fire protection, codes, emergency response, and department activities on the fire ground. FESHE non-core requirement equivalent to NFA C0270.

#### FIRE 122 Fire Department Budget (1 Credit)

Covers the budget process as required by Oregon laws. Includes types of budgets, the process of preparing the budget and classifying expenditures.

#### FIRE 123 HazMat Awareness & Operations (3 Credits)

**Prerequisites with concurrency:** FIRE 175 or department approval based on agency affiliation.

Prepares individuals to safely respond to hazardous materials emergencies. Includes training and education requirements for Hazardous Materials Awareness and Operations level certification, per National Fire Protection Association (NFPA) Standard 472 and State certification requirements per Oregon Department of Public Safety Standards and Training (DPSST). Students will be prepared to test for IFSAC certification.

#### FIRE 125 Firefighter Type II Training (3 Credits)

This is a National Wildfire Coordinating Group (NWCG) course. Trains new firefighters in basic firefighting skills and the basic fire behavior factors that will aid them in the safe and effective control of wildland fires. Receive an NWCG certification for S-130, S-190, and L-180 upon successful completion.

#### FIRE 130 Rescue Practices (3 Credits)

**Recommended preparation:** FIRE 104.

Explores techniques and applications of specialized rescue practices in modern fire service. Addresses specialized techniques used in vehicle rescue, steep-angle rescue, swift-water rescue, and basic overviews of ice rescue, electrical rescue, and trench rescue. Incorporates field exercises to practice techniques and tool use. Combine with Emergency Medical Technician-Basic training to integrate fire and emergency medical service skills for emergency rescue.

**FIRE 131 S-131, Firefighter Type I (1 Credit)****Prerequisites:** FIRE 125.

Provides Firefighter Type 1 training. Includes operational leadership; communications; lookouts, communications, escape routes, and safety zones; tactical decision making. Includes class discussion and tactical decision games designed to facilitate learning. National Wildfire Coordinating Group (NWCG) S-131 certified course; must be qualified as a Wildland Firefighter Type II (FFT2) per NWCG to enroll.

**FIRE 175 NFPA Firefighter 1 Academy (7 Credits)**

Provides new firefighters the practical and cognitive training needed to operate safely and effectively on the fireground. Meets the requirements outlined by NFPA 1001 (National Fire Protection Association,) the Oregon Department of Public Safety Standards and Training (DPSST,) and the International Fire Service Accreditation Congress (IFSAC) for firefighter training. Focuses on an intense hands-on approach to firefighter, which promotes both skill competency and an understanding of the fireground. Students will be tasked to complete numerous fireground evolutions that apply their skills to a variety of scenarios. Successful completion of finger printing/background check is required prior to DPSST certification. Requires a high level of physical fitness.

**FIRE 199 Selected Topics: Fire Science (1-4 Credits)**

This course is in development.

**FIRE 200 S-200 Initial Attack Incident Command (1 Credit)****Prerequisites:** FIRE 230.

Designed to meet the training needs of the Incident Commander Type 4 (ICT4). Presented in a discussion/exercise format. The six instructional units include Foundation Skills; Intelligence Gathering and Documentation; Size Up the Incident; Develop a Plan of Action; Post-fire Activities; Evaluate Incident Objectives and Manage the Incident. This is an NWCG certified course. NWCG requires students be qualified as any single resource boss to take this course.

**FIRE 201 NFPA Instructor 1 (3 Credits)**

Explores the job performance requirement of the National Fire Protection Agency, 1041 Standard for Fire Service Instructor Professional Qualifications and the National Wildfire Coordinating Group. Prepares students for instruction: planning, using a variety of instructional methods, teaching diverse learners, and evaluating course outcomes. Includes guidelines for addressing the critical issues of safety and the legal issues of training. This course is articulated with DPSST to provide NFPA Instructor 1 Certification. P/NP grading.

**FIRE 203 S-203 Introduction to Incident Information (3 Credits)****Prerequisites:** Instructor approval based on agency nomination.

Provides students with the knowledge and skills they need to serve as public information officers (PIOF). Includes establishing and maintaining an incident information operation, communicating with internal and external audiences, working with the news media, handling special situations, and long term planning and strategy. This course is an NWCG certified course.

**FIRE 205 Fire Behavior & Combustion (3 Credits)****Prerequisites:** FIRE 104, FIRE 105, FIRE 110, and FIRE 120.**Recommended preparation:** MTH 105Z.

Explores theories and fundamentals of how and why fires start, how they spread, and how they are controlled. Introduces the basic principles of chemistry and physics that govern fire behavior. Examine the properties of combustion products, fire-extinguishing agents, and the three states of matter. Fire and Emergency Services Higher Education (FESHE) core requirement equivalent to NFA C0276.

**FIRE 210 FI-210 Wildfire Origin/Cause (2 Credits)****Prerequisites:** Department approval.

Provides a knowledge and skill base for the wildland fire origin and cause determination investigator (INVF). Trains an INVF to perform at an acceptable level on a national basis without regard to geographic boundaries. This course is an NWCG certified course and NWCG recommends students have law enforcement or firefighter experience with wildland fire investigation responsibilities.

**FIRE 210S Structure Fire Investigation (2 Credits)****Prerequisites:** FIRE 104, FIRE 105, FIRE 110, FIRE 112, FIRE 120, FIRE 175, and FIRE 205.

Provides the technical knowledge needed for proper fire scene interpretations, including recognizing and conducting origin and cause, preservation of evidence and documentation, scene security, motives of the fire setter, and types of fire causes. Fire and Emergency Services Higher Education (FESHE) non-core requirement equivalent to NFA C0283.

**FIRE 211 S-211 Portable Pumps (1 Credit)****Recommended preparation:** FIRE 125 and MTH 015 (or higher).

Covers skills needed to design, setup, operate, troubleshoot, and shut down portable water delivery systems. Focuses on portable pumps, not water delivery for engines. Includes portable water delivery systems, equipment, roles and responsibilities, and system design and hydraulics. Includes an applied field exercise. National Wildfire Coordinating Group certified course.

**FIRE 212 S-212 Wildland Fire Chainsaws (2 Credits)**

Provides introduction to the function, maintenance, and use of internal combustion engine powered chainsaws and their tactical wildland fire application. Includes field exercises to support entry-level training for firefighters with little or no previous experience in operating a chainsaw, providing hands-on cutting experience in surroundings similar to fireline situations. NWCG (National Wildfire Coordinating Group) certifying course.

**FIRE 215 S-215 Fire Operations in the Urban Interface (3 Credits)****Prerequisites:** FIRE 131 and FIRE 290.

Focuses on tactical decisions needed to confront wildland fire that threatens life, property, and improvements in the wildland/urban interface. Includes interface awareness, size-up, initial strategy and incident action plan, structure triage, structure protection tactics, incident action plan assessment and update, follow-up and public relations, and firefighter safety in the interface. This is an NWCG certified course and NWCG requires students be qualified as a Firefighter Type 1 (FFT1).

**FIRE 219 S-219 Fire Operations (2 Credits)****Prerequisites:** FIRE 125.

Introduces the roles and responsibilities of a firing boss (FIRB) and outlines duties of other personnel who may engage firing operations. Discusses and illustrates common firing devices and techniques. Although comprehensive in nature, the course work is not a substitute for the dynamic fire environment. National Wildfire Coordinating Group (NWCG) certified course requiring Firefighter Type 2 (FFT2) qualification for certification.

**FIRE 230 S-230 Crew Boss (2 Credits)****Prerequisites:** FIRE 131 and FIRE 290.

Trains students in the performance of duties associated with the single resource boss position from initial dispatch through demobilization to the home unit. Topics include: operational leadership, preparation and mobilization, assignment preparation, risk management, entrapment avoidance, safety and tactics, offline duties, demobilization and post incident responsibilities. This is an NWCG certified course. Students are required to be qualified as firefighter type 1 (FFT1) and have successful completion of S-290.

**FIRE 231 S-231 Engine Boss (1 Credit)****Prerequisites:** FIRE 131, FIRE 230 and FIRE 290.**Recommended preparation:** FIRE 215, FIRE 219, FIRE 270, FEMA 1-200 and a certified driver course.

Trains students to perform all duties associated with the single resource engine boss. Topics include engine and crew capabilities and limitations, information sources, fire size up considerations, tactics, and wildland/urban interface. This is an NWCG certified course and students must be qualified as a firefighter type 1 (FFT1) and have successfully completed S-230.

**FIRE 232 Fire Protection Hydraulics and Water Supply (4 Credits)****Prerequisites:** FIRE 104, FIRE 105, FIRE 120, FIRE 175, FIRE 205, and MTH 098 (or higher) or minimum placement Math Level 14.

Provides a foundation of theoretical knowledge in the principles of the use of water in fire protection and in the application of hydraulic principles to analyze and solve water supply problems. FESHE non-core requirement equivalent to NFA C0277 and DPSST certification in NFPA Pumper Operator.

**FIRE 236 S-236 Heavy Equipment Boss (1 Credit)****Prerequisites:** FIRE 230 and FIRE 290.

Trains for the role of heavy equipment boss on an incident as outlined in the PMS 310-1 and the Position Task Book developed for the position. Primary considerations are tactical use and safety precautions required to establish and maintain an effective dozer operation. This is an NWCG certified course and students are required to be qualified as firefighter type 1 (FFT1) and have successfully completed S-230.

**FIRE 248 S-248 Status/Check-In Recorder (2 Credits)****Recommended preparation:** FEMA I-200, L-180 Human Factors, and basic computer skills.

Introduces tools and techniques used to perform the duties of a status check-in recorder (SCKN). Provides an overview of what a student can expect if dispatched to an incident. This is an NWCG certified course.

**FIRE 255 Wildland Interface & Tactical Decision Simulations (2 Credits)****Prerequisites:** FIRE 104, FIRE 105, FIRE 125 and FIRE 175.

Focuses on structure fire duties in relation to the urban interface. Designed to assist structure firefighters in making tactical decisions when confronting wildland fire that threatens life, property, and improvements in the wildland urban interface. Uses simulations of specific problem situations to learn and to apply tactical decision-making skills in the fire environment. Includes anticipating or predicting problem fire behavior during operations and using lookouts, communications, escape routes, and safety zones.

**FIRE 261 S-261 Applied Interagency Incident Business Management (2 Credits)****Recommended preparation:** ICS I-100; NWCG certification of S-260, Interagency Incident Business Management, S-110, Basic Willand Fire Suppression Orientation; I-Suite, Time Module component, and L-180 Human Factors on the Fireline.

Provides the prerequisite skills/knowledge necessary to perform the tasks of the entry-level finance positions in the Incident Command System (ICS). Designed to be taken after completion of Interagency Incident Business Management (S-260). This is an NWCG certified course and students are required to have completed S-260, Interagency Incident Business Management.

**FIRE 263 Human Behavior in Fire (3 Credits)****Prerequisites:** FIRE 104, FIRE 105, FIRE 110, FIRE 112, FIRE 114, FIRE 120, FIRE 205, and MTH 098 (or higher) or minimum placement Math Level 14.

Provides fundamental information on human behavior as it relates to fire and mass casualties, understanding human behavior, building design, evacuation and fire department operations. Discusses issues associated with large populations and disabled or persons with limited mobility. FESHE fire prevention curriculum requirement equivalent to NFA C0276.

**FIRE 265 Fire and Emergency Service Administration (3 Credits)****Prerequisites:** FIRE 104, FIRE 105, FIRE 110, FIRE 112, FIRE 114, FIRE 175, FIRE 120, and WR 065 (or higher) or placement into Wr/Comm Level 9.**Prerequisites with concurrency:** FIRE 205.

**Recommended preparation:** Recommended to be taken your second year. Introduces the organization and management of a fire and emergency services department and the relationship of government agencies to the fire service. Emphasizes fire and emergency service ethics and leadership from the perspective of the company officer. Fire and Emergency Services Higher Education (FESHE) non-core requirement (equivalent to NFA C0272); meets DPSST Fire Officer I requirements.

**FIRE 270 S-270 Basic Air Operations (2 Credits)****Recommended preparation:** FIRE 125.

Covers aircraft types and capabilities, aviation management and safety, tactical and logistical uses of aircraft, and requirements for helicopter take-off and landing areas. NOTE: The regulations, procedures, and policies addressed in this course are primarily those governing federal agency and incident command system operations. State, county, and other political subdivisions using this course will need to consult their agency having jurisdiction with respect to regulations, procedures and policies. National Wildfire Coordinating Group (NWCG) certified course.

**FIRE 275 Tactics & Strategies (3 Credits)****Prerequisites:** FIRE 104, FIRE 105, FIRE 110, FIRE 112, FIRE 114, FIRE 120, FIRE 123, FIRE 175, FIRE 205, and FIRE 265.**Prerequisites with concurrency:** FIRE 232.

Provides a capstone experience to the Fire Science AAS program. Includes an in-depth analysis of the principles of fire control using personnel, equipment, and extinguishing agents on the fire ground. Taken in the final term prior to program completion. Fire and Emergency Services Higher Education (FESHE) non-core requirement; equivalent to NFA C0279.

**FIRE 280 Co-op Work Experience Fire Science (1-4 Credits)****Prerequisites:** Instructor approval.

Provides experience in which students apply previous Fire Science classroom learning in an occupational setting. Credits depend on the number of hours worked. P/NP grading.

**FIRE 281 L-280 Followership/Leadership (2 Credits)****Prerequisites:** FIRE 125.

Designed as a self-assessment opportunity for individuals preparing to step into a leadership role. Includes one day of classroom instruction followed by a day in the field with small teams of students working through a series of problem-solving events (Field Leadership Assessment Course). Includes leadership values and principles; transition challenges for new leaders; situational leadership; team cohesion factors; ethical decision making; after action review techniques. National Wildfire Coordinating Group (NWCG) certified course. P/NP grading.

**FIRE 286 Pacific Northwest Engine Academy (3 Credits)****Prerequisites:** FIRE 125 and FIRE 211.

Provides training in water handling and engine operation skills applicable to both fuels management and fire suppression activities. Uses Incident Command System (ICS) terminology. P/NP grading.

**FIRE 290 S-290 Intermediate Wildfire Behavior (3 Credits)****Prerequisites:** FIRE 125.

Prepares the prospective fireline supervisor to undertake safe and effective fire management operations. Second course in a series that collectively serves to develop fire behavior prediction knowledge and skills. Discusses fire environment differences as necessary; instructor should stress local conditions. National Wildfire Coordinating Group (NWCG) certified course.

**FIRE 291 S-300 IC Extended Attack (1 Credit)****Prerequisites:** FIRE 200 and FIRE 292.

Meets the training needs of the incident commander, type 3 (ICT3). Focuses on the lessons of leadership and command as they relate to the ICT3 position. Includes tactical decision games for students to practice concepts. Units include: Foundational Skills, Situational Awareness, Command and Control, Managing the Incident, Transitional Activities, Post-Fire Activities and a Final Simulation. This is an NWCG course and requires qualification as an Incident Commander Type 4 (ICT4) and Task Force Leader (TFLD) OR qualified as ICT4 and Strike Team Leader and any two single resources boss positions - one must be Crew (CRWB) or Engine (ENGB).

**FIRE 292 S-330 Task Force/Strike Team Leader (1 Credit)****Prerequisites:** FIRE 230 and FIRE 290.

Prepares the student to perform in the role of task force leader (TFLD) or any strike team leader. Examples and exercises are specific to wildland fire suppression. The student is expected to perform in high risk simulations. This is an NWCG certified course and students are required to be qualified as any single resource boss.

**FIRE 293 S-339 Division Group Supervisor (1 Credit)****Prerequisites:** FIRE 200, FIRE 290 and FIRE 292.

Prepares student to perform in the role of division/group supervisor. Provides instruction in support of the specific tasks of division/group supervisor, but will not instruct the student in general management/supervision or in the incident command system (ICS). Topics include: division/group management, organizational interaction, and division operations. This is an NWCG certified course and students are required to be qualified as a Task Force Leader (TFLD); OR qualified as Incident Commander Type 3 (ICT3); OR qualified as Incident commander Type 4 (ICT4) AND any two (2) Strike Team Leader positions (one must be STCR or STEN).

**FIRE 294 S-390 Fire Behavior Calculation (3 Credits)****Prerequisites:** FIRE 230 and FIRE 290.

Introduces fire behavior calculations by manual methods, using nomograms and the Fire Behavior Handbook Appendix B: Fire Behavior. Gain an understanding of the determinants of fire behavior by studying inputs such as weather, slope, fuels, and fuel moisture. Learn how to interpret fire behavior outputs, documentation processes, and fire behavior briefing components. This is an NWCG (National Wildfire Coordinating Group) Certified course; requires qualification as a single resource boss.

**FIRE 298 Independent Study: Fire Science (1-4 Credits)****Prerequisites:** Instructor approval.**Recommended preparation:** Prior coursework in the discipline.

Individualized, advanced study in Fire Science to focus on outcomes not addressed in existing courses or of special interest to a student. P/NP grading.

**FIRE 299 Selected Topics: Fire Science (1-4 Credits)**

Provides a learning experience in Fire Science not currently available; this course is in development to be proposed as a permanent course.