

## **Fire Science Degree Program Outcomes**

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

1. Explain currently used fire suppression technology and its impact on the fire service mission.
2. Analyze a fire department budget.
3. Locate specific applicable standards and regulations, including those issued by the National Fire Protection Association's (NFPA) and the Occupational Safety and Health Administration's (OSHA), as well as federal, state and local laws as they apply to specific areas of the fire service.
4. Identify construction types and structural components used in the built environment.
5. Evaluate the impact of fire behavior, smoke and heat removal, and fire suppression techniques upon a specific construction type as it relates to fire resistance, safe occupant removal, fire fighter safety, and building collapse.
6. Demonstrate competence in the assessment of a trauma and medical patient.
7. Demonstrate competence in the management of a trauma and medical patient.
8. Explain the National Incident Management System and the role of the All Hazard Approach in emergency response planning based on the criteria provided by the Department of Homeland Security.

## **Fire Science Degree Outcome Assessment Process**

**Outcome 1:** Assessment is based on midterm and final exam in which students identify and describe the following:

- Fire Suppression installation, maintenance and testing standards
- Fire Suppression systems and their applications
- Fire Suppression system components

**Outcome 2:** Assessment is based on a research project in which students research and report on the financial characteristics of a fire department of their choice. Students identify and explain the following:

- Total Annual Budget (Current year and two prior years)
- Current Year Revenue expected to be derived from taxes
- Current Year Revenue expected to be derived from sources other than taxes
- Percentage of the budget committed to personnel in current year
- Percentage of budget committed to operational expenses in current year
- Percentage of budget committed to capital expenditures in current year

**Outcome 3:** Assessment is based on two projects. Project 1 requires that the students create a PowerPoint presentation in which they photograph local facilities meeting various Occupancy Classifications as defined in NFPA 101 and the International Building Code. Project 2 requires that the students create a PowerPoint presentation and checklist based on Common Code Violations for presentation to a presumed group of business owners within their community.

**Outcome 4:** Assessment is based on a student-developed PowerPoint presentation that explains each of the major types of building construction. In addition, the presentation must address concerns about firefighter safety in relation to the construction types.

**Outcome 5:** Assessment is based on the completion of a research project in which students review a NFPA Fire Investigation Report and report on the following:

- Details of fire ignition, growth and development
- Contributions of building construction, interior finish and furnishings
- Fire detection and suppression scenarios
- Performance of structures exposed to the fire; smoke movement and control
- Human reaction (response) and evacuation
- Firefighting and rescue
- Fire propagation as a function of human reaction time
- The extent of life loss, injury and property damage.

**Outcome 6:** Assessment is based on successful completion of the NREMT Emergency Medical Technician (EMT) cognitive exam. The exam covers the entire spectrum of EMS care, including: Airway, Respiration & Ventilation; Cardiology & Resuscitation; Trauma; Medical & Obstetrics/Gynecology; and EMS Operations. Items related to patient care are focused on adult and geriatric patients (85%) and pediatric patients (15%). In order to pass the exam, students must meet a standard level of competency. The passing standard is defined by the ability to provide safe and effective entry-level emergency medical care.

**Outcome 7:** Assessment is based on successful completion of the NREMT Emergency Medical Technician (EMT) cognitive exam. The exam covers the entire spectrum of EMS care, including: Airway, Respiration & Ventilation; Cardiology & Resuscitation; Trauma; Medical & Obstetrics/Gynecology; and EMS Operations. Items related to patient care are focused on adult and geriatric patients (85%) and pediatric patients (15%). In order to pass the exam, students must meet a standard level of competency. The passing standard is defined by the ability to provide safe and effective entry level emergency medical care.

**Outcome 8:** Assessment is based on successful completion of the following FEMA Independent Study Courses:

- IS-100: Introduction to the Incident Command System
- IS-700: National Incident Management System, An Introduction
- IS-800: National Response Framework, An Introduction