



# FIRE SAFETY MANUAL

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**Revised: May, 2013**

# FLORIDA ATLANTIC UNIVERSITY

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# **1 FIRE SAFETY PROGRAM COMPLIANCE AND RESPONSIBILITIES**

## **1.1 Introduction**

The mission of our fire safety program is to broadly increase fire safety awareness, reduce the risk and number of fires, reduce loss of life, injury and property damage through education training and inspection as well as policy and standard development. Our strategy to reduce fire deaths and injuries is to focus on prevention by identifying and rectifying unsafe behaviors. The National Fire Protection Association (NFPA) and the Occupational Safety and Health Administration (OSHA) are the primary standards used in the development of this Manual. Any area not specifically covered may be referenced in one of the above standards and will apply as necessary.

## **1.2 Implementation**

Campus fire safety is a vitally important area of concern for FAU. The potential for loss of life or injury from a fire-related incident is one of the most serious risks a university must face. Therefore, an institution of higher education must have a comprehensive fire safety program. It requires an on-going commitment on the part of the community, the institution, and the administration. Careful planning, implementation, and maintenance are all essential ingredients of a successful fire safety program.

## **1.3 Compliance and Responsibilities**

Due to the danger of injury or death from fire-related emergencies, faculty, staff, students and contractors as well as visitors must comply with this program. Any hazardous or emergency situation must be reported to the proper authorities. Failure to do so could result in the possible loss of life and property. Persons who knowingly and/or willingly violate the provisions of this program may be subject to disciplinary action. The responsibilities for campus fire prevention rest on all levels of the University and are outlined as follows:

## **1.4 Responsibilities**

### **1.4.1 The President of the University**

As the chief executive, has ultimate responsibility for establishing and maintaining environmental health and safety programs for the University, and provides continuing support for the Fire Safety Program.

### **1.4.2 Vice-Presidents, Deans, Chairs, and Directors**

These administrators are responsible for enforcing fire safety programs in areas under their control, and providing assistance to EH&S in conducting safety inspections, correcting violations, and implementing fire prevention and evacuation policies as well as encourage and require employees to participate in fire safety trainings and awareness programs.

### 1.4.3 Supervisors

Supervisors must brief employees on the specific hazards of their work area, on fire reporting and evacuation plans, and fire extinguisher locations. They will be exemplary in fire prevention and require them to participate in fire drills so that they become familiar with the area escape plan

### 1.4.4 Employees

New employees, when attending the initial orientation, will receive an overview of the safety programs provided by EH&S and should become familiar with the services. The orientation will focus on fire prevention techniques in the work area as well as what to do in case there is a fire emergency. Employees should comply with fire safety policies and guidelines, report any unsafe condition and receive training as required.

### 1.4.5 Students

Students should familiarize themselves with the fire safety guidelines of FAU and those living in Residence Halls shall also be familiar with Housing and Residential Life rules. They should report vandalism and fire hazards to EH&S or Housing and Residential Life. They will be required to evacuate the building during a fire emergency and proceed to pre-determined assembly areas of their buildings and wait there until told to re-enter the building.

### 1.4.6 Environmental Health & Safety

- Provides a fire-safe environment for employees, faculty, students and visitors.
- Coordinates and reports code compliance inspections.
- Responds to fire incidents and does the follow-up.
- Assists in the response to reports from the State Fire Marshal and the follow up.
- Acts as liaison to other local and state regulatory agencies related to fire and life safety.
- Assists and advises University departments on matters relate to fire and life safety issues.
- Participates in the design of fire detection and alarm system standards.
- Monitors fire detection and fire suppression systems.
- Develops and publicizes university fire program and policy.
- Serves on the University Safety Committee.
- Conducts emergency evacuation exercises.
- Provides fire safety education and training.
- Review plans.
- Participates in the design, construction, and renovation of buildings through the process of plans review and construction inspections.

### 1.4.7 Physical Plant

- Inspects, tests, and maintains fire detection and suppression systems.
- Inspects and tests emergency exit signs and lighting and other life safety systems.
- Corrects fire code deficiencies in a timely manner.

- Assists in the design of fire suppression, detection and alarm systems.

#### **1.4.8 Housing and Residential Life**

- Provides fire safety education for student residents and housing staff.
- Conducts monthly in-house code compliance inspections for residence halls and apartments.
- Participates on the University Fire Safety awareness programs.
- Inspects, tests, and maintains all fire safety equipment.
- Assists and coordinates emergency evacuation exercises for housing units.
- Corrects fire code violations in a timely manner.

#### **1.4.9 Facilities Planning**

- Develops and maintains a university design manual.
- Develops fire suppression and detection system specifications.
- Participates on University Fire Safety awareness strategies.
- Ensures Life Safety Code Compliance for new and renovated buildings.
- Executes fire code corrections that require Capital Outlay funding.

#### **1.4.10 Contractors**

Comply with local, state, and federal safety standards. If the contractor has an established program that meets or exceeds FAU policy, it may be used on the job site. If the contractor does not have such program, FAU policies may be mandated. The more restrictive requirements will apply.

## **2 FIRE PREVENTION MEASURES**

### **2.1 Program Strategies**

Fires require fuel, an adequate oxygen supply, and an ignition source to start. Fire prevention is accomplished by maintaining control over one of the three required elements that, when brought together, cause fires. The strategies we follow will include the following:

1. Implement a program that targets preparation, prevention and emergency preparedness and evacuation.
2. Proper handling of combustible and flammable materials. FUEL LOADS.
3. Proper handling and control of all ignition sources. FUEL SOURCES.
4. Implement safe housekeeping practice that reduces the risk of fire danger.
5. Install a reliable fire protection system and maintenance procedures.



6. Disseminate fire safety information through education, training and other means of awareness program.

## **2.2 Fire Prevention Plan:**

The purpose of the plan is to eliminate the causes of fire and prevent loss of life and property by fire. The plan provides faculty, staff and students with information and guidelines which will assist in recognizing, reporting and controlling as well as eliminating the causes of fires and fire hazards.

## **2.3 Program Elements will include:**

1. Identifying potential fire hazards one of which is the proper handling of combustible and flammable materials.
2. Control and proper usage of ignition sources mainly electricity which is the major ignition source in all occupancies. Ignition sources also exist in chemical and mechanical forms. Smoking, open flames like candles and hot burners as well heat producing elements.

The major causes of fire at the workplace include poor housekeeping, improper storage and use of flammable materials, overloaded electrical outlets and extension cords, misuse of heat producing appliances including space heaters, unsupervised cooking, and improper disposal of smoking materials on campus grounds. Implementing fire prevention measures is the key in an attempt to insure one's personal safety.

### **2.3.1 Prevention Measures**

- Make certain that a copy of the "Fire and Emergency Procedures" is posted in a conspicuous location on each floor.
- Have an understanding and knowledge of the contents of the "Fire and Emergency Procedures."
- Recognize all possible risks associated with an activity or process and eliminate it by controlling sources of ignition and properly managing combustible and flammables.
- Regularly observe emergency evacuation routes, fire extinguishers, and emergency and exit lights. Immediately report any missing equipment or any other problems discovered to EH&S.
- Encourage occupants to actively participate in fire drills that are conducted regularly.
- Regularly observe the lobby, corridors, stairwells, and keep them clear of obstructions.
- Regularly observe all exits to keep them clear of obstructions AT ALL TIMES.
- Report any tampering with the fire alarm, smoke detection and suppression systems to EH&S.

- Regularly observe fire doors to make certain they are closed at all times; report inoperable doors to Physical Plant or the respective maintenance offices.
- Inspect offices in search of:
  - Overloaded circuits
  - Frayed or damaged electrical cords
  - Improperly used extension cords
  - Improperly used appliances
- Forbid the use of candles or any other open flame devices for any purpose in the University buildings.
- Enforce the "No Smoking Policy" in all FAU facilities.
- Enforce all Florida Atlantic University safety regulations. If there are questions, contact EH&S.

### **2.3.2 Housekeeping**

- Fire doors must be kept closed at all times unless they are held open by an approved device connected to the fire alarm system.
- Exits, stairways and passageways leading to and from exits must be kept free of obstructions at all times. Furnishings, decorations, combustible objects, or flammables must not block exits, access to exits, or any means of egress.
- Dispose of all trash as soon as possible in trashcans or dumpsters. Waste materials must never be piled in corridors or stairwells while awaiting removal.
- Flammable materials should be present in the work area only in the quantities required for the day's job. These materials must be placed in an approved storage area at the end of each day.
- Materials must not obstruct sprinkler heads or be piled around fire extinguishers, fire alarm pull stations, or sprinkler and stand pipe control valves. To obtain proper distribution of water from sprinklers, a minimum of 18 inches of clear space is required below sprinkler deflectors.

### **2.3.3 Electrical Wiring and Appliances**

- Supervisors should periodically inspect all electrical equipment and cords to ensure proper use and safe conditions. Improper use of electrical devices to obtain more outlet capacity can result in overloaded circuits and fire.
- The use of extension cords should be minimal and used only when a flexible, temporary connection is necessary. The cord and the outlet should be checked periodically to ensure overheating is not occurring. Extension cords cannot be used for fixed wiring, and should never be tacked, stapled, tied, hidden under rugs or draped over pipes or other supports,

fastened to or through woodwork, ceilings or walls. When there is a permanent need of an electrical outlet, one should be installed through proper work order or minor project request.

- Extension cords are permitted to be used as permanent wiring at any time. However surge protectors are permitted. They must plug directly to a wall outlet and the equipment must be directly plugged into the surge protector. All surge protectors are to be UL listed and bear the UL symbol.
- The following are some of the items that are not permitted.
  - Three way outlet splices (the little box that makes one plug into three)
  - Outlet boxes (usually silver box with 4 plugs on top and a long black cord)
  - Home use extension cords (usually brown, green or white light weight cords)
  - Heavy duty extension cords (when not being used temporarily)
- Be sure all electrical equipment is properly grounded. If any evidence is found of frayed, cracked or damaged wiring or electrical outlets, the equipment affected should be taken out of service until repairs are made.

Space heaters, coffee makers, microwave ovens, toasters and all other appliances with exposed heating elements should never be left unattended while in operation. Space heaters should not be placed under desks or in other enclosed areas. These appliances should be unplugged after each use and stored only after they are cool enough to touch. They should be operated away from combustible materials such as files, curtains, trash containers, etc., AND MUST BE KEPT AT LEAST 3 FEET AWAY FROM ALL COMBUSTIBLE AND FLAMMABLE MATERIALS.

### **3 GUIDELINES FOR FIRE SAFETY EDUCATION AND TRAINING**

The Department of Environmental Health and Safety (EH&S) serves the community by addressing all aspects of the natural and built environment that can affect the health and safety of students, staff, faculty and visitors. It does so through an educational process of training and other service oriented programs.

At the core of the program is the education and knowledge which we believe is the key to save lives, test and train occupants in fire safety awareness, and bring a higher level of understanding of what is involved in order to prevent and more importantly SURVIVE A FIRE. In essence the goal is to provide knowledge so as to understand the origin of fires, sources of fires, how to prevent fires from occurring and finally what to do if one is faced with fire.

The fire safety training is organized in such a way as to meet the specific needs of groups of people based on the kind of fire hazards to which they are exposed.

#### **3.1 Fire Safety Training for Office Employees**

Workplace fire safety guidelines are primarily derived from the National Fire Protection Association's Life Safety Code (NFPA 101) and the Occupational Safety & Health Administration's (OSHA) regulations contained in Title 29, part 1910, Subpart E. of the Code of Federal Regulations. These regulations apply to buildings and work areas and provide basic requirements for the protection of property and life and the prevention of fires and explosions. OSHA requires employers to have a Fire Prevention Plan and to inform their employees of fire hazards to which they are exposed upon initial assignment of their jobs.

This Fire Prevention and Emergency Evacuation training has been developed to comply with the above regulations and guidelines. EMPLOYEES WILL BE TRAINED ABOUT THE FIRE PREVENTION PLAN AND EMERGENCY EVACUATION PROCEDURES of their work place, understand the threat and power of fire, and learn what to do in case of fire. This includes being familiar with basic fire protection systems including the basics of fire extinguishers and how to use them. All faculty, staff and students participate in this training.

### **3.2 Fire Safety in Residence Halls**

“Get Out and Stay Alive.” The training provides students who live in the residence halls with information necessary to maintain a fire safe environment. This program focuses on fire prevention, fire protection and fire emergency preparedness and evacuation and is designed as a tool student's use to save lives in the event of fire. Training topic include identifying the possible causes of fire, fire prevention techniques, emergency planning, familiarizing with evacuation plans, fire drills and basic concepts on fire protection systems as it relates the effect of vandalizing and tampering. Hands-on fire extinguisher is a vital part of this training module. Students living in the Residence Halls, resident advisors, housing administrators and staff are enrolled in this training.

### **3.3 Fire Safety Training for Crowd Managers**

This training module provides guidance and education to departments that host large size indoor and outdoor activities or events, or departments that have Class A & B occupancy facilities such as theatres auditoriums, gymnasiums etc. The training covers requirements that need to be met during an event, procedures that need to be in place to ensure safety of the crowd and the organizers. Participants will learn about basic fire prevention concepts, how fire protection systems work, what to do in case of a fire emergency including how to work with emergency responders, occupancy classifications and occupant load limits as well as how to deal with crowd. Hands- on fire extinguisher training is also included in this module. Event managers, people in charge of auditoriums as well as leaders of student organizations participate in this training.

### **3.4 Fire Safety Training for Building Supervisors**

This module of fire safety training is for people who are assigned to manage buildings and spaces. The training covers fire prevention and emergency preparedness and evacuation techniques, understanding of life safety systems in buildings and how they operate, major hazard associated with buildings as well as how to get people out of the building during an emergency and interact

with emergency responders. Hands-on fire extinguisher is included in this module. Building managers, administrators and office managers enroll for this training.

### 3.5 Fire Safety Training for Laboratory Employees

Fires and explosion are the most serious physical hazards faced in typical chemistry labs as well as in other labs and research and experiment settings. The concentration of fuel loads in the form of flammable and combustible liquids as well as the existence of highly pressurized cylinders of different kinds; together with different kinds of ignition sources that are used for operation classify laboratories to be high hazard areas to work.

Training will outline how to prevent fire in lab setting which will outline on the handling of flammable and combustible liquids including hazardous waste materials (fuel loads) containment of ignition sources be electrical, chemical, or mechanical. It also addresses the proper procedures to follow for preparing for a fire emergency and what to do should a fire emergency occur. A hands-on fire extinguisher training and knowing the different types of fire extinguisher is also an important part of the training module. Lab supervisors, technicians, student and faculty members who teach and work in labs participate in this training.

### 3.6 Theme of Fire Safety Training

In any of the above modules of training the theme of each of the training sessions is to help participants learn:

#### 1. FIRE PREVENTION (Stopping Fire From Occurring)

Training Topics:

- What is fire?
- What are the possible causes of fire?
- What needs to be done to prevent the possible causes of fire?
- Actions to take to mitigate fires, inspection, hazard reporting,

#### 2. EMERGENCY PREPAREDNESS AND EVACUATION (What Action To Take In Case Fire Occurs In A Building)

Training Topics:

- How to prepare for a fire emergency.
- Participation in fire drills.
- Knowing evacuation procedures
- Knowledge and maintenance of fire protections systems
- Know how to use proper type of fire extinguisher

### 3.7 Fire Extinguisher Training

OSHA Standards 1910.157 directs that where an employer has provided fire extinguisher for employees in the work place, the employer shall provide an education program to familiarize employees with the general principles of fire extinguisher use and the hazards involved with incipient stage firefighting.

The employer shall provide the required education upon initial employment and at least annually thereafter.

This training program provides extensive information on the classification of fires, portable fire extinguisher classification, operation of portable fire extinguisher, and the hazards involved in fighting an incipient stage fire. Classroom training provides attendees with the opportunity to actually use fire extinguisher to put out a small fire.

## 4 EMERGENCY EVACUATION PROCEDURES

The purpose of the Emergency Evacuation Procedures is to establish minimum requirements that will provide a reasonable degree of life safety from fire and similar emergencies in Florida Atlantic University buildings and structures. The Emergency Evacuation Procedures will be utilized to evacuate all occupants during a fire emergency. Failure to leave the building when a fire evacuation alarm is sounding is a violation of state law.

### 4.1 Emergency Evacuation

#### 4.1.1 General Information

**What conditions may warrant evacuation of a building?**

- **Fire,**
- **Bomb Threat,**
- **Hazardous Material Spill,**
- **Hostile Intruder,**
- **Utility Failure, etc.**

**What should I know about the building evacuation plan?**

- **KNOW** the evacuation plan of the building and where to find it. (Consult Building Safety Personnel)
- **KNOW** the location of all exits for the building.
- **KNOW** the locations of emergency equipment (i.e., fire extinguishers, pull stations, emergency telephones, etc.).

- KNOW the location of the assembly area outside the building.
- ASSIST and participate in fire drills.

**What should I do when I hear a fire alarm, or get an order to evacuate without an activated alarm?**

- TURN OFF ALL HAZARDOUS EXPERIMENTS or procedures before evacuating. If possible, take or secure all valuables, wallets, purses, keys, etc. **as quickly as possible.**
- CLOSE all doors behind you as you exit.
- CHECK all doors for heat before you open or go through them to avoid walking into a fire.
- EVACUATE the building using the nearest exit or stairway. **DO NOT USE ELEVATORS.**
- CALL 911 from a safe area and provide name, location, and nature of emergency.
- PROCEED to pre-determined assembly area of building and **remain there** until you are told to re-enter by the emergency personnel in charge.
- DO NOT IMPEDE access of emergency personnel to the area.
- INFORM Building Safety Personnel or Emergency Personnel of the event, conditions and location of individuals who require assistance and have not been evacuated.

**What should I do to initiate a fire alarm to evacuate a building?**

- **Activate Fire Alarm Pull Station Located At Various Places Along Exit Routes.**

**4.1.2 Individuals Requiring Assistance**

**What should I know as an individual requiring assistance?**

- LEARN the locations of exit corridors, exit stairways and designated areas of refuge.
- PLAN an escape route.
- TELL a co-worker or instructor how to assist you in case of emergency.

**What should I do, as an individual requiring assistance, during a building evacuation?**

- WAIT near the closest stairway, entrance or designated area of refuge **and** wait for assistance from others.
- **DO NOT USE ELEVATORS**

**What should I know/or do to help individuals requiring assistance?**

- KNOW the needs and capabilities of people requiring assistance who are routinely in your work area.
- ASK how you can help anyone requiring assistance before giving it.
- GENERAL GUIDELINES:
  - **INDIVIDUALS WHO ARE BLIND OR VISUALLY IMPAIRED:**
    - OFFER assistance verbally and guide them to the nearest exit.

- DO NOT GRAB THEIR HANDS AND PULL THEM ALONG. Instead, offer your elbow to them. It is easier to hold on to a sighted person's elbow during an evacuation. If possible, someone should follow behind to protect the individual from being pushed down in the event of crowding.
- **INDIVIDUALS WHO ARE DEAF OR HARD OF HEARING:**
  - Get their attention and convey information by using hand gestures or writing what is happening and where to go.
  - Guide them to the nearest exit.
- **INDIVIDUALS WHO MAY NOT BE ABLE TO RESPOND TO AN EMERGENCY SHOULD BE CALMLY ADVISED AND GUIDED TO THE EXIT.**
- **INDIVIDUALS WHO ARE IMMOBILIZED OR HAVE A MOBILITY DISABILITY:**
  - These include individuals wearing casts and/or using canes or crutches, or those who are wheelchair bound, and those sustaining injuries during the emergency that render them immobile.
  - They should be given assistance based solely upon their ability to maneuver through doorways and up/down stairs to **REDUCE THE RISK OF PERSONAL INJURY. They should not be evacuated by untrained personnel unless the situation is life-threatening (Fire Rescue/Police personnel are trained personnel).**
  - If located on an upper floor, individuals may be assisted to a stairway entrance or designated area of refuge to await evacuation or further instructions from Fire/Rescue or Police. If the individual is capable of walking with assistance, a "buddy" should assist and accompany the individual when descending the stairs

**What should I do to assist individuals who cannot maneuver up/down stairs?**

- GUIDE THE INDIVIDUAL quickly to reasonable safety, to a stairway entrance, out of way from the stream of traffic or designated area of refuge.
- ACCOMPANY ANY ACTION by a verbal explanation so that the person being assisted understands what is happening and why these actions are being taken.
- CONTACT UNIVERSITY POLICE immediately if a telephone is available, and provide the following:
  - The individual's name and location within the building
  - The phone number from which the call is being made.
  - *If left alone, the individual may wish to remain on the phone with University Police.*
- IF AVAILABLE, A COMPANION, OR OTHER RESPONSIBLE PERSON may remain with and assist the individual.
- INFORM the Building Safety Supervisor or emergency personnel of the exact location of the individual(s) with the disability (ies).

*Trained, equipped, emergency personnel will facilitate the evacuation of individuals with disabilities.*



## 5 FIRES AND FIRE SAFETY

### 5.1 General Information

#### What should I do if I discover a fire?

- **ACTIVATE THE FIRE ALARM SYSTEM** by pulling one of the nearest pull stations that are located along the exit routes, **if the alarm is not already sounding.**
- **FOLLOW YOUR EVACUATION ROUTE** and evacuate the building through the nearest exit **if the alarm is sounding. DO NOT USE ELEVATORS.**
- **PROCEED** to the pre-determined outdoor assembly area for the building.
- **CALL 911** to report the fire, after you evacuate the building.
- **REMAIN OUTSIDE** at the assembly area until you are been told to re-enter the building by the emergency personnel in charge.

#### What do I need to know about portable fire extinguishers?

- Portable fire extinguishers are installed throughout FAU buildings.
- Familiarize yourself with the locations of the fire extinguishers and receive hands-on training.
- Fire extinguishers can only be used for small fires that can be easily contained.
- Multi-purpose ABC fire extinguishers are used to fight Class “A”, “B” and “C” fires:  
**Class “A”:** Fires caused by ordinary combustibles, such as wood, paper or textiles.  
**Class “B”:** Fires caused by flammable and combustible liquids, such as cooking oil, gasoline, and other solvents.  
**Class “C”:** Fires caused by electrically-energized equipment or appliances, etc.

#### When should I use a portable fire extinguisher?

- Attempt to use fire extinguishers **ONLY** if the following apply:
  - You are trained on how to use the fire extinguisher.
  - The proper extinguisher is readily available.
  - The fire is small, contained, and not spreading beyond its starting point.
  - The exit is cleared and there is no imminent peril.
  - The building is being evacuated.
  - The fire department is being called.

#### How do I use a fire extinguisher?

- To operate your extinguisher, remember the word **PASS**.
  - **P – Pull the pin**
  - **A – Aim low at the base of the fire**
  - **S – Squeeze the lever**

- **S – Sweep across the fire**
- Contact EH&S immediately to replace any used fire extinguisher at (561)297-3129.

**How do I prevent fires from occurring?**

- Check for the following fire hazards at all times and report to EH&S or call University Police:
  - Improper disposal of smoking materials.
  - Exits not clearly marked or means of egress blocked by storage.
  - Trash and other combustibles have not been disposed of regularly or Improper storage of flammable and combustible liquids.
  - Electrical hazards, such as overloaded outlets, unapproved types of extension cords, exposed wires and power cords that are in poor condition.
  - Use of open flames / candles.

## **6 PROCEDURES FOR FIRE DRILLS**

### **6.1 General Information**

Environmental Health and Safety or its designees conduct fire drills in all University buildings as required by state law. The primary concern in the event of a fire is to get everyone out of the building as quickly as possible. To do this, occupants must be prepared in advance for a quick and orderly evacuation. A trained group will act more calmly under emergency situations, thereby dispelling panic, which has caused more casualties than fire itself. Slow evacuation and panic account for the large majority of all fatalities in fires.

### **6.2 Purpose of Fire Drills:**

- To allow occupants to familiarize themselves with drill procedures, location of fire exits, and the sound of the fire alarm.
- To allow EH&S to monitor the timeliness and effectiveness of evacuations.
- To detect technical problems with the fire alarm equipment.
- To gauge whether or not persons evacuate the building as legally required.
- To check if fire protection equipment, such as fire doors are being used properly.
- To gauge how long it takes to evacuate each building, and which exits are generally used.

### **6.3 General Fire Drill Procedures**

- Fire drills are arranged and supervised by the University Fire Safety Officer, or designee, with the cooperation of Building Supervisors and the Police Department.
- The date and time will be scheduled when most occupants are in the building.
- The University Fire Safety Officer, or designee, will inform Campus Police of the exact times the alarm will be pulled for the drill.

- The University Fire Safety Officer, or designee, will activate the fire alarm.

### **WHEN THE EVACUATION ALARM SOUNDS, “EVERYONE MUST LEAVE THE BUILDING”**

- After evacuation, occupants shall proceed to a pre-determined location and wait for the instruction of emergency personnel to re-enter.
- The University Fire Safety Officer, or designee, shall silence and reset the panel when everyone has evacuated the building.
- Fire drills will be monitored for effectiveness and documented using the [FAU Fire Drill Response Form](#).
- If the fire drill is completed by a designee, the designee shall complete [FAU Fire Drill Response Form](#), and send it to the University Fire Safety Officer.
- The Building Supervisor shall receive a completed copy of the [FAU Fire Drill Response Form](#) from the University Fire Safety Officer after the completion of every drill.
- Fire drills will be held at least:
  - Once per semester in residential occupancies.
  - 10 times a year at Henderson University School and Slattery Child Care Center.
  - Annually in all other buildings.

## **7 FIRE SAFETY REQUIREMENTS FOR MEANS OF EGRESS (DOORS and CORRIDORS) AND FIRE LANES**

### **7.1 Introduction**

A means of egress is an exit path that occupants may use to safely exit a building. It is designed to provide safe and easy travel during a fire or other emergency so that the risk of injury or death is minimized. Most facilities have more than one means of egress, though the exact number of exits depends on the building's function, design, and occupancy load. Once in place, exit paths must be carefully maintained to ensure they are not blocked or compromised during normal building operation.

A means of egress is a continuous and unobstructed way of exit travel from any point in a building or structure to a public way, which allows occupants to promptly exit a building or structure in the event of an emergency.

A means of egress consists of three parts: exit access, exit and the exit discharge. Exit access is the path from any location within a building to an exit. An exit is typically a door leading to the outside or, in a multi-story building an enclosed exit stairway. Exit discharge is the pass from the exit to the public way. A public way is a space that is permanently dedicated to public use, most often a street or alley.

Looking at the typical causes of fire deaths, blocked exits are probably the most preventable and most likely to result in criminal negligence charges. Florida Atlantic University has a responsibility to provide a safe environment to anyone working, learning or attending events within a building. It is therefore essential that there is access for quick evacuation during an emergency and the guidelines below are strictly observed.

## 7.2 Basic Requirements for Means of Egress

- For any room or space with only one exit a maximum occupant load should not exceed 50 people.
- For any room or space with only two exits, the maximum occupant load should not exceed 500 people.
- For any room or space with only three exits, the maximum occupant load should be 1000 people.
- For rooms more than 50 occupants, doors must swing in the direction of egress.
- For rooms more than 100 occupants, doors should be equipped with panic hardware.
- Exit doors should lead to a corridor, an exit stair enclosure, or directly to the exterior of a building. Exits should not pass through adjacent rooms or through hazardous areas such as kitchens, storage rooms, loading docks etc.
- Doors act as a barrier for fire and smoke and to serve as components in a means of egress.
- The self-closing devices shall not be disconnected or rendered inoperable.
- Fire and smoke rated doors shall not be blocked open. Obstructions that will prohibit fire and smoke rated doors from closing and latching without human intervention are not permitted.
- Door chocks or foot stops may not be installed on any fire rated door.
- Exit doors must not be equipped with locking hardware that would allow an occupant to be locked inside the room or space.
- Exit doors should also not be equipped with secondary locking devices, such as a dead bolt or slide bolt etc. It should be possible to open any designated exit door using a single motion, without the use of key, tool or special knowledge.
- The means of egress including the exit discharge shall be illuminated at all times the building is occupied.
- Gates used as a component in a means of egress shall conform to applicable requirements to doors.
- Turnstiles or similar devices that restrict travel to one direction shall not be placed so as to obstruct travel to one direction. Shall not be placed to obstruct any required means of egress.
- Where required exit and exit access doors shall be marked by an approved exit sign readily visible from any direction of egress travel.

### **7.3 Corridors/Hallways/Passageways/Ramps/Stairwells**

Corridors, hallways, passageways, ramps and stairwells etc. are designed and constructed to allow people to exit the building by the safest and quickest method possible devoid of any obstructions or protrusions.

### **7.4 Minimum Widths**

- Minimum widths (which increase according to the number of people) range from, 18 " between desks, to 44" for corridors depending on the occupancy type.
- Furniture, artwork, wall hangings, statues etc., which protrude from walls may not obstruct the minimum width, nor present a tripping, injury or other safety hazard.
- Minimum aisle widths must be maintained at all times.

### **7.5 Obstructions and Protrusions**

- No corridor, aisle way or component of a means of egress may be obstructed.
- Non-combustible furniture in lobbies must not obstruct the minimum width of egress and must be arranged so there is a direct path through the lobby to the EXIT.
- Wires, cables or extension cords may not be laid across corridors, aisles or pathways.
- Minimum ceiling height in exit passageways is 7'6". Lights, decorations, signs or any other items hung from the ceiling may not be lower than 6'8".
- Wires or cables hung from the ceiling must not present a safety hazard such as snagging equipment being transported through the corridor.

### **7.6 Items Not Permitted in Corridors/Hallways**

- Any combustible Flammable storage cabinets of any size.
- Compressed gas bottles of any size.
- Carts, cabinets, shelves or other items on which combustibles or flammables are likely to be stored.
- Chemicals, munitions, pyrotechnics or any other hazardous material.
- Any item that will impede the normal or emergency flow of traffic or will obstruct any emergency device.
- Portable heaters, coffee pots, food warmers or other devices that may present a hazard.
- Unprotected high voltage, electrical or gas powered equipment of any sort, material and overstuffed furniture boxes, etc.

### **7.7 Atriums and Large Corridors**

The open spaces at the base of atriums and large corridors must be left clear at all times. If there is a need to use these open spaces temporarily for any kind of function, it must be done in a way that is not obstructing passage. Environmental Health & Safety must be consulted in advance for proper

safety precautions.

## **7.8 Fire Lanes**

In the event a fire should occur, it is critical that emergency responders be able to access the building, or location of the emergency. Fire lanes and emergency access routes have been provided for this purpose.

- Fire lanes (normally marked in red on the curb) may not be blocked at any time. This includes temporary parking for the purpose of "just dropping something off." Emergency vehicles have the right-of-way. All vehicles will, when an emergency vehicle approaches from any direction, immediately pull over to the right side of the road to give passage to the Vehicle.
- Fire hydrants, fire department connections, or other emergency equipment may not be obstructed at any time. Parking is prohibited within 15 feet of a fire hydrant, or fire department connections.

## **8 PLANNING AND MANGEMENT GUIDE FOR PUBLIC ASSEMBLY OR SPECIAL EVENTS**

### **8.1 General information on Event Planning**

#### **8.1.1 Fire and Life Safety**

Fire safety is a primary consideration for all events, event sites, event workplace, and event operation. It encompasses the prevention of fire as well as the safety of people and protection property should a fire occur as well as the ability to evacuate people and provide response access to fire fighters and their equipment. See [Appendix 2 – FAU Event Planning Checklist](#) for a detailed list of considerations.

All persons planning public assembly events are encouraged to contact the department of Environmental Health and Safety for information and assistance. Consultation is available by telephone, email, meetings and at the event site. All event layouts should be evaluated by EH&S to ensure that the appropriate fire safety precautions and emergency plans are in place based on the type and scope of event taking place. When necessary a life safety evaluation will be conducted to ensure adequacy of life safety features, fire prevention and fire suppression capabilities, means of egress and the ability of occupants to exit safely and quickly if a fire or other emergency should occur.

In order to comply with the requirements of the State Fire Code, it is necessary for EH&S to make certain approvals as noted in these guidelines. Required approvals and inspections should be requested as far in advance as possible. Local fire department officers have to be present for certain events such as indoor pyrotechnics, outdoor fireworks and large scale events.

### 8.1.2 Definition of Public Assembly

Public assembly events involve various risk factors associated with having numbers of people in one location. The primary risk factors are high occupant density, occupants that are not familiar with the buildings, and in some case darkness. These risks can be managed through proper event planning and management.

The State Fire Prevention Code defines public assembly occupancy as follows:

Assembly occupancies include but not limited to, all buildings or portions of buildings, used for gathering together 50 or more persons for such purpose as deliberation, worship, entertainment, eating and drinking, amusement, or awaiting transportation (NFPA 101 Life Safety Code).

Examples of assembly occupancies found on the FAU campuses include large meeting rooms and classrooms, auditoriums with fixed seats or loose chair seating, multipurpose rooms, concert halls, theaters, sport arenas, field houses, restaurants and libraries. **Tents are considered buildings.** Tents must meet most of the requirements of buildings. Please see section 8.1.3.2 below.

### 8.1.3 Stages

Enclosed open areas such as an outdoor stage must meet the same requirements as buildings. Fenced open areas must have at least two exits.

### 8.1.4 Use of Tents and Canopies

This section shall be followed when tents and canopies are used on campus either for recreational or gathering purposes. A canopy is defined by fire code as any temporary membrane structure with 75% or more of its sides open without sidewalls whereas tents have more than 25% sidewall coverage.

#### **Inspections:**

All tents and canopies with an occupancy load of more than 50, or any tent in excess of 400 square feet, or any canopy in excess of 800 square feet, must be inspected by EH&S before use and must meet the following requirements.

#### **Tent/canopy erection and set-up considerations:**

1. Physical plant must be notified of all tent and canopy activities on campus so that appropriate lawn mowing, pest control and utility marking can be accomplished.
2. If the event includes the staging of multiple tents/canopies in the same vicinity that will include a cooking tent/canopy to support the event, a site plan must be presented to EH&S prior to erection of the tents/canopies.
3. Tents or canopies with an occupant loading of more than 50 people shall submit a detailed floor plan to EH&S that indicates the means of egress, seating capacity, arrangement of seating, and location/type of any heating devices to be used.

4. Tents or canopies shall not be located within 20 feet of lot lines, buildings, other tents or canopies, parked vehicles or internal combustion engines. For the purpose of determining required distances, support ropes and guy wires shall be considered as part of the tent or canopy. *Exception: Separation distance between tents and canopies not used for cooking is not required when the aggregate floor area does not exceed 15,000 square feet.*

### **Occupancy Load Requirements:**

Tent/canopy occupancy loads are determined as follows:

1. Tents/canopies set up as a table and chair event (sit down meal) require 15 square feet per person.
2. Tents and canopies set up as a chaired event only require 7 square feet per person.
3. Tents/canopies set up without seating, for standing room only, require 5 square feet per person.

### **Exit Requirements:**

1. Tent /canopy occupants must be within 100ft of an exit from any point in the structure.
2. Exit signs must be posted at each exit in a tent, and they must be either self-luminous, or capable of being illuminated by power.
3. The minimum width of an exit must not be less than 36 inches.
4. Guy wires or guy ropes must not cross an exit at a height of less than 7 feet.
5. Where tents/canopies are placed near fences or other obstructions, a clear exit path must be maintained to an area sufficiently away from the tent.
6. Tent/canopy stakes must be railed off, capped, or covered.

### **Flame Resistance and Structure:**

1. All tent and canopy fabrics must be flame resistant.
2. A certificate or other proof of approval by a testing laboratory is acceptable as evidence of the required fire resistance. A copy of the certificate must be provided to EH&S. These certificates should be available from the tent supplier.
3. Tent suppliers must be able to certify that tents have been erected in accordance with manufacturer recommendations, industry standards, and code requirements.

### **Floor Covering:**

1. The area enclosed by any tent and not less than 10 feet outside of such tent must be cleared of all flammable or combustible material or vegetation prior to erecting the tent. The premises must be kept free from such flammable or combustible materials during the period for which the area is used.
2. No hay, straw, shavings, or similar combustible materials are permitted within any tent unless they have been treated to make them flame retardant. A certificate or other proof of approval by a testing laboratory indicating that the material has been properly treated is acceptable as evidence. A copy of certificates must be provided to the EH&S prior to placing such materials within a tent. These certificates are available from the material manufacturer or supplier.

### **Fire Protection:**



1. At least one 10 pound ABC dry chemical fire extinguisher should be staged at each tent or canopy. Additional fire extinguishers will be required as the occupancy of the tent or canopy increases.
2. Commercial cooking equipment such as grills and broilers, when used within tents or canopies, must meet the same requirements for indoor commercial kitchens (i.e. proper ventilation, fire suppression systems).

#### **Cooking and food warming issues:**

1. Open exposed flames for cooking or other purposes are not permitted in tents or open canopies open to the public.
2. Food cooking operations using open/exposed flames must be staged at least 20 feet from tents/canopies used for assembly activities.
3. Food warming operations (using sterno or warming devices) are permitted in public assembly tents/canopies, but they should be set up with at least 10 feet clearance from any combustible material.

#### **Electrical:**

1. Electrical systems and equipment must be isolated from the public by proper elevation or guarding. All electrical fuses and switches must be enclosed in approved enclosures. Cables on the ground, in areas traveled by the public, must be placed in trenches or protected by approved covers (yellow jackets etc.).
2. All electrical systems must be properly grounded.
3. Generators must be placed so that exhaust fumes do not enter tents.
4. Electrical installations must comply with the NFPA 70.

#### **Propane Heating Systems:**

1. Tanks shall be no closer than 10 feet to the tent/canopy.
2. All propane tanks shall be labeled.
3. All propane tanks shall be stored in the upright position.
4. Heating systems shall be installed in accordance with their listings.

### **8.1.5 Large scale Events**

All events intended to, or that have the potential to, attract large crowd must be coordinated through any number of university departments and divisions. These include but are not limited to: University Space Utilization and Analysis, Campus Police, Campus Parking, Physical Plant, Risk management, etc.

### **8.1.6 Fire and Life Safety Planning and Management Information**

#### **8.1.6.1 Room Capacity**

Information on campus room capacities may be obtained from Space Utilization and Analysis Department. The State Fire Marshal Office determines the legal capacities. The occupant load is the

maximum capacity based on the net clear floor area. Stages and other obstructions, seating arrangements and the use of tables will decrease the floor area. The type of event is also a determining factor.

The following are examples of occupant loads for areas that are frequently used:

Use	Area per person
Concentrated – (Auditorium and dance floor)	7 sq. ft./net
Less concentrated – no fixed seating (Conference room and classroom, gymnasium and dining lounge)	15 sq. ft.
Fixed seats	No. of fixed seats
Stage (persons on stage)	15 sq ft
Kitchen	100 sq ft. gross
Library (stack area)	100 sq ft. gross
Library (reading)	50 sq ft. gross
Swimming Pool (water surface)	50 sq ft. gross
Swimming Pool (deck area)	30 sq ft. gross

### 8.1.6.2 Exit Requirements

The placement of stages, seats, equipment (including wiring), and security arrangements affect exits and access to exits. Exits must remain unobstructed and provide clear access to the outside at all times. Wires or cables cannot be placed in front of exits or on steps, and must be properly taped down to the floor, or covered to avoid tripping hazards.

The number of exits required is based on room capacity.

Number of Persons	Minimum No. of Exits
≤ 49	1

50-100	2
101-600	3
601 or more	4

### 8.1.6.3 Set-up Plans

The Boca Raton campus has standard set-up plans for the gymnasium, the Live Oak Pavilion, and the dining halls. Physical Plant and the respective facilities maintain these plans and should be contacted. Set-up plans for other spaces not routinely used for public assembly (including lobbies and atriums), or any plans that are different from existing standard plans, must be approved in advance by the Office of the State Fire Marshal for conformance with life safety regulations. Temporary seats must be secured together. Temporary bleachers and platforms must be certified as structurally sound by a professional. The use of “festival” style seating (general admission without the use of actual seats) is prohibited for concert events in venues that have an occupant load of 1000 or greater (Gym, Live Oak etc.).

### 8.1.6.4 Expositions

Expositions of products or other displays have a number of special requirements. Contact EH&S for consultation and event planning

### 8.1.6.5 Event Decorations

*Decorations are common factors in the spread of fire. It is necessary to ensure that all decorations used meet the requirements of safety and fire resistance. All materials used for decorations and theatrical scenery, including the drop used behind stages during concerts must be class ‘A’ rated for flame spread. Sponsors, promoters, or other production personnel must have documentation that certifies the flame spread rating prior to the start of an event.*

- Decorations cannot conceal or obstruct, in whole or part, exits, exit lights, fire alarm pull boxes, fire hose cabinets, fire extinguishers, sprinkler heads, smoke detectors, or other fire related items.
- All decorations used in corridors, lobbies, assembly rooms, dining rooms, classrooms and offices must be non-combustible or flame retardant.
- If trees or plants (natural or artificial) are used, keep them out of corridors and away from doorways.
  - No candles or open flame devices are permitted.
  - Do not decorate corridors with wrapping paper.
- Remove all decorations, wrappings and trees immediately after the event.

#### 8.1.6.6 Light Decorations

- Use only electric decorative lights and associated wiring for decorative lights that are UL or FM listed.
- Flame producing devices such as, but not limited to candles, may not be used.
- Mixing and matching lights can create a fire hazard. Keep outside lights outside and inside lights inside.
- Check the light bulbs, sockets, wires and plugs to make sure nothing is cracked, broken or exposed. Discard any defective light strands.
- Keep lights away from flammable and/or combustible materials.
- Extension cords used for temporary decorations must be UL listed.
- Do not connect more than three sets of lights to an extension cord.
- Keep all cords out of high-traffic areas where they could create a tripping hazard.
- Do not run cords through, under or behind a door, furniture or carpet. Such practice could lead to a fire.
- Electrical outlets should not be overloaded.
- All lights should be turned off before leaving the building.

#### 8.1.6.7 Open Burning (Flames)

Open burning is defined as any open/exposed flame, whether indoors or outdoors, which could cause a potential fire hazard. Examples are bonfires, campfires, leaf burning, artwork involving flames, pyrotechnics of any kind, etc. The term open flame shall mean any flame or ember that may be able to come in contact with a flammable surface including but not limited to matches, gas or kerosene stoves or lamps, candles, sterno cans, cigarettes and flares. Open burning on any FAU property must be approved in writing by EH&S after consultation with the Office of the State Fire Marshal and the City Fire Department.

#### 8.1.6.8 Open Burning (Indoors)

*Open burning indoors (particularly when such burning might activate any type of fire alarm detection/ suppression system) is normally prohibited. Special exceptions may be authorized under the following conditions.*

- A written request is sent to EH&S at least two weeks in advance of the event.
- The proposed burning will not endanger the occupants of the facility.
- The burn location will not block any emergency device or access to exits.
- The event coordinator will contact EH&S, Campus Police, and the building manager 24 hours in advance of the event for final coordination.
- The event coordinator will be responsible for providing a Fire Watch of the entire building during the time of the open burning if any safety system must be shut down.
- The event coordinator will be responsible for assigning event staff to monitor conditions in the burning area.
- The event coordinator will be responsible for complete extinguishing and removal of all

materials.

- At the end of the burning, a thirty-minute watch will be made of the area to ensure there is no residual heat left in the material burned.

#### **8.1.6.9 Open Burning (Outdoors)**

*Open burning outdoors will be authorized under the following conditions.*

- A written request is sent to EH&S at least two weeks in advance of the event.
- The proposed burning will not endanger any adjacent building, vehicles or vegetation.
- The burn location will not block access for emergency vehicles to any building, street, or emergency device.
- Open flame fires will not be within fifty feet from any building, vehicle, or vegetation, or twenty-five feet from any flammable storage. The distance may vary according to the size of the event.
- The event coordinator will be responsible for providing Fire Guards in the burning area.
- The event coordinator will contact EH&S, Campus Police, and occupants of adjacent buildings 24 hours in advance prior to the event or operation for final coordination.
- The host will be responsible for complete extinguishing and removal of all materials used in the open burning.
- A five to thirty minute watch will be made of the area to ensure there is no residual heat left in the material.

#### **8.1.6.10 Bonfires:**

Bonfires will be permitted in accordance with the University Bonfires Policy & Procedure. (<http://www.fau.edu/facilities/ehs/policies-and-procedures/EHS28-Bonfire-Policy.pdf>)

#### **8.1.6.11 Fireworks, Pyrotechnics and Flame Effects**

Fireworks, Pyrotechnics and Flame effects will be permitted and coordinated in accordance with the University Fireworks, Pyrotechnics, and Flame Effects Policy & Procedure. (<http://www.fau.edu/facilities/ehs/policies-and-procedures/EHS24-Fireworks-Pyrotechnics-Flame Effects.pdf>)

## **9 STORAGE FIRE SAFETY**

Storage shall include all spaces or structures used primarily for the storage or sheltering of goods, merchandize and records and products.

Storage in itself does not constitute a fire hazard. A fire hazard is created when items are stored improperly or in a hazardous location, or block egress and exits.

## 9.1 General Storage

- Combustible materials must be separated from other hazardous materials such as flammables, corrosives, explosives, oxidizers etc. Contact EH&S for approval of separations.
- Storage areas must be separated from other areas by at least a one-hour fire barrier with a fire rated self-closing door, and be protected by fire detection and/or suppression systems.
- Stored materials must be kept at least thirty-six inches from any heat source.
- Aisles in storage rooms must have a minimum width of twenty-eight inches to allow for evacuation, and permit firefighters to gain access to the most remote area of the room.
- Storage cannot block fire extinguishers, fire alarm pull stations, emergency or exit lighting, access to evacuation routes or the exit door, emergency equipment or prevent entry of emergency personnel.
- Storage under stairs is not permitted unless the area is enclosed and protected with a one-hour fire rated enclosure and a detection and/or suppression system.
- Doors to storage rooms may not be "propped" open at any time.
- Contact Property Management for proper disposal of and storage of surplus, obsolete and unused property.
- Smoking is not permitted in any storage area under any conditions.

## 9.2 Flammable Storage

*It is critical that flammables are used and handled properly and stored safely.*

- Rooms used for flammable storage must be constructed to meet the requirements for at least one-hour fire rating, ventilation, heating, electrical systems, fire detection and/or suppression systems.
- Flammables generally are not permitted to be stored in basements of buildings. Exceptions will be determined by EH&S and must be authorized in writing.
- A "daily use" of flammable liquids may be stored on open shelves. "Daily use" refers to a small amount of consumable flammables that are expected to be used in a repetitive nature, and the amount used would not constitute more of a hazard than other ordinary combustibles in the room. Store flammable materials not in active use in an approved flammable storage cabinet.
- Flammables, required to be stored away from combustibles, will be stored in an approved flammable storage cabinet. This cabinet will be labeled and incorporate self-closing doors.
- Flammable storage will be kept at least 50 feet from open flames or other heat sources.
- Oily or grease-laden rags must be placed in a self-closing oily rag can for proper cleaning or disposal.

- Ordinary combustibles may not be stored in flammable storage.

### 9.3 High Stack Storage

This type of storage has become increasingly popular for space saving purposes for records and commodities. This also presents a different type of hazard for fire safety and fire fighting.

- It is highly recommended that non-combustible materials be used in the construction of storage racks. This reduces the amount of fire spread should a fire occur.
- Under no circumstances may storage of materials be closer than eighteen inches of sprinkler heads.
- Aisle widths in high rack storage, which also requires the use of mechanical devices such as forklifts or carts, must be of sufficient width to allow personnel evacuation if a cart is in the aisle.
- Collect hazardous waste in appropriate containers.

### 9.4 Housekeeping, Maintenance, and Protection of Storage Spaces

- The structural integrity of racks used for storage shall be properly maintained.
- Records storage height must not exceed the nominal 15 feet.
- Smoking and hot work around storage structure shall be highly regulated.
- Storage areas aisles shall be kept clear from storage of waste material and debris.
- Fire doors shall not be obstructed.
- All record storage and adjoining areas must be protected by a professionally designed fire detection and suppression system.
- The position of sprinkler heads must provide complete, unobstructed coverage, with clearance of not less than 18 inches.
- Two-hour fire barrier walls must be provided between the record storage areas and other auxiliary places and 3 hour fire barrier wall separating storage areas from each other.
- The fire resistive rating of the roof must be a minimum of half hour for all records storage facilities.

## 10 ELECTRICAL FIRE SAFETY

Electricity is a serious work place hazard, capable of causing employee death and injury as well as serious property damage. This program establishes minimum standards to prevent hazardous electrical exposures to personnel and ensure compliance with regulatory requirements applicable to electrical systems. It is also intended to protect employees against electrical shock, burns and other potential electrical safety hazards such as fire and explosion as well as comply with regulatory requirements.

Management is responsible for providing employees safety training, conducting electrical safety inspections, correcting all electrical safety hazards and that all electrical equipment and components comply with code and regulations. Employees are responsible for the immediate reporting of electrical safety hazards, for not working on electrical equipment without proper training and authorization for complying with all electrical safety rules and regulations and inspecting equipment before using it.

## **10.1 Electrical Hazards Control**

### **10.1.1 Engineering Controls**

- All electrical distribution panels, breakers, disconnects, switches and junction boxes must be completely enclosed.
- Water tight enclosure must be used if any of these components could possibly be exposed to moisture.
- Structural barriers must be used to prevent accidental damage to electrical components.
- Conduits must be supported through their entire length, and non-electrical attachments to conduits are prohibited.
- Non-rigid electrical cords must have strain relief wherever necessary.

### **10.1.2 Administrative Controls**

- Only trained, authorize employees may repair or service electrical equipment.
- Contractors must be licensed to perform electrical; work.
- Physical barriers must be used to prevent unauthorized persons from entering areas where new installations or repair of electrical components or equipment is being performed.
- Only authorized personnel must enter electrical distribution rooms.
- All electrical control devices must be labeled properly.
- Senior facility manager must authorize any work on energized electrical circuits.
- Inspect all electrical equipment for hazards that could cause employee injury, death.

### **10.1.3 Personal Protective Equipment**

- Management will provide personal protective equipment for use and is mandatory to use them when contact with exposed electrical sources.
- Inspect and test PPE before use.
- Wear non-conductive headgear if there is danger of electrical burns or shock from contact with exposed energized equipment.



- Wear eye and/or face protection any time there is danger of flying objects, flashes or electrical arcs produced by an electrical explosion

#### **10.1.4 Training Requirements**

Workers near energized, or potentially energized electrical circuitry of fifty (50) volts to ground or greater, shall be trained in energized electrical safe work practices and procedures and retrained as necessary.

#### **10.1.5 Qualified Electrical Worker**

Employees must receive training in avoiding the electrical hazards associated with working on or near exposed energized parts prior to performing energized electrical work. Such training will be provided when the employee is initially assigned to the job and refresher training will be provided every three years or when conditions change.

The following items are to be included in the training of Qualified Electrical Workers:

- Demonstrate a working knowledge of the National Electrical Code.
- Familiar with lockout /tag-out procedures including safe work practices required to safely de-energize electrical equipment.
- Universal electrical safety procedures.
- Skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment.
- Perform on-the-job training with a qualified electrical worker.
- Skills and techniques necessary to determine the nominal voltage of exposed live parts.
- Selection and use of proper work practices, personal protective equipment, tools, insulating and shielding materials and equipment for working on or near energized parts.

#### **10.1.6 Portable Electrical Equipment and Extension Cords**

The following requirements apply to the use of cord-and-plug-connected equipment and flexible cord sets (extension cords):

- Extension cords may only be used to provide temporary power.
- Portable cord-and-plug connected equipment and extension cords must be visually inspected before use on any shift for external defects such as loose parts, deformed and missing pins, or damage to outer jacket or insulation, and for possible internal damage such as pinched or crushed outer jacket. Any defective cord or cord-and-plug-

connected equipment must be removed from service and no person may use it until it is repaired and tested to ensure it is safe for use.

- Extension cords must be of the three-wire type. Extension cords and flexible cords must be designed for hard or extra hard usage
- Personnel performing work on renovation or construction sites using extension cords or where work is performed in damp or wet locations must be provided, and must use, a ground-fault circuit interrupter (GFCI).
- Portable equipment must be handled in a manner that will not cause damage. Flexible electric cords connected to equipment may not be used for raising or lowering the equipment.
- Extension cords must be protected from damage. Sharp corners and projects must be avoided. Flexible cords may not be run through windows or doors unless protected from damage, and then only on a temporary basis. Flexible cords may not be run above ceilings or inside or through walls, ceilings or floors, and may not be fastened with staples or otherwise hung in such a fashion as to damage the outer jacket or insulation.
- Cords must be covered by a cord protector or tape when they extend into a walkway or other path of travel to avoid creating a trip hazard.
- Attachment plugs and receptacles may not be connected or altered in any way that would interrupt the continuity of the equipment grounding conductor. Additionally, these devices may not be altered to allow the grounding pole to be inserted into current connector slots. Clipping the grounding prong from an electrical plug is prohibited.
- Flexible cords may only be plugged into grounded receptacles. The continuity of the ground in a two-prong outlet must be verified before use. It is recommended that the receptacle be replaced with a three-prong outlet. Adapters that interrupt the continuity of the equipment grounding connection may not be used.
- All portable electric equipment and flexible cords used in highly conductive work locations, such as those with water or other conductive liquids, or in places where employees are likely to contact water or conductive liquids, must be approved for those locations.
- Employee's hands must be dry when plugging and unplugging flexible cords and cord-and-plug connected equipment if energized equipment is involved.
- Lamps for general illumination must be protected from breakage, and metal shell sockets must be grounded.
- Temporary lights must not be suspended by their cords unless they have been designed for this purpose.
- Portable lighting used in wet or conductive locations, such as tanks or boilers, must be operated at no more than 12 volts or must be protected by GFCI's.

- Extension cords are considered to be temporary wiring, and must also comply with the section on “Requirements for Temporary Wiring” in this program

### 10.1.7 Requirements for Temporary Wiring

Temporary electrical power and lighting installations 600 volts or less, including flexible cords, cables and extension cords, may only be used during and for renovation, maintenance, repair, or experimental work. The duration for temporary wiring used for decorative lighting for special events and similar purposes may not exceed 90 days. The following additional requirements apply:

- Ground-fault protection (e.g., ground-fault circuit interrupters or GFCI) must be provided on all temporary-wiring circuits, including extension cords, used on construction sites.
- In general, all equipment and tools connected by cord and plug must be grounded. Listed or labeled double insulated tools and appliances need not be grounded.
- Feeders must originate in an approved distribution center, such as a panel board, that is rated for the voltages and currents the system is expected to carry.
- Branch circuits must originate in an approved power outlet or panel board.
- Neither bare conductors nor earth returns may be used for the wiring of any temporary circuit.
- Receptacles must be of the grounding type. Unless installed in a complete metallic raceway, each branch circuit must contain a separate equipment-grounding conductor, and all receptacles must be electrically connected to the grounding conductor.
- Flexible cords and cables must be of an approved type and suitable for the location and intended use. They may only be used for pendants, wiring of fixtures, connection of portable lamps or appliances, elevators, hoists, connection of stationary equipment where frequently interchanged, prevention of transmission of noise or vibration, data processing cables, or where needed to permit maintenance or repair. They may not be used as a substitute for the fixed wiring, where run through holes in walls, ceilings or floors, where run through doorways, windows or similar openings, where attached to building surfaces, or where concealed behind building walls, ceilings or floors.
- Suitable disconnecting switches or plug connects must be installed to permit the disconnection of all ungrounded conductors of each temporary circuit.
- Lamps for general illumination must be protected from accidental contact or damage, either by elevating the fixture or by providing a suitable guard. Hand lamps supplied by flexible cord must be equipped with a handle of molded composition or other approved material and must be equipped with a substantial bulb guard.

- Flexible cords and cables must be protected from accidental damage. Sharp corners and projections are to be avoided. Flexible cords and cables must be protected from damage when they pass through doorways or other pinch points.

### 10.1.8 Working on Wet or Damp Locations

Work in wet or damp work locations (i.e., areas surrounded or near water or other liquids) should not be performed unless it is absolutely critical. Electrical work should be postponed until the liquid can be cleaned up. The following special precautions must be incorporated while performing work in damp locations:

- Only use electrical cords that have Ground Fault Circuit Interrupters (GFCIs);
- Place a dry barrier over any wet or damp work surface;
- Remove standing water before beginning work. Work is prohibited in areas where there is standing water;
- Do not use electrical extension cords in wet or damp locations; and
- Keep electrical cords away from standing water.

### 10.1.9 Working on De-Energized Equipment

#### 10.1.10 Electrically Safe Condition

The most important principle of electrical safety is to assume all electric circuits are energized unless each involved worker ensures they are not. Every circuit and conductor must be tested when work is done on them. Proper PPE must be worn until the equipment is proven to be de-energized.

- Voltage rated gloves and leather protectors must be worn
- Electrically insulated shoes should be worn
- Approved insulating mats
- Safety glasses must be worn
- The required Arc Flash PPE must also be worn

**The process of de-energizing is "live" work and can result in an arc flash** due to equipment failure. When de-energizing equipment, follow the procedures specified in the FAU Lock Out/Tag Out Program (<http://www.fau.edu/facilities/ehs/info/Lockout-Tagout-Program.pdf>).

#### 10.1.11 Working Space around Electric Equipment

##### 10.1.11.1 Spaces around Electrical Equipment

- Sufficient access and working space shall be provided and maintained around all electric equipment to permit ready and safe operating and maintenance of such equipment. Enclosures that house electric apparatus and are controlled by lock and key shall be considered accessible to qualified persons.
- **Width of Working Space.** The width of the working space in front of the electrical equipment shall be the width of the equipment or 750 mm (30 in), whichever is greater. In all cases, the work space shall permit at least a 90 degree opening of equipment doors or hinged panels.
- **Height of Working Space.** The workspace shall be clear and extend from the grade, floor, or platform to the height required by 70E 400.15(E). Within the height requirements of this section, other equipment that is associated with the electrical installation and is located above or below the electrical equipment shall be permitted to extend not more than 150 mm (6 in) beyond the front of the electrical equipment.
- **Clear Spaces.** Working space required by the 70E standard shall not be used for storage. When normally enclosed live parts operating at 50 volts or more are exposed for inspection or service, the working space, if in a passageway or general open spaced shall be suitably guarded.

#### **10.1.11.2**      *Access and Entrance to Working Space*

- **Minimum Required.** At least one entrance of sufficient area shall be provided to give access to the working space about electric equipment.
- **Unobstructed Exit.** Where the location permits a continuous and unobstructed way of exit travel, a single entrance to the working space shall be permitted.

#### **10.1.11.3**      *Illumination*

- Illumination shall be provided for all working spaces about service equipment, switchboards, panel boards, or motor control centers installed indoors. Additional lighting outlets shall not be required where the work space is illuminated by an adjacent light source. In electrical equipment rooms, the illumination shall not be controlled by automatic means only.

#### **10.1.11.4**      *Headroom*

- The minimum headroom of working spaces about service equipment, switchboards, panel boards, or motor control centers shall be 6 1/2ft). Where the electrical equipment exceeds 6 1/2 ft. in height, the minimum headroom shall not be less than the height of the equipment.

#### **10.1.11.5      *Dedicated Equipment Space***

- All switchboards, panel boards, distribution boards, and motor control centers shall be located in dedicated spaces and protected from damage.

#### **10.1.12          *Contractor Employees***

- Electrical safety programs used by contractors must meet or exceed all applicable guidelines of this Program.
- Contractors are required to comply with applicable Safety and Health regulations such as OSHA, NFPA, and EPA.
- Contractors may be required to submit copies of their safety program to the safety coordinator upon request.

#### **10.1.13          *Electrical Fire Prevention Tips***

- Electrical work shall be done only by a qualified electrician.
- Keep light fixtures and light bulbs away from anything that can burn, including furniture, bedding, curtains, clothing, and flammable or combustible gases and liquids.
- Use light bulbs that much the recommended wattage on the lamp or fixture.
- If a fuse blows or a circuit breaker trips often find out why and correct the problem. Have a qualified electrician inspect and fix it.
- Always replace blown fuses with ones on the proper rating. If the problem continues, call electrician.
- Major appliances (refrigerators, stoves, washers, dryers) should be plugged directly into a receptacle outlet. Never use an extension cord with a major appliance as it can overload the cord and cause the flexible covering to catch fire.
- Check electrical cords often. Replaced cracked, damaged and loose electrical or extension cords.
- Avoid putting cords where they can be damaged or pinched by furniture, under rugs and carpets, or across doorways.
- Use only surge protectors or power strips that have internal overload protection. Use surge protectors or power strips that have the label of a recognized testing laboratory.
- Extension cords are for temporary use only. Have a qualified electrician determine if additional circuits or outlets are needed.
- Replace outlets if plugs fit snugly or the outlet does not accept plugs with one blade larger than the other.
- Cover outlets and wall switches with wall plates to prevent shocks.

- Ground fault circuit interrupters (GFCI) reduce the risk of shock. GFCI shut off electricity when it becomes a shock hazard. Make sure GFCIs are installed in bathrooms, basements, garages, outdoors, at kitchen counters and in other locations in the home where electricity is near water.

## **11 FIRE SAFETY PROGRAM IN THE RESIDENCE HALLS**

### **11.1 Residence Hall Fire Safety Program Objectives**

The primary objective of the campus Resident Hall fire safety program is to prevent fire and take appropriate actions before such conditions result in a fire emergency. This goal is accomplished by:

- Conducting periodic reviews and updates of fire prevention policies.
- Conducting regularly scheduled fire drills.
- Promoting fire prevention and emergency evacuation procedures.
- Inspecting, testing and maintaining fire protection systems in accordance with National Fire Protection Association (NFPA) standards.
- Performing plan reviews and code consultation related to capital improvement and remodeling projects.
- Mitigating fire hazards utilizing the information provided from regularly scheduled fire safety inspections performed by the Office of the State Fire Marshal, EH&S as well by the department of Housing and Residential Life and other fire protection consultants.
- Raising awareness of residents in fire safety.

### **11.2 On-Campus Student Housing Fire Protection Equipment and Systems**

Specially designed systems are provided in all Residence Halls to assist in extinguishing fires, and to limit the spread of fire and smoke, either by automatic, semi-automatic or manual means. These include, but are not limited to, portable fire extinguishers; fire hoses, fire pumps, wet and dry stand pipe systems, automatic sprinklers, other specially engineered suppression systems, fire detection and alarm systems, fire doors and dampers. Other life safety systems like exit and emergency lights with back-up emergency power are integral parts of our residence hall fire protection systems. Fire protection and life safety equipment are installed inspected, tested and maintained in accordance with NFPA Codes and as required by the local AHJ.

### **11.3 Fire Prevention Policies and Procedures:**

Several fire prevention policies and procedures have been developed and implemented. Applicable NFPA, OSHA, FAU Fire Safety Program, FAU safety policies and procedures as well as Housing and

Residential Life Regulations and the FAU Crisis Action Guide were referenced during the development of these policies. A summary of these policies are highlighted bellow:

### **11.3.1 Policy on Holiday Decorations**

- All decorations and ornaments must be of fire-resistant or non-combustible material, and listed by Underwriters Laboratory (UL) and approved for use.
- The use of live or cut Christmas trees is prohibited in university buildings.
- Artificial trees made of fire retardant materials or non-combustible materials labeled with UL or Factory Mutual (FM) approval ratings are allowed. No natural trees, wreathes, boughs or other decorations constructed from the branches of natural trees may be used. Metallic trees may create electrical hazards when placed in close proximity to the electric supply; therefore the use of electric lights on metallic trees is prohibited.
- Trees and other decorations must be located so as not to obstruct exit corridors or the operation of fire protection equipment. Trees should also not be placed in any manner that could present a fall or trip hazard, impede egress, or block emergency egress from any room.
- Electrical cords should not be routed through or under doors, rugs or loose carpeting or across work surfaces. Routing of cords through these areas may cause damage to the cord and create a fire or trip hazard.
- Plugging lights into an overloaded circuit is not permitted. Multiple adaptors are prohibited. Instead, use power strips with a fuse or integral circuit breaker when extra outlets are needed.
- Decorative displays are prohibited in stairwells and should be limited in lobbies and common areas in the residence halls.
- All holiday decorations should be removed before leaving campus for the holiday and at the end of each semester.
- No candles, incense burners, potpourri pots, or scented oil warmers may be used.
- Decorative materials like paper or cloth or any other type of combustible materials shall not cover more than 20% of hallway or rooms walls.

### **11.3.2 Policy on Electrical Equipment and Appliances**

Prohibited fire or life safety hazards include but are not limited to the following:

- Rice cookers
- Hamburger cookers
- Frying skillets
- Barbeque grills



- 110 volts extension cords
- 110 volts extension cords wrapped in duct tapes
- Piggy backed power strips
- Duct tape wrapped around electrical plugs
- Electrical outlet with no cover plates
- Any halogen lamp that requires a bulb over 120 volts
- Space heaters
- The use or storage of flammable fluid, hazardous liquids or chemicals.

### 11.3.3 Policy on Electrical Safety

**EXTENSION CORDS** are acceptable means of providing **TEMPORARY** power. However they cannot be used as a substitute for permanent electrical wiring. They can be used provided they are:

- Used temporarily
- Used to power non-heat producing devices
- UL approved and Factory Manual listed and three-wire grounded.
- Not connected, spliced together, or piggy-backed
- Plugged into a permanent outlet

#### **EXTENSION CORDS WILL NOT BE PERMITTED:**

- When used as permanent wiring
- When used on heat producing or high voltage devices such as heaters, microwave ovens, refrigerators etc.
- If they become a tripping hazard
- When routed through openings in walls, ceilings, doorways or under flooring or carpets etc.
- When showing signs of wear, defects, bulging, exposed wire or other damages
- When plugged into a power strip or another extension cord.

### 11.3.4 Policy on Tampering

- Tampering with or damaging fire safety equipment including automatic door closures, smoke detectors, pull stations, fire extinguishers, sprinkler heads is punishable by law.

Initiating false alarms, stopping existing fire alarms, or failing to immediately evacuate during a fire alarm are violation of state fire codes, and will result in disciplinary action and are punishable under state law.

### 11.3.5 Candle and Open Flame Safety

- Possession of candles, open flames, incense, hot plates and heating units with open flame or heating element are prohibited.

### 11.3.6 Cooking Safety

- The leading cause of kitchen fires is unattended cooking, when the food or liquid overheats and catches fire. Cooking is permitted only in approved outside areas and in residence halls that have designated cooking facilities.
- **While cooking students are advised through established policies to:**
  - Stay near the stove or in the room at all times when cooking.
  - If leaving the room is necessary to remove the food from the heat and turn off the stove.
  - Keep all loose material and objects that can catch fire, including clothing, away from the heat and the stove.
  - Keep the oven, stove, toaster, and grill clean – a buildup of fat, crumbs, or grease can easily catch fire. Keep all metal or metallic items out of microwaves.
  - Residents are responsible for proper use of cooking appliances.
  - In the Village Student Apartments, residents are permitted to use personal charcoal barbeque grills at a safe distance (at least 20 feet or more) from buildings and entrances. Personal grills are not permitted at all in the Residence Halls or on the grounds of the Residence Hall area. The use of grills is not permitted under any covered walkways landings, entrances, balconies or stairwells that include the main breezeway.

### 11.3.7 Policy on Smoking Safety

- Smoking is not permitted inside any of the residence halls, including student rooms, hallways, bathrooms, elevators, lounges dining areas and other public areas in compliance with the Florida Clean Indoor Air Act.
- No smoking is permitted within 20 ft of any door entrances, operable windows, or air intake vents.
- Careless disposal of matches and cigarettes butts is a common cause of fire. Students are continuously reminded to use caution when disposing of such items.
- As of January 1, 2010 FAU has updated its designated smoking areas.

### 11.3.8 Policy and Procedure on Fire Drills

Drills are an intricate part of our emergency preparedness planning and are conducted to ensure that FAU complies with the laws of the State of Florida.

Drills in the Residence Halls are coordinated by Housing and Residential Life, EH&S, as well as University Police. Students living in the Residence Halls are required to participate in the scheduled fire drills.

During student orientation, or in other forums used to raise awareness, students staying on campus housing are reminded or informed about fire drills and what to do during a fire emergency. Four fire drills are scheduled in each Residence Hall during the academic year:

Fall Semester (1)

Spring Semester (1)

Summer Semester (2)

One fire drill within the first three weeks of each of the fall and spring semesters and another two drills in summer semesters is conducted. Flyers are posted in each residence hall approximately 48 hours in advance of the each fire drill.

Students evacuate when the fire alarm is activated and proceed to a predetermined assembly area away from the building. Failure to do so will result in disciplinary action of a \$75.00 fine. Elevators shall not be used during fire drill evacuations.

Prior arrangement shall be made to assist handicapped occupants. Resident Assistants will be assigned on each floor to ensure students are evacuating at the sound of the alarm. Once an “all cleared” signal is given to the building coordinator, the fire alarm will be silenced, reset, and occupants may be permitted to re-enter the building.

The FAU Department of Environmental Health and Safety monitors the effectiveness of the drills and documents them, while the FAU Police Department assists in crowd management and communication with Police Dispatch to ensure fire alarm activation and reset signals are monitored.

Fire drills are conducted and documented in accordance with the university fire drill policy.

### 11.3.9 Emergency Evacuation Procedures

In the event of fire, bomb threat, hazardous material spill, etc., students are instructed to adhere to the following procedures:

1. Activate fire alarm system if it is not already activated.
2. Evacuate the building using the nearest exit or exit stairways and close door behind you as you leave. **DO NOT USE ELEVATORS.**

3. **Call 911** from a safe location and provide name, location and nature of emergency.
4. Proceed to the common assembly area of the building.
5. Stay out until you are told to re-enter the building.

#### **11.3.10 Fire Alarm Reporting and Evacuation Protocols**

If a fire alarm sounds in a building the Resident Assistants (RA) should report to the area office immediately. The RA on duty will assume leadership for implementing the emergency protocol and the rest of the RAs will be distributed on different levels and at exit ways to assist with crowd control and expedite evacuation.

University Police dispatches the local fire department to the scene and after investigation of the incidence, the alarm is silenced.

Once the alarm has been silenced and the fire department or police has given the all clear signal, the Resident Coordinator will have the RA on duty notify the rest of the RAs around the building that students are permitted to enter. No student will be permitted to enter the building until this has occurred.

The Resident Coordinator will then fill out appropriate paper work. The Resident Coordinator (RC) of the building or the assistant director and the director will get involved depending on the nature of the emergency. If the emergency is categorized to be a disaster the emergency operation center is activated and the university community and other stakeholders are informed using the emergency alert system.

#### **11.3.11 Policy on Fire Safety Inspections**

Housing and Residential Life, as well as EH&S take proactive measures to foster students' cooperation and compliance with fire safety requirements. Residence Assistants and EH&S personnel conduct Fire safety inspections of the Residence Halls, including student rooms, every semester. The State Fire Marshal inspects Residence Halls on an annual basis every summer. The State Fire Marshal inspection gives the University the ability to address and mitigate any life safety violations identified by the inspector before the start of the fall semester.

If unapproved items or practices are discovered during inspections, immediate action will be taken to remove the hazards or discontinue the practice.

#### **11.3.12 Policy on Fire Safety Education and Training**

Florida Atlantic University's fire safety program themes are fire prevention, emergency preparedness, and evacuation (response).

Fire prevention and fire response trainings are on-going awareness programs that focus on the elimination of fire hazards and what to do in case of a fire (i.e. **EVACUATION**).

Basic fire safety instruction is provided to all students living in residence halls who attend the orientation programs the beginning of each academic year.

At least one training session is offered to all housing facility staff, faculty and RA's annually prior to the opening of the residence halls at the start of each school year. Additional workshops are also held during the year as deemed necessary, especially using venues like Safety Month and the Annual Fire Prevention Week. Local fire response and fire prevention personnel are invited and encouraged to participate in the training.

In addition to the training workshops, Environmental Health and Safety and the Housing staff also distribute fire safety information to students on a regular basis.

#### ***11.3.12.1 Fire Prevention Training***

Fire prevention training includes instructions on what should be done to reduce the potential for ignition and fuel loads. Participants are trained to recognize potentially hazardous situations such as smoking, about open flames and candles as well as cooking fires including poor housekeeping practices

#### ***11.3.12.2 Fire Response Training***

This training includes clear instructions on what residents should do in the event of a fire. Emphasis is made on getting out of the building at the sound of the alarm. Since small fire can be fought successfully with portable fire extinguishers participants are also trained how to use a fire extinguisher as well as how to recognize when a fire is too large to attack. Participants are instructed to observe the rules for safe evacuation and to practice periodically through fire drills.

Each Resident is given a copy of the Housing and Residential Life Guidebook that provides information on a variety of fire safety issues and what appropriate action to take during a fire alarm or fire emergency including instructions:

1. Not to tamper with the building fire protection features, either intentionally or accidentally.
2. Not to cover Smoke detectors or have the batteries removed.
3. Not to hang any object from a sprinkler head or be subjected to physical abuse.
4. Not to store objects in exit ways, including hallways, corridors and stairways, where they could obstruct egress path.
5. Know how to report fires etc.
6. What items are not allowed to bring in to their rooms
7. Hazards associated with the use of electricity and electrical cords.

## 12 FIRE EXTINGUISHER PROGRAM

Fire extinguishers are special pressurized devices that release chemicals or water to aid in putting out a fire. They keep small fires from spreading, assist in fighting fires until the Fire Department arrives, and may help provide an escape route for you. *A fire extinguisher is no substitute for the Fire Department. The Standing rule is to **Always call the Fire Department first** no matter how small you think the fire is.*

A comprehensive fire extinguisher safety program includes both educational components and hands-on instructional opportunities to ensure students and employees understand the relevant information and have the ability to put that knowledge to use in practice.

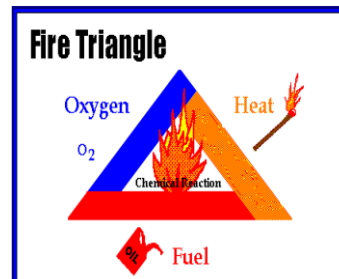
The key elements in the program are:

1. *Fire source:*  
Describe the basic source of fire and various methods for halting combustion process. Understanding what type of fire extinguisher is most effective for a given hazard.
2. *Fire classes and Fire Extinguishers:*  
How different agents extinguish classes of fire and importance of selecting the proper fire extinguisher.
3. *Identifying a Fire Extinguisher:*  
Discuss the distinguishing features and characteristics of extinguishers
4. *Practical Training:*  
Hands-on fire exercise will significantly increase familiarization with the operation of fire extinguisher.

### 12.1 The Fire Triangle

Four things must be present at the same time in order to produce fire

1. Enough oxygen to sustain combustion
2. Enough heat to raise the material to its ignition temperature
3. Some sort of fuel or combustible material, and
4. The chemical, exothermic reaction that is fire



Oxygen, heat and fuel are frequently referred to as the “fire triangle.” Add the fourth element, the chemical reaction, and you actually have the “fire tetrahedron.” The important thing to remember

is when you take any of these four things away, you will not have a fire, or the fire will be extinguished.

Essentially, fire extinguishers put out fires by taking away one or more elements of the fire triangle/tetrahedron. Fire safety, at its most basic, is based upon the principle of keeping fuel sources and ignition sources separate.

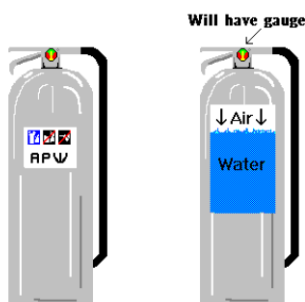
## 12.2 Classes of Fires

There are five classes of fires. All fire extinguishers are labeled using symbols for the classes of fires they can put out. A red slash through any of the symbols tells you the extinguisher cannot be used on that class of fire. A missing symbol tells you only that the extinguisher has not been tested for that class of fire.

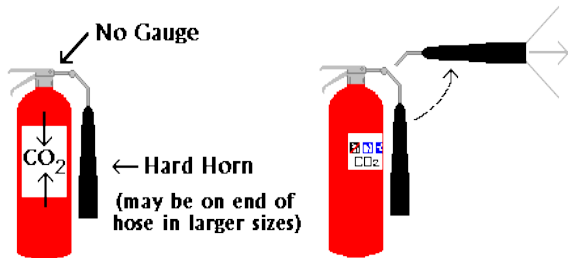
1. **Class A** fires involve paper, wood, and other ordinary combustibles.
2. **Class B** fires involve flammable liquids, such as gasoline, oil, and some paints and solvents.
3. **Class C** fires involve energized electrical equipment such as power tools, wiring, fuse boxes, appliances, TVs, computers, electric motors, etc.
4. **Class D** fires involve combustible metals, such as magnesium, potassium, and sodium.
5. **Class K** fires involve grease in commercial cooking equipment.

## 12.3 Types of Fire Extinguishers

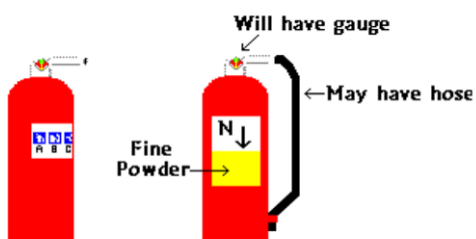
Different types of fire extinguishers are designed to fight different classes of fire. The extinguisher must be appropriate for the type of fire being fought.



**Pressurized water** extinguishers are being phased out because they do not work with class B and C fires. They can be used for ordinary combustibles like wood, paper, many plastics, cloth and rubber.



**Carbon dioxide** extinguishers are generally used in areas of sensitive electrical or electronic equipment since it is gas and leaves no residue that damages the equipment. Carbon dioxide functions by removing or displacing the oxygen in a fire. It is a non-flammable gas, extremely cold.



**Dry chemical** fire extinguishers are by far the most common on campus. ABC or multipurpose fire extinguishers are effective on all three classes of fires. Dry chemicals function by interrupting the chain reaction of the fire tetrahedron. The extinguishers are pressurized with nitrogen gas as an expellant. They can be used on class A, B and C fires. Dry chemical extinguishers put out fires by coating the fuel with thin layer of chemical dust. This in turn separates the fuel from the oxygen in the air. The powder has also the ability to interrupt the chemical chain reaction of the fire. These are the most common extinguishers found on campus since they are very effective at extinguishing fires.

**K-Class Extinguisher:** A K - Class extinguisher contains a wet chemical that is composed of potassium based solution. They are used on kitchen fires that involve high temperature cooking oils and deep fat fryers. The solution provides both a cooling effect on the fire as well as forming a blanket on top of the fire cutting off the oxygen.

## 12.4 How to Use a Fire Extinguisher

It is easy to remember how to use a fire extinguisher if you can remember the acronym **PASS**, which stands for **PULL**, **AIM**, **SQUEEZE**, and **SWEEP**.



**Pull** the pin.

This will allow you to discharge the fire extinguisher.



**Aim** at the base of the fire.

If you aim at the flames (which is usually the temptation), the extinguisher agent will fly right through and do no good. You have to hit the fuel





**Squeeze** the top handle or lever.

This depresses a button that releases the pressurized extinguishing agent in the extinguisher.



**Sweep** from side to side until the fire is completely out.

Start using the extinguisher from a safe distance away moving forward while sweeping the nozzle from side to side. Once the fire is out, keep an eye on the area in case it re-ignites.

## 12.5 Rules for Fighting Fires

Fires can be very dangerous and you should always make certain to not endanger yourself or others when attempting to put out a fire. For this reason, when a fire is discovered:

- Assist any person, who is in any immediate danger to safety, if it can be accomplished without risk to you.
- Activate the building fire alarm system or notify the fire department by dialing 911. When you activate the building fire alarm system, it will automatically notify the fire department and get help on the way. It will also sound the building fire alarm system to notify other occupants, and it will shut down the air-handling units to prevent the spread of smoke throughout the building.
- Only after completing the above two, you may use an extinguisher if you are trained and the fire is small.

**However, before deciding to fight the fire, keep these rules in mind:**

### **NEVER FIGHT A FIRE IF:**

- **You do not know what is burning and you do not know what type of fire extinguisher to use.** Even if you have an ABC extinguisher, there may be something in the fire, which could explode or produce toxic smoke. Chances are you know what is burning, or at least have a pretty good idea, but if you do not know, let the fire department handle it.
- **The fire is spreading rapidly beyond the spot where it is started.** The time to use the fire extinguisher is in the recipient, or beginning stages of the fire. If the fire is spreading quickly, it is best to simply evacuate the building, closing windows and doors as you leave.

## 12.6 Mounting Fire Extinguishers

Most fire extinguishers are mounted on walls or columns by securely fastened hangers so that they are supported adequately, although some fire extinguishers are mounted in cabinets or wall recesses. In any case, the operating instructions must face outward, and the extinguisher should be placed so that it can be removed easily. Cabinets should be kept clean and dry.

## **12.7 Tampering/Vandalism**

Tampering with, or vandalizing, a fire extinguisher includes the following:

- Discharging the extinguisher for any other reason than to extinguish a fire.
- Relocating an extinguisher without approval.
- Damaging any part of the extinguisher intentionally or accidentally through carelessness.

## **12.8 Reporting Damaged or Discharged Extinguisher**

Never put an extinguisher back in its place after use. If an extinguisher is discharged, or if it is damaged in any way, report the fire extinguisher to Environmental Health and Safety by calling 7-3129.

## **12.9 Maintenance**

Maintenance should include a thorough examination of the extinguisher's mechanical parts, the extinguishing agent and the expelling means.

The purpose of the maintenance program is to make sure that the extinguisher will operate properly, and will not pose a potential hazard to the operator or people nearby. Certified personnel will perform maintenance once every year as per NFPA 10.

## **12.10 Guidelines for Inspection and Maintenance of Fire Extinguishers**

The purpose of this guideline is to provide information regarding the requirements of inspection and maintenance of fire extinguishers in all facilities of Florida Atlantic University. This information is based on Occupational Safety and Health Standards 1910.157 and NFPA10 and project specification.

All fire extinguishers shall be inspected and maintained in accordance with the manufacturers established operating standards and applicable code requirements. Any inspection, servicing, recharging, or testing of fire extinguishers shall only performed by licensed and certified companies with qualified personnel normally engaged in this type of work.

The annual inspection shall include check of the following items.

1. The extinguisher is located in its designated location.
2. There is no obstruction to access or visibility.
3. Operating instructions on the name plate are legible and facing outward.
4. Seals and tamper indicators are in place and not broken or missing.
5. The extinguisher is full determined by weighing or "hefting".
6. Extinguisher shows no obvious physical damage, corrosion, leakage, or clogged nozzle.

7. Pressure gauge reading or indicator is in the operable range or position.
8. Extinguisher chemical is not caked. (dry chemical only).
9. Tag is attached that indicates the month and year the maintenance and recharging were performed and identifies the person performing the service.

**In addition to the above required inspection each fire extinguisher shall be subject to a periodic maintenance that will include:**

1. Thorough examination of the basic elements of a fire extinguisher annually including:
  - a) All necessary parts of fire extinguishers
  - b) Extinguishing agent of both cartridge and cylinder-operated dry chemical, stored pressure, loaded steam and pump tank fire extinguishers
  - c) Expelling means of all extinguishers
  - d) Weigh all carbon dioxide and halogenated fire extinguishers as required by the manufacturer.
2. As part of the annual maintenance and where applicable conductivity test shall be performed on carbon dioxide fire extinguishers hoses.
3. When recharging a fire extinguisher the recommendations of the manufacturer shall be followed and a leak test shall be performed on stored pressure and self expelling types of fire extinguishers.
4. All fire extinguishers that require recharging as a result of either six-year maintenance or hydrostatic testing must have "Verification of Service" collar located around the neck of the container.
5. Dry chemical and Halon fire extinguishers shall be serviced every six years. Six -year maintenance involves taking apart the fire extinguisher to internally examine all components.
6. Every six years stored pressure fire extinguishers that require a 12-year hydrostatic test shall be emptied and subjected to the applicable maintenance procedures.
7. Every 12-year, extinguishers must be hydrostatically tested. Test involves high pressure testing to determine continued serviceability to the extinguisher shell.
8. As part of hydro testing of carbon dioxide fire extinguishers conductivity test shall be performed on all on all carbon dioxide fire extinguishers hoses that require such testing. Hose assemblies found to be nonconductive shall be replaced. Carbon dioxide fire extinguishers are not required to be examined internally. However these extinguishers must be weighed on a special scale to determine if the amount of carbon dioxide is within the required range. Carbon dioxide fire extinguishers are subject to hydrostatic test testing every five years.

9. Each fire extinguisher shall have a tag or label securely attached that indicates the month and the year the maintenance was performed. The tag must identify the technician name, license number and the company name.
10. During the maintenance and inspection of fire extinguishers, any extinguisher that is identified, as having a deficiency the inspecting company shall immediately replace the fire extinguisher with the same type and size by a loaner.
11. All inspection, testing and maintenance shall be performed in compliance with applicable NFPA standards and documented accordingly.

## **13 INSPECTION AND TESTING OF FIRE PROTECTION AND LIFE SAFETY SYSTEMS**

FAU is working to provide a level of life safety and property protection that will meet the needs of the people occupying its buildings while meeting the safety requirements of local building codes and the authority having jurisdiction. Fire detection devices and alarm systems are the key elements among the fire protective features of any facility. Detection and alarm systems help limit property losses in buildings regardless of the type of occupancy, and significantly reduce the loss of life from fire since many of the fire deaths in the United States result from building fires.

### **13.1 Fire Protection Equipment and Systems**

Fire Protection Equipment and systems are specially designed, either alone or as a system, to limit the spread of fire and smoke by assisting in extinguishments, either by automatic, semi-automatic or manual means. This includes, but is not limited to:

- Portable fire extinguishers
- Fire hoses
- Fire pumps
- Wet and dry standpipe systems
- Automatic sprinkler systems
- Halon systems and other special extinguishing systems
- Fire doors, dampers and other fire protection systems and appurtenances
- Fire alarm systems

Fire protection and life-safety equipment and systems shall be inspected, tested and maintained in all occupancies and locations where required, or installed as set forth in NFPA Codes, federal, state, and local standards, and as may be required by the State Fire Marshal.

The provisions of this Standard apply to the inspection, maintenance, and testing of both fire protection and life-safety systems and equipment. **The requirements presented in this Standard are to be considered as a MINIMUM. See the Appendices for sample forms that apply to the inspection, testing and maintenance of fire protection systems.**

### 13.2 Servicing, Testing, and Maintenance

Qualified, certified and/or licensed personnel shall conduct all servicing, testing, repair, maintenance and tagging of fire protection and life-safety equipment. Personnel not licensed, certified, or approved by the City Fire Department or State of Florida may be required to provide documentation of licensing or certification by similar approved agencies or authorities, or identification as manufacturer's representative or authorized service personnel.

### 13.3 Service Tags

After installation or service, an approval service tag shall be completed in detail indicating all work that has been done and then attached to the equipment or system in such a position as to permit convenient inspection and not hamper its actuation or operation. A new service tag must be attached each time service is performed. If impairments to the system constitute emergency impairments as defined in applicable NFPA Standards, then a completed tag shall be attached indicating the nature of the impairment or what corrective action is necessary. The office of the State Fire Marshal and/or the City Fire Department shall be notified as soon as possible whenever fire protection or life-safety equipment is TAGGED.

### 13.4 New Installation

All new installations of fire protection equipment and fire alarm systems shall have installation acceptance tags affixed to them.

### 13.5 Upgrade of Equipment

All fire protection and life-safety equipment shall be maintained in accordance with requirements of the manufacturer and local, state, federal or nationally recognized standards in effect at the time of original installation and acceptance, unless otherwise required by the State Fire Marshal or other regulatory agencies.

### 13.6 Inspection and Maintenance Records

All logs or records of inspection, testing, maintenance and major repairs of fire protection and life-safety equipment and systems shall be maintained on file for not less than **3 years**, and made available to the State Fire Marshal or fire inspector upon request.

## 13.7 Notification of Systems Out of Service

The Fire Department should be notified immediately when a required fire protection or life-safety system is placed out of service for emergency or non-scheduled repairs, replacement, or service. The Fire Department shall again be notified when the system is restored to normal operational status.

The office of the State Fire Marshal shall be notified, **in writing**, not less than **7 days** prior to any lengthy routine or scheduled repairs, or replacement time period. Notification shall be prior to, where possible, placing the system out of service. Certification and documentation of repairs and operational readiness of the system shall be provided to the State Fire Marshal or fire inspector upon request.

No fire protection or life-safety system shall be placed permanently out of service unless prior written approval is obtained from the State Fire Marshal.

## 13.8 Life Safety Systems

### 13.8.1 Fire Alarm Systems

Fire alarm systems shall be tested, and service tagged at the main alarm panel, not less than **annually**. Testing shall include all smoke detectors, manual pull devices, annunciators, visual indicators and strobes, control units, voice/alarm communications systems and other devices that may be part of the fire alarm system.

### 13.8.2 Test of Systems

An approved fire alarm service company shall test the fire alarm system. All testing and maintenance shall be in accordance with NFPA Standard No. 72 and this Standard. Test operation of all auxiliary functions of alarm system including, but not limited to: electronic locking devices, automatic fire and smoke door and damper function, elevator recall, stair pressurization operation and HVAC shutdown.

### 13.8.3 Emergency Lighting Systems

Provide for the quarterly testing of emergency lighting systems that are part of an approved exit system and shall include, but is not limited to: lighted exit signs, stairway lighting, and egress lighting, where required both inside and outside of a building or structure.

### 13.8.4 Generator Systems

A “run check” of the generator unit shall be performed at least **monthly**, for a period of at least **30 minutes**, under load conditions. System shall be checked for proper fuel, oil and coolant levels prior to starting test. Authorized building or contract personnel may

perform “Run Tests” and maintenance. All testing should be done in accordance with manufacturer’s guidelines and NFPA Standard No. 110. A written record of monthly test shall be maintained by the generator room.

### 13.8.5 Battery Systems

Battery units shall be inspected **quarterly**. Authorized building or contract personnel may perform inspections using procedures in accordance with manufacturer’s guidelines and NFPA Standard No. 110. A written record of inspections shall be maintained.

### 13.8.6 Emergency Power Supply Systems (EPSS)

These systems provide emergency power for continuous operation of, but are not limited to: exit lighting systems, fire alarm system, fire pump, stair pressurization and smoke removal systems, elevators, and associated electrical transfer switch gear. The unit shall be inspected quarterly.

### 13.8.7 Engine Driven Generator Systems

An authorized generator company shall conduct an annual ‘Load Test’. Load test shall be performed under temperature conditions and at a capacity not less than **50 percent** of the total connected emergency power supply load manufacturer’s nameplate rating for the unit, for a continuous period of not less than **90 minutes**. Load test shall include building load with all required equipment on the emergency circuit(s) operational for the duration of the test. Elevator recall and firefighter control operations shall be checked, but need not be continuous for the test period.

### 13.8.8 Test of Automatic Fans and Dampers

Operational tests of all automatic fans and dampers connected to building fire alarm systems shall be conducted **annually** in conjunction with fire alarm systems tests. Results shall be included with the fire alarm system inspection test reports.

## 13.9 Waterbased Life Safety Systems

### 13.9.1 Automatic Sprinkler Systems

#### 13.9.1.1 Routine Inspection

Approved contract personnel or building personnel, fully trained to perform such inspections or checks, may perform routine visual inspections and equipment checks in accordance with NFPA Standard No. 25. A written record of weekly and monthly inspections of system components shall be maintained.

Regardless of the type of system, all automatic fire sprinklers must remain clean at all times. They must not be caked with dust, grease, or paint, particularly on the heat-responsive element. They must be provided with guards if located in the areas prone to damage. Light fixtures, HVAC equipment, cables, stored materials, or movement of overhead doors and windows should not obstruct sprinklers. NFPA 25 requires this type of evaluation to be performed once a year. Sprinklers must be free from corrosion. A sufficient supply of spare sprinkler heads of each type and ratings used by the system and the special wrench needed to replace them, must be available on the premises.

Piping must be checked once a year when the sprinklers are being inspected to make sure it is in good condition, free from mechanical damage, and not being used to support fixtures, ladders, or any other loads. NFPA 25 requires that the pressure gauge of a wet pipe system be read monthly and the reading must be recorded

#### ***13.9.1.2 Test of Systems***

All automatic sprinkler systems shall be tested **annually** in accordance with NFPA Standard No. 25 and State requirements, and service tagged by an approved fire protection sprinkler company.

#### ***13.9.1.3 Wet Standpipe System***

Wet standpipe systems should contain water in the piping at all times. A flow test shall be conducted for each zone of the standpipe system every **5 years**. An approved service company shall conduct flow tests with required volume of water at the system's design pressure and provide required service tagging of the system at the main control valves and risers. Testing shall be conducted in accordance with NFPA Standard No. 25.

#### ***13.9.1.4 Dry Standpipe System***

Dry standpipe systems do not normally contain water in the piping and have to be supplied with water from an outside source. An approved service company performing such testing shall conduct hydrostatic test on the standpipe system every **5 years**.

### **13.9.2 Fire Department Connections**

#### ***13.9.2.1 Inspection***

Fire Department Connections (FDC) shall be inspected **quarterly**. Inspections should check for: missing protective caps or covers, damaged hose couplings, couplings not operating freely, the presence of foreign material that might interfere with operation of



system, water in the piping that could indicate possible check valve leaks, and missing standpipe or sprinkler connection identification signs.

### ***13.9.2.2 Test of System***

An approved service company shall conduct flow and pressure tests of all fire department connections, piping and check valve assemblies, not less than every **5 years**. Testing should be conducted as a part of the standpipe system 5-year test when possible, and in accordance with NFPA Standard No. 25.

## **13.9.3 Fire Pumps**

### ***13.9.3.1 Diesel Driven Pumps***

Operating test of diesel engine driven fire pumps shall be conducted **weekly** without water flowing. This test shall be conducted by allowing automatic starting of the pump to occur and running the pump for a minimum of **30 minutes**. Run test may be performed by authorized building or contract personnel and shall be in accordance with the manufacturer's guidelines and NFPA Standard No. 25. A written record of all weekly tests shall be maintained.

### ***13.9.3.2 Electrically Driven Pumps***

Operating test of electrical motor driven fire pumps shall be conducted **weekly** without water flowing. This test shall be conducted by allowing automatic starting of the pump to occur, and running the pump for a minimum of 10 minutes. May be performed by authorized building or contract personnel and shall be in accordance with the manufacturer's guidelines and NFPA Standard No. 25. A written record of all weekly tests shall be maintained by the pump room.

### ***13.9.3.3 Pump Tests***

A flow test at pressure shall be conducted on fire pump(s) **annually**. Flow tests shall be performed by an approved service company, and shall be conducted and service tagged in accordance with manufacturer's guidelines and NFPA Standard No. 25.

## **13.9.4 Private Fire Service Mains**

Private dry barrel and wet barrel fire hydrants, and wall hydrants, installed for fire department use shall be inspected and flow tested by an approved service company **annually**. Testing shall be conducted in accordance with NFPA Standard No. 25, and a written report of the test findings shall be provided to EH&S.

## 13.10 Fire Doors and Dampers

### 13.10.1 Fire Door Inspection

Fire doors, shutters and windows shall be inspected at least **quarterly**. Inspections should include the following:

1. Guides and bearing should be well lubricated.
2. Doors normally held open by automatic closing devices should be operated to assure they are working properly. Closing devices and coordinators should be adjusted to assure that the doors close and latch properly.
3. Chains and cables should be regularly inspected for excessive wear and stretching. Ropes or other non-approved chain or cable replacements shall not be installed or used on fire doors.
4. Check fusible links for paint or other non-approved coating materials. Replace any painted or coated links.
5. Check door rollers for paint, dirt or grime buildup. Remove paint or buildup as necessary to assure that rollers will not bind.
6. Check doors for holes or other damage that would violate their fire rating.

Inspections may be performed by authorized building or contract personnel and shall be in accordance with the manufacturer's guidelines and NFPA Standard No. 80. A written record of all inspections shall be maintained.

### 13.10.2 Fire Door Testing

All sliding and rolling fire doors, shutters and windows shall be allowed to close completely at least **annually** to check operations of the guides and rollers, and to make sure the doors have adequate clearance to close completely. Chains and cables should be adjusted as needed. An approved service company shall perform any required repairs of fire doors or assemblies. A written record of all inspections and repairs shall be maintained.

### 13.10.3 Fire Damper Inspections

All accessible fire damper assemblies in mechanical, electrical or air handler rooms and spaces, in firewalls or rated occupancy separation walls, or in floors, shall be visually inspected at least **quarterly** to verify that their operations are not obstructed or impaired. Authorized building or contract personnel may perform visual inspections. A written record of inspections shall be maintained.

## 13.11 Special Fire Suppression Systems

### 13.11.1 Commercial Kitchen Hood Systems

All vent hood fire suppression systems installed in commercial kitchens shall be inspected and service tagged not less than **every 6 months**, and after any activation of the system by an approved fire protection equipment company. Inspections shall be in accordance with manufacturer's guidelines.

Additionally, all commercial kitchen vent hoods, exhaust ducts, exhaust fans and appurtenances shall be cleaned and inspected by approved personnel in accordance with manufacturer's guidelines as often as necessary to insure against excess grease accumulations.

### 13.11.2 "Type K" Extinguishing Systems and Portable Fire Extinguishers

"Type K" extinguishing systems and portable fire extinguishers, installed for use in the protection of cooking areas within commercial kitchens, shall be inspected, tested, service tagged and maintained in accordance with manufacturer's guidelines and new NFPA 10.

### 13.11.3 Fixed Dry Chemical Extinguishing Systems

Fixed dry chemical extinguishing systems where installed for protection of, but not limited to, the following: dip tanks or process hazards as spray booths, chemical hood systems or laboratory hood systems; shall have an actuating test of the system performed (discharge of the agent is not required) and service tags affixed every **6 months** by an approved fire protection equipment company.

### 13.11.4 Fixed Wet Chemical Extinguishing Systems

Fixed wet chemical extinguishing systems where installed for protection of, but not limited to, the following: dip tanks or process hazards as spray booths, chemical hood systems or laboratory hood systems; shall have an actuating test of the system performed (discharge of the agent is not required) and service tags affixed every **6 months** by an approved fire protection equipment company. Inspections shall be in accordance with manufacturer's guidelines.



## Appendix 1 – Fire Drill Response Form

*Note: This form should be completed for any scheduled fire drill or any false alarm which results in a building evacuation. If you require help or have questions regarding this form, call EH&S at 7-3129.*

### **Section 1: General Information**

Date/Time Fire Drill conducted:

Building Name and No:

Person Supervising the Fire Drill:

### **Section 2: Alarm Information**

Time Alarm Set-Off:

Time Alarm Silenced:

Alarm Signal Received by Dispatcher  Yes  No

Reset Signal Received by Dispatcher  Yes  No

Did Alarm Devices Activate?

Was there any trouble with the alarm panel, or initiating devices?

### **Section 3: Evacuation Information**

Did everyone in the building evacuate?  Yes  No

Evacuation time:

Was the evacuation orderly?  Yes  No

Did everyone proceed to the predetermined assembly area?

Any comments or recommendation on the evacuation:



## Appendix 2 - FAU Event Planning Checklist

This document has been developed as a management tool for University sponsored campus events. Through the use of this checklist accepted safety, environmental health and risk management standards and techniques can be applied to help insure a successful and accident-free event.

**Any “No” answer requires contacting Environmental Health & Safety.**

A. SITE SELECTION	Yes	No	N/A
1. Has the occupancy load/limit been determined for location to be used?			
2. Are stages and platforms appropriately guarded and edges and steps highlighted for clear visibility?			
3. Is the location adequately illuminated for the time and type of event?			
4. Have special lighting arrangements been made for outdoor locations, e.g. flashlights, spotlights, security lighting?			
5. Does the location have at least two means of egress that are remote from each other?			
6. Are all exits clearly visible and marked to identify them as such?			
7. Are exits so arranged and maintained as to provide free and unobstructed egress from all occupied areas? (No exit may be blocked with furniture, concessions, or locked from the inside; rugs, mats, electrical extension cords or other cables may not be placed across exit corridors so that they impede clear access to the exit doors and corridor.)			
8. Have stairs/stairwells and handrails been inspected to assure that they are in good condition? (No storage is permitted in stairwells or under stairs at any time.)			
9. Will tents be used? (Assembly and maintenance of tents must comply with requirements of NFPA standards 101 & 102.)			
10. Have walkways leading to and from event site been inspected for potential slip & fall and trip & fall hazards? (Slip/trip/fall hazards must be corrected or exposure of participants to these hazards must be prevented prior and during the event.)			
11. Have grassy areas to be used or in close proximity been inspected for holes and other hazards?			

12. Have area in close proximity to event location been inspected for standing water or mosquito breeding areas, during the raining season?			
<b>B. OPERATIONS</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
1. Does this event require coordination with the Physical Facilities Department? (Representative events that might require coordination include bonfires, facility setup, area clean-up, or special equipment requirements.)			
2. Is the setup planned such that aisle ways and doorways are free of cords, protrusions and other obstructions that could cause tripping or struck-by injuries?			
3. Have arrangements been made for emergency lighting? (Outdoor activities may meet this requirement using large battery operated flashlights.)			
4. Have responsibilities for execution of emergency evacuation procedures been addressed?			
5. Have appropriate accommodation been made for emergency evacuation for persons with disabilities?			
6. Is the event setup planned such that access to alarm activation and warning devices are kept clear and accessible?			
7. Have security arrangements been confirmed with the University Police Department?			
8. In addition to 7 above, have procedures been established for effective crowd control?			
9. Have arrangements been made to setup barricades to clearly delineate area for pedestrian and vehicular traffic?			
10. When required, have arrangements been made to maintain radio communication between event organizers and event staff?			
11. Will event staff be clearly identifiable so that guests may request help or information?			
12. Have responsible individuals been identified to conduct roving inspections during event? (Aware of general and specific crowd control, suspicious activity, hazards, etc.)			
13. Are procedures in place to enforce the state statute which prohibits smoking in public buildings?			
14. Will any Special Equipment, High Risk Activity, or Animals be involved in the event?			

15. Have ADA accommodations been made to assist persons with disabilities to fully participate in the event as planned? (Mobility Impairments, Sight Impairments, Speech Impairments, Hearing Impairments, Others)			
<b>C. EVENTS INVOLVING FIRE, FLAME AND/OR HEAT</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
1. Have all combustible decorative materials that will be used in building been treated with flame retardant?			
2. Will there be a firework display at the event?			
3. Do you plan to have a bonfire at the event?			
4. Do you plan to have a barbeque at the event?			
5. Is the use of all "open flames" inside the building prohibited for this event? (Burning candles and all other forms of open flames are prohibited inside buildings)			
6. Has a request for the use of pyrotechnic devices been submitted to EH&S for this event? (See the FAU Fireworks, Pyrotechnics, and Flame Effects Policy & Procedure for guidance.)			
7. Are barbeque grills setup at least 20 ft. from any building?			
8. Is a portable fire extinguisher available within 25 feet barbeque grills?			

### Appendix 3 - Summary of Minimum Inspection, Testing and Maintenance for Sprinkler Systems, NFPA 25

<b>Item</b>	<b>Activity</b>	<b>Frequency</b>
Gauges (dry, pre-action deluge systems)	Inspection	Weekly/Monthly
Control Valves	Inspection	Weekly/Monthly
Alarm Devices	Inspection	Monthly
Gauges (wet pipe systems)	Inspection	Monthly
Hydraulic Nameplate	Inspection	Quarterly
Buildings	Inspection	Annually (prior to freezing weather)
Hanger/Science Bracing	Inspection	Annually
Piping	Inspection	Annually
Sprinklers	Inspection	Annually
Fire Department Connections	Inspection	Quarterly
Valves (all types)	Inspection	Weekly/Monthly
Alarm Devices	Test	Quarterly
Main Drain	Test	Quarterly
Antifreeze Solution	Test	Annually
Gauges	Test	5 years
Sprinklers-High Temp.	Test	5 years
Sprinklers-Fast Response	Test	20 years and every 10 years thereafter
Sprinkler	Test	50 years and every 10 years thereafter
Valves (all types)	Maintenance	Annually or as needed
Obstruction Investigation	Maintenance	5 years or as needed



## Appendix 4 - Summary of Fire Pump Inspection, Testing, and Maintenance

Item	Activity	Frequency
Pump house,		
Heating	Inspection	Weekly
Ventilating louvers	Inspection	Weekly
Fire pump system	Inspection	Weekly
Pump operation,		
No-flow condition	Test	Weekly
Flow condition	Test	Annually
Hydraulic	Maintenance	Annually
Mechanical transmission	Maintenance	Annually
Electrical system	Maintenance	Varies
Controller, various components	Maintenance	Varies
Motor	Maintenance	Annually
Diesel engine system, various components	Maintenance	Varies

## Appendix 5 - Inspections, Testing and Maintenance-Fire Alarm System

### INSPECTION

#### Weekly

- Check electrolyte level and connection for lead acid batteries.

#### Monthly

##### **Fire Alarm Systems-General:**

- Check all fire alarm equipment to make sure it is not damaged or inoperative.
- Check power supply for normal indication.
- Illuminate lamps and light emitting diodes (LEDs) on fire alarm and annunciator panels.
- Conduct operational test of engine generator, if connected to generator.
- Check water level of rechargeable batteries if wet cell batteries are used.

##### **Voice Alarm Systems:**

- Check speakers for damage.
- Check pre-amplifier and its controls for normal indication.
- Check amplifier and its controls for normal indication.
- Check voice tapes (if the system requires one) for normal indication.

##### **Manual Stations:**

- Check all manual stations for damage or obstruction.

##### **Detectors:**

- Check all detectors for damage or obstruction. Obstruction means that the detector is located in a dead air pocket; is too close to an air handling unit discharge outlet, covers too large a space, or is blocked by storage.

#### Semi-Annually

##### **Fire Alarm Systems-General**

- Remove fuses, check ratings, and reinstall.
- Check voltage of each rechargeable battery cell.

## Inspections, Testing and Maintenance-Fire Alarm System

### TESTING

#### Monthly

- Test the primary power supply for initiating and notification appliance circuits. The primary power supply is usually a 120-V AC circuit controlled either by a fused safety switch or by a circuit breaker. Disconnect the primary power and make sure the fire alarm system switches normally to the secondary source of power.
  
- Test the two-way communications system either by removing the telephone receiver from its cradle or by inserting a plug-in, two-way communications device in its jack. This should sound a signal in the central control center and allow two-way communications. Record the specific device tested on the two-way communications circuit so that different devices are used in subsequent tests.

#### Quarterly

- Test the supervisory device circuit by disconnecting a conductor from its terminal in the control panel. Once a trouble signal is received, reconnect the wire to its terminal and reset the control panel. Repeat the test for all supervised circuits.

### TESTING OF FIRE ALARM CONTROL PANELS

#### Monthly

- Activate one device on each initiating device circuit.
- Activate notification appliance circuits and confirm proper operation of all audible and visual alarms.
- Test Sprinkler water flow circuits by activating a flow switch on each circuit.

#### Semi-Annually

##### **Fire Alarm Systems-General:**

- Test each manual station.
- Activate extinguishing system alarm switches.
- Activate supervisory signal initiating devices (e.g., gate valve switches, high air pressure switches, low air pressure switches, temperature sensors, and water level).
- Test 10% of rate-of-rise heat detectors. (Test a different 10% every 6 months so that all detectors are tested in 5 years.)
- Test 10% of rate compensation heat detectors. (Test a different 10% every 6 months so that all detectors are tested in 5 years.)
- Test each smoke detector.

## Inspections, Testing and Maintenance-Fire Alarm System

### MAINTENANCE

Maintenance is the work necessary to keep fire alarm equipment operable and to make repairs. Repair of fire detection and alarm equipment must be made immediately to assure that the system will operate properly when needed.

### ANNUAL REQUIREMENTS

#### Fire Alarm Systems-General:

- Test supervisory device circuits.
- Verify primary power supply. (Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances operating for 5 minutes. Be sure to reconnect all power supplies at end of tests.)
- Disconnect primary power supply to test secondary power supply. (Disconnect primary power. Verify that the control panel operates properly from secondary power. Verify that trouble indicator comes on upon primary power loss. Measure standby current using manufacturer's data. Test system under maximum load, including all alarm appliances operating for 5 minutes. Be sure to reconnect all power supplies at end of tests.)
- Activate alarm notification appliances.
- Test voice alarm system functions.
- Test operation of speakers.
- Verify that annunciators accurately report all alarm and trouble signals.
- Test all control unit functions.
- Test each alarm initiating and signaling circuit for trouble signals.
- Calibrate and test of smoke detectors. All smoke detectors, regardless of type, are tested in the same manner. This operating test consists either of spraying a smoke detector test aerosol into the detector chamber. Each detector has a self-contained light, which illuminates, flashes or loses illumination when the detector operates.
- Test operation of two-way communications.
- Confirm operation of all audible and visible alarm notification appliances.
- Remove fuses and verify ratings and supervision**



## Appendix 6 - Fire Detection and Alarm Systems Monthly Tests and Maintenance

YES = SATISFACTORY

NO = UNSATISFACTORY (EXPLAIN ON REVERSE)

N/A = NOT APPLICABLE

SYSTEM \_\_\_\_\_

INSPECTOR \_\_\_\_\_

DATE \_\_\_\_\_

	YES	NO	N/A
The recorded message was tested and is operational.			
All engine-driven generators for fire alarm systems are tested weekly and a log of the tests is kept.			
Radio fire alarm signal receiving equipment was tested hourly and a log of the tests is kept.			
All radio, fire alarm boxes transmit a test alarm daily and a log of the tests is kept.			
Telegraphic fire alarm signal receiving equipment was tested daily and a log of the tests is kept.			
All telegraphic fire alarm boxes are tested bi-monthly and are operational.			
One initiating device on each circuit was tested and all circuits are operational:			
Each indicating appliance circuit was tested and all circuits are operational:			
Each speaker circuit was tested and all circuits are operational:			
One device on each two-way communication circuit was tested and each circuit is operational.			
Test each supervisory device circuit by removing a wire from its terminal.			



## Appendix 7 - Fire Detection and Alarm Systems Monthly Inspection

YES = SATISFACTORY  
 NO = UNSATISFACTORY (EXPLAIN ON REVERSE)  
 N/A = NOT APPLICABLE

SYSTEM \_\_\_\_\_

INSPECTOR \_\_\_\_\_

DATE \_\_\_\_\_

	YES	NO	N/A
Fire alarm panel appears operational.			
Lights and LEDs on fire alarm and annunciator panels are operational.			
Battery electrolyte level is satisfactory.			
All heat detectors appear operational.			
All smoke detectors appear operational.			
All flame detectors appear operational.			
All manual stations appear operational.			
All bells or horns appear operational.			
All speakers appear operational.			
Pre-amplifier appears operational.			
Amplifier appears operational.			
Voice tape appears operational.			
Power supplies appear operational.			
All radio fire alarms transmitting equipment appears operational.			
All radio fire alarms receiving equipment appears operational.			
All telegraphic fire alarms transmitting equipment appears operational.			
All telegraphic fire alarms receiving equipment appears operational.			



## Appendix 8 - Fire Detection and Alarm Systems Annual Test and Maintenance

YES = SATISFACTORY

NO = UNSATISFACTORY (EXPLAIN ON REVERSE)

N/A = NOT APPLICABLE

SYSTEM \_\_\_\_\_

INSPECTOR \_\_\_\_\_

DATE \_\_\_\_\_

	YES	NO	N/A
Alarm indicating appliances (visual and audible) were tested and are operational.			
The primary power supply was tested and is operational.			
The secondary power supply was tested and is operational.			
The lamp and LED circuits were tested and are satisfactory.			
Smoke detectors were recalibrated and operate satisfactory.			
Batteries were discharged for two hours and remain operational.			
Battery charging devices were tested for proper operation.			
Battery voltage was measured under full load with charger disconnected.			
Batteries had the float voltage measured in each cell and are satisfactory.			
Bell or horns were tested and are operational.			
Annunciators were tested and are operational.			
Control units were tested and all functions are operational.			
Voice alarm system components were tested and are operational.			
Each initiating and signaling circuit was tested for trouble signals.			
Two fixed temperature heat detectors for every 100 present were removed and satisfactory tested by a testing laboratory. The two fixed temperature detectors were replaced with new fixed temperature heat detectors.			
DATE THE SYSTEM WAS INSTALLED:			
DATE THE FIXED TEMPERATURE HEAT DETECTORS WERE TESTED:			
NOTE: If the tested fixed temperature heat detectors fail, all fixed temperature heat detectors in the building must be replaced.			