

GLEAMM Microgrid Safety Plan

The purpose of this safety plan is to outline the policy and procedure for providing a safe environment for students, staff, faculty, and visitors to engage in productive endeavors associated to the GLEAMM Microgrid. This plan will be reviewed and/or revised during the fall of even years wholly divisible by four. The policies presented herein are derived from the policies provided under Texas Tech University Operating Procedures 10.x, 60.x, 76.x. The university policies provided in the OP supersede where conflicts may arise between the policies provided herein and those described in the OP.

GLEAMM will submit to safety audits conducted by the TTU EH&S Staff during September of every even year and provide corrective actions as needed before the end of January the following year.

This safety plan is divided into sections as follows:

- General Safety
- Fire Safety
- Severe Weather Event Safety
- Emergency Action Under Threats of Violence
- Test bed Safety
- Hazardous Material Handling and Emergency Action

General Safety

The applicable university operating procedure is TTU OP 60.01.

The goal of this TTU GLEAMM Safety Policy is to promote safe endeavors in the department through a safety policy implementation that pervades the fabric of operations in the department. The policy implementation hierarchy is as follows:

1. Department Director
2. Department Associate Director
3. Faculty and Staff
4. Research Assistants
5. Students
6. Visitors

Individuals are responsible for their own actions regarding safety and each level of the hierarchy is responsible for those levels that numerically follow in the list. Individuals that witness unsafe practices at any level are encouraged to courteously address the unsafe practices of a group or individual at the time of the action. Each individual at a given level of the hierarchy is encouraged to seek the assistance of persons in the next higher level of the hierarchy to assist in

addressing unsafe practices witnessed in any level of the hierarchy. If corrective action is not taken, then the issue can be brought to the attention of the Director for appropriate redress. If any individual believes they are in harm's way in any situation that is presented in the facility, those individuals are encouraged to remove themselves from the situation and seek redress as outlined above.

Fire Safety

The applicable university operating procedure is TTU OP 60.12.

If there is a fire:

1. If you discover or suspect a fire, sound the building alarm.
 - If there is no alarm in the building, notify other occupants by shouting "fire" as you leave the building.
2. Leave the building.
3. Try to rescue others **ONLY** if you can do so safely.
4. Move away from the building at least 50 feet, out of the way of the fire department.
5. Don't go back into the building until the fire department says it is safe to do so.
6. Call the Fire/Police Department:
 - Dial 911

The exit routes to be used during a fire are indicated in the following floor plans. The figures indicate the general outdoor muster locations as well.

GLEAMM Microgrid Building (Building 0458)

GLEAMM Microgrid Site



Severe Weather Event Safety

The applicable university operating procedure is TTU OP 10.03 and OP 76.12.

Texas Tech maintains several warning and alert systems for use in the event major storms or other disasters threaten our community. Ideally, enough warning time will allow precautionary measures to be implemented. The unpredictable nature of weather conditions, however, does not always provide for adequate warning.

If a tornado warning is issued or a tornado is sighted, the following actions should be taken:

1. Seek inside shelter, preferably a basement, or inside a steel-framed or reinforced concrete structure (including all major university buildings).
2. Seek shelter in an interior hallway and stay away from exterior glass.
3. Lie flat on the floor and use tables, mattresses, or blankets for cover.
4. If caught in open country, lie face down in the deepest depression available such as a ditch, culvert, or ravine.

In instances where severe weather events result in suspension of campus activities, essential personnel (defined in OP 10.03) will remain on duty while all other personnel will not report to campus. The status of the suspension of operations will be broadcast via local television and radio stations, text message, roll calls and via the university website. All personnel are required to remain abreast of the operation status of the campus and must report for duty when normal operations are resumed.

Emergency Action Under Threats of Violence

The applicable university operating procedure is TTU OP 76.01, 76.06, and 76.10.

Texas Tech recognizes the high cost of violent incidents and the disruptive effect they have on personnel and productivity. Personal harassment (including stalking), abusive behavior, and violence are not tolerated in the workplace.

Threat of Personal Harm or Harm to a Group

All personnel, regardless of position, are responsible for the immediate reporting of any threats received, witnessed, or communicated to them. Personnel should also report unusual or threatening behavior, even though it may not be in the form of a direct threat, when such behavior makes the personnel fearful for their continued safety or the safety of others.

Re-portable threats include those made by co-workers, students, or outsiders entering the workplace – such as spouse, job applicants, etc. Employees must make such re-ports regardless of the relationship of the employee to the person who initiated the threat or behavior. Reports should be made immediately, without fear of retaliation, to a supervisor, personnel management, Texas Tech Police, or to any member of Texas Tech management. Texas Tech management must immediately report all incidents of threatening behavior to the chief of police or designee or the managing director of Personnel or designee.

Bomb Threat

Upon receipt of a bomb threat, the person receiving the call should immediately notify the Texas Tech Police Department and then the departmental supervisor. A checklist is available in OP 76.06A to assist in obtaining helpful information. The Texas Tech Police Department communications operator will immediately dispatch officers to the location of the reported threat to perform a cursory search of the premises and assume responsibility for handling the threat. The police department will provide further action as required.

Facility Safety

The applicable university operating procedure is TTU OP 60.x.

The GLEAMM facility will have a material safety data sheet present for inspection by all persons entering the facility. This sheet must be updated as the inventory of material changes in the facility.

The following policies apply to all students (graduate and undergraduate), faculty, and staff working on the field locations. Violation of these policies will result in suspension of research privileges. In the following items, the noun 'facility' will refer to all GLEAMM facilities indicated above:

1. Students are responsible for their own insurance coverage; consequently, students injured in the facility are responsible for their own medical bills.
2. All personnel must complete documented safety training under the direction of the person of record in the facility before they will be allowed to use the equipment in the facility. For new constituents in the department, this safety training will be conducted periodically and no less than once a semester that the facility is in use. Personnel missing the safety training will be disallowed use of the facility.
3. Hazards present in each facility will be posted on the exterior side of the entry doors.
4. Material Safety Data Sheets will be posted near each door on the interior of each facility.
5. Personnel must review the Material Safety Data Sheets before using any chemicals/hazardous materials in a facility.
6. Many of the experiments are hazardous if not handled properly. The facility instructor will provide details about safe operating procedures.
7. Personnel must operate all facility equipment in a safe manner. Use of safety goggles when drilling, cutting, handling caustic materials or concentrated acids, or working with pressurized vessels. In general safety goggles should be worn at all time while in the facilities.
8. Whenever dangerous situations are observed; a chemical spill, broken glass, someone who is not following safe procedures, the person making the observation is to report the hazard to the instructor.
9. Personnel will wear appropriate clothing (this may include long sleeved shirts, long pants, steel toed shoes, safety goggles, gloves) that are not loose or bulky that might become entangled in moving equipment. Jewelry/watches is to be removed in all instances. Any long hair must be secured in such a manner that it will not become entangled with moving equipment.
10. Fire Extinguishers are marked. In case of fire call 911.
11. As appropriate, instructional facilities are equipped with eyewash and shower stations. Wash off immediately, with water, any chemical that makes skin contact.

In general, all persons using the facilities will be very safety conscious, and exercise common sense such as:

1. Not leaving equipment lying on the floor that could cause tripping.
2. Cleaning up oil or other fluids that could cause slippage.
3. Not distracting other people while they are operating equipment.

Hazardous Material Handling and Emergency Action

The applicable university operating procedure is TTU OP 60.x.

There are many situations in the normal operation of GLEAMM where hazardous materials must be handled. These materials include, chemicals, hot materials, sharp objects, etc. Extreme caution must be implemented in the handling of these materials. The TTU OP 60.x has procedures for the various scenarios that arise; GLEAMM personnel engaged in the supervision of these kinds of activities must practice the policies presented therein.

Outdoor Wildlife and Nearby Buildings

GLEAMM personnel working or walking to the facility and engaged in the supervision of these kinds of activities must practice the policies presented therein. The following policies apply to all students (graduate and undergraduate), faculty, and staff working on the field locations. Violation of these policies will result in suspension of research privileges.

The department will provide appropriate ventilation, heating and cooling, maintenance and other environmental concerns in order to ensure a safe learning environment. It is the responsibility of the instructor and visitor to report issues to the attention of GLEAMM personnel for further action. Some hazards that may be present include, but are not limited to:

1. Natural or man-made terrain hazards on the job site,
2. Dermatitis, scrapes or burns from poisonous plants,
 - a. Beware of cactus and prickly weeds
3. Severe weather conditions,
 - a. Lightning and thunderstorms,
 - i. Seek appropriate shelter and monitor local weather warning systems.
 - b. Flooding and flash flooding,
 - c. Strong winds, tornadoes, and
 - i. Keep all doors closed,
 - ii. If outside and unable to find shelter, lie down in a ditch, ravine, or culvert and cover your head with your arms. Watch for flash flooding.

- d. Snow, freezing rain, sleet, and hail.
4. Sunburn, heat stress, heat rash, heat exhaustion, or heat stroke,
 - a. Wear clothing that does not transmit light, use of wide brimmed hat, sunglasses, sunscreen,
 - b. Seek shade and hydration often.
5. West Nile virus, Lyme disease, and other insect-borne diseases,
 - a. Snakes, hornets, bees, mosquitos, ticks and spiders
6. Wildlife bites, stings and attacks
 - a. The policy of Reese Technology Center is to avoid contact and engagement with any wildlife you encounter. Slowly back away and notify GLEAMM personnel if an animal appears to be injured or ill.
7. Uneven surfaces, wet grass, and mud,
8. Holes in the ground that can cause trips or falls,
9. Certain terrain hazards can cause water to collect,
10. Overhead hazards such as power lines or moving equipment.

Access to Reese Technology Center Airfield

Entry onto the airfield is gained, and at the discretion of, GLEAMM staff or faculty. Students are not authorized to be on the airfield premises at any other time that that designated by the faculty or staff.

Gun Firing Range Safety

Among the many hazardous outdoor conditions at the GLEAMM microgrid site, all visitors, students, faculty and staff are to be extremely cautious and aware of the nearby South Plains Association of Governments firing zones and schedule. GLEAMM personnel will email notifications of any site closures due to firing range activity. Closures of the site must be strictly adhered to ensure the safety of all collaborators. Any violation of this polices will result in suspension of research privileges.

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