
BTEC Safety Training

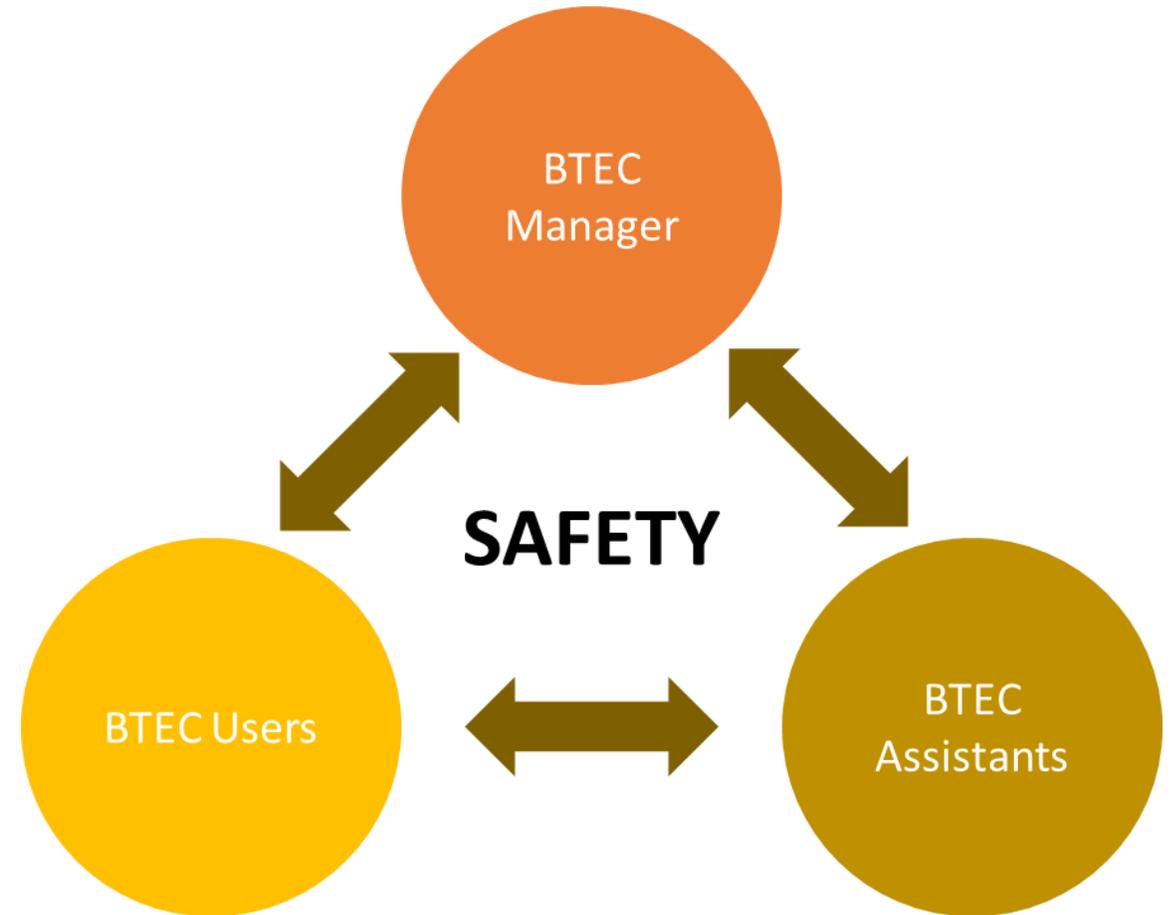
October 2022

Introduction

- This training is a requirement for any person who works in BTEC's Biosensors & Instrumentation suite (BTEC 201 "dry lab")
- The objective of this training is to provide users with the tools and knowledge to work safely
- Though this training provides a general overview of safety, it is important that anyone working in BTEC must be aware of hazards specific to any equipment and materials they use
- Must pass safety quiz at the end

Culture of Safety

- Safety is everyone's responsibility
- Never work in the lab alone
- The BTEC Manager/Assistants are here to support your ideas and projects, and to provide you with the tools and guidance to work safely in BTEC



GENERAL SAFETY

General Safety Rules

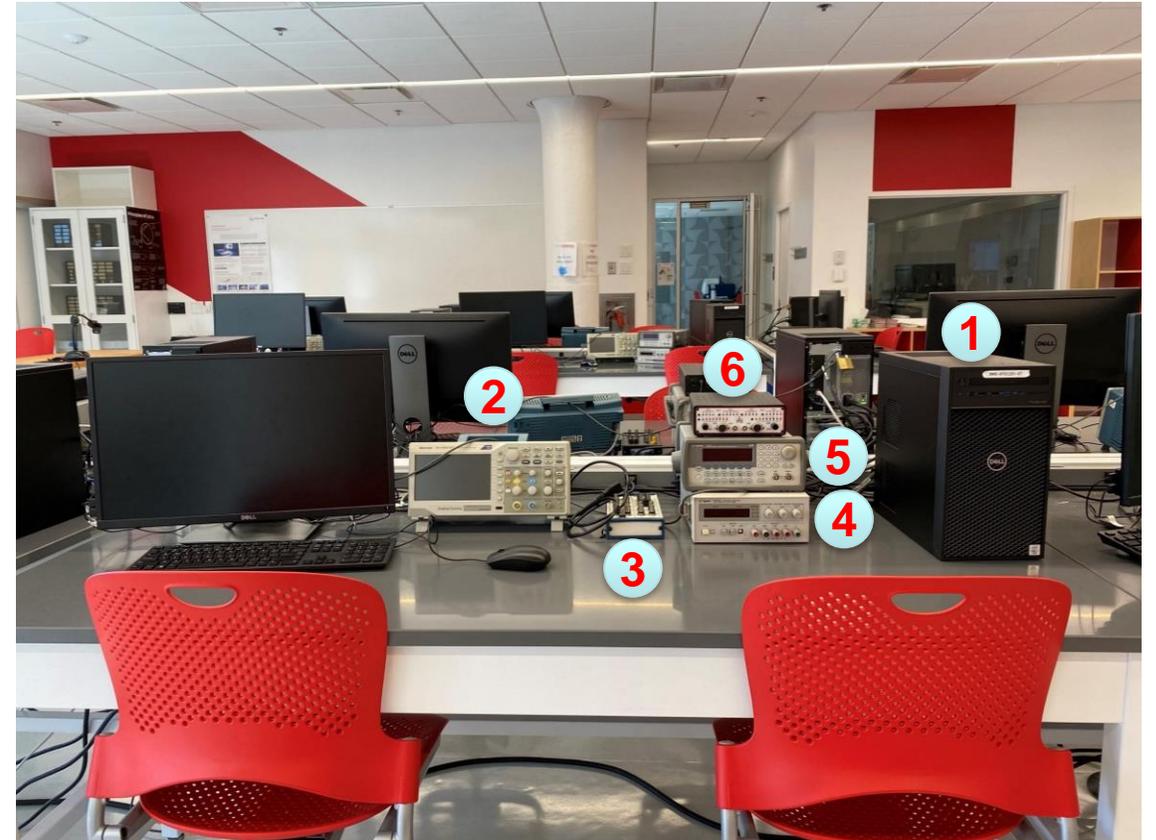
- BTEC Manager/Assistants must be present for you to work in BTEC
- NO eating/drinking allowed
 - You can step out in the hallway to take a drink of water
 - Do not bring in any containers with food/drink unless they are fully sealed
- Must wear closed-toe shoes
- Do not put/leave items on the floor (e.g., backpacks), as this can pose a tripping hazard
 - Use cubbies for personal items

Use of Equipment

- Do not operate a piece of equipment you are not trained on/unfamiliar with/using for the first time
- Ask the BTEC Manager/Assistants for help
- We will provide equipment training for individuals/groups
- Make sure you are comfortable with any equipment you are using

Equipment on Benches

1. **Workstation:** data analysis (e.g., MATLAB), CAD (e.g., SolidWorks)
2. **Oscilloscope:** analyze analog signals (e.g., electrocardiogram signal)
3. **Analog-To-Digital Converter (ADC):** digitize analog signals for manipulation on the computer
4. **Voltage Supply:** power supply for circuits (-20 to 20 V)
5. **Function Generator:** generate non-DC signals (e.g., sine wave)
6. **Filter/Gain Stage:** analog filter and amplifier (e.g., electrode readings from the body)
7. **Soldering Station** (against the opposite wall)



Electrical Safety

- Disconnect power sources when not in use
- Remove jewelry/metal on and around hands (can conduct electricity/current)



Soldering

- **Must wear eyeglasses** with side protection



- **Must solder** in proximity of snorkel



Personal Protective Equipment (PPE): What is Available and When to Use

1. Safety glasses

- Mandatory for certain activities, such as soldering



2. Disposable gloves

- Handling of solids (e.g., powders) / liquids that can stick to skin/clothes



3. Face shields

- Good to use when trimming excess wires on finished circuit board



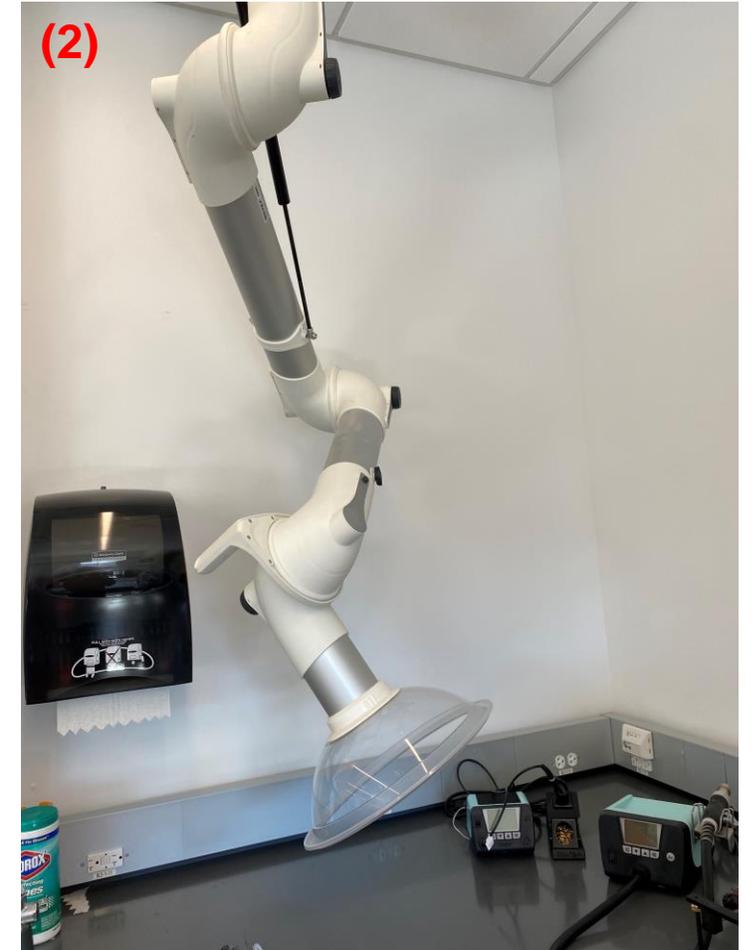
4. Masks

- Additional protection against aerosols (e.g., solder smoke, COVID-19, etc.)



Additional Safety Equipment: What is Available and When to Use

1. Sharps container for disposal of blades and pointed instruments
2. Snorkels (local exhaust ventilation device)
3. BENCHTOP FANS if require additional local ventilation

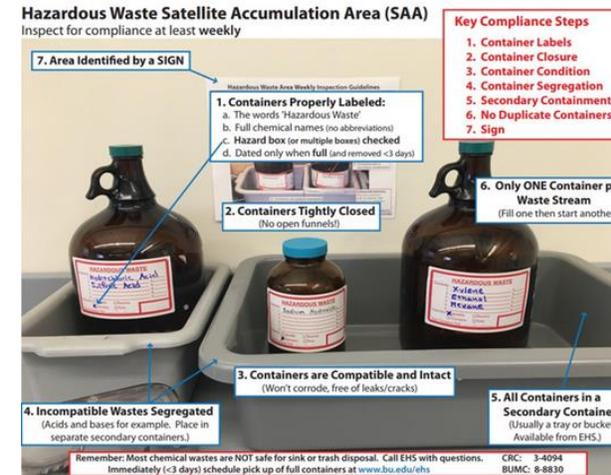


Cleaning Up Properly After Use

- Put away all tools and supplies
- Dispose of and/or properly store your work
- Clean up work area, tuck in chairs
- Wash hands

Waste Disposal

- Biological/Chemical
 - Satellite Accumulation Area
 - Biohazard box
- Battery & Other Electronics Recycling
- Sharps



PROTOCOL FOR INCIDENTS

Fire Safety Response: RACE

- R**escue Rescue the injured or anyone in the immediate danger so long as you do not put yourself at greater risk
- A**lert Alert everyone in the area and activate the fire alarm pull station, alert other staff, and call **911** (*)
- C**ontain Contain the fire and smoke by closing the fume hood sash, cabinet, lab door, etc.
- E**vacuate Evacuate the area and proceed to designated assembly location

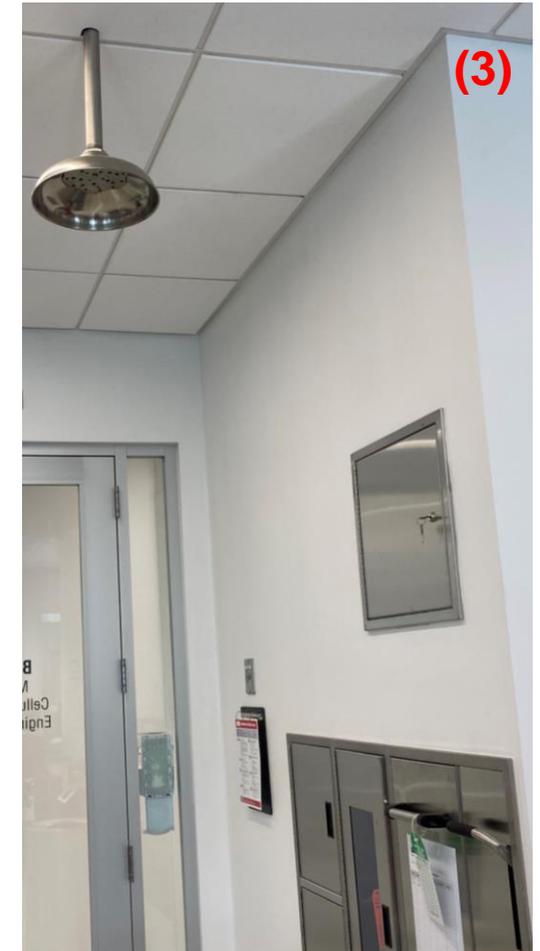
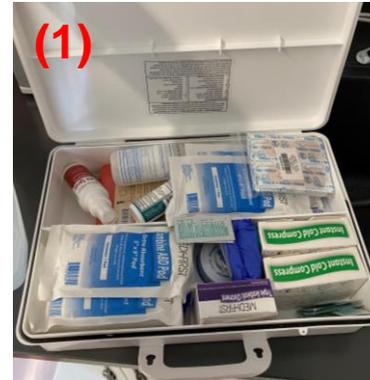
***After Calling 911 Please contact Control to report fire:**
@ BUMC 617-358-4444
@ CRC 617-353-2121

Fire Safety: Fire Extinguishers

- Must be inspected monthly and certified annually
- Only use a fire extinguisher if:
 - You have to fight the fire to save your own life
 - It is a small fire that is safe to extinguish, and you have been properly trained
- Using a Fire Extinguisher
 - **PASS**
 - **P**ull retaining pin
 - **A**im the nozzle at the base of the flame
 - **S**queeze the handle to discharge contents of extinguisher
 - **S**weep from side to side

For Injuries/Emergencies

- **First aid kit for minor cuts/injuries**
 - On shelf near soldering area
- **Eyewash station**
 - One by sink near soldering area
- **Emergency shower**
 - In 207
- **Fire extinguisher**
 - West wall (on the right when facing whiteboards)
- **Exit push buttons**
 - Next to every door in case lose power
- **Posted exit signage for egress routes in the event of an emergency or an alarm sounding**
 - Above doors, in hallways



Emergency Shower

- Use to extinguish fire on your body or remove gross contamination
- Caught self on fire and near safety shower, stand under shower head and pull handle to activate water flow
- Spilled something on your body: remove contaminated clothing, then activate safety shower to remove contamination from your skin
- Immediately notify BTEC Manager/ Assistants



Spills

- Restrict access to area, assess extent of spill, remove affected personnel
 - Notify BTEC Manager/Assistants immediately
- If been exposed, notify BTEC Manager/Assistants immediately and/or call 911
 - Will notify BU's Research Occupational Health Program (ROHP) for medical assistance and/or call 911
- If you feel comfortable, have been properly trained, and there is no threat of adverse exposure, you can don appropriate PPE (e.g., gloves) and proceed to clean up a spill
 - If safe to do so, contain spill using paper towels
- Do not attempt to clean up a large spill or a spill beyond your control, or a spill with potential to create adverse exposures
 - BTEC Manager and/or Environmental Health & Safety will determine how to dispose of waste

Emergency Instructions Placard (Located in BTEC 202)

BOSTON
UNIVERSITY
EMERGENCY INSTRUCTIONS

EMERGENCY CONTACTS

<ul style="list-style-type: none"> 1 Fire (Code Red)/Hazardous Material/Facilities Event 2 Public Safety or Medical Incidents 3 Exposures/Lab Related Medical Incident (ROHP) 	CRC 617-353-2105 617-353-2121 Both Campuses: 617-414-ROHP (7647)	BUMC 617-358-4144 617-358-4444 Both Campuses: 617-414-ROHP (7647)
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Fire Response | Evacuation

- Upon detection of smoke or fire follow R.A.C.E.
- Rescue/Remove person(s) from the fire scene/room.
- Alert/Activate the nearest fire pull station, alert other staff, and call 911 then #1 above to report location and details.
- Confine fire/smoke by closing doors and windows.
- Extinguish/Evacuate Extinguish a small fire if safe to do so or to escape a large fire. Evacuate building as directed by fire alarm system or response authorities." Report to department rally point.
- Do NOT use elevators.
- Those needing special assistance should be evacuated to nearest stairwell, and notify emergency responders.
- Dept. Meeting Place: _____
(WRITE HERE)

Weather Emergencies

- Any weather-related event that may affect normal operations to the university may activate the BU Emergency Response Plan.
- Information will be relayed via BU Today | Send Word Now | BU Alert
- Speak to your supervisor about departmental coverage.

Accidents | Injuries | Medical Emergencies

- Call Public Safety at #2 above for medical assistance
- Exposures | All lab-related injuries or exposures must be reported to #3 above, Research Occupational Health Program (ROHP) | 617-414-ROHP (7647), 72 E. Concord St., Evans 825
- For minor injuries:
 - Students: Student Health Services | 617-353-3575
881 Commonwealth Ave.
 - Employees: Occupational Health Center | 617-353-6630
930 Commonwealth Ave., #1200

Utilities Failure

- Call #1 above.
- Elevator: If trapped, call #1 above from telephone.
- Electric: Unplug non-essential equipment and plug in essentials to red power outlets
- Water: Call #1 above. Alternate water sources will be provided as necessary

Hazardous Materials Spill | Exposure

- Notify personnel and isolate the area.
- Contain the spill if safe to do so.
- Protect nearby drains.
- To report the spill, call #1 above.

Do not attempt to clean large spills, highly hazardous spills, spills that have migrated to drains or any spill that could result in adverse exposure.

For immediate medical assistance, call #2 above.

To report lab exposures, call #3 above.

Workplace Violence | Active Shooter

Follow S.A.F.E.

- Secure your area.
- Alert by calling #2 above.
- Follow directions of emergency responders.
- Exit when directed.

Active Shooter - Run, Hide, Fight

- Run: Escape if possible.
- Hide: Find place out of sight, lock door, barricade entrance, silence phones/pagers.
- Fight (last resort): Act aggressively, do not hesitate.

Suspicious Package | Bomb Threat

Suspicious Package

- Do not touch or disturb object.
- Call #2 above and provide as much information as possible.
- Prepare to evacuate.

Telephoned Bomb Threat

- Get as much information as possible - note details such as accent, sex, age, background.
- Keep caller on phone.
- Have a co-worker call #2 above to report details.

Emergency Management Phases

- A** Alert of potential, impending or actual event handled by those on site at the time
- B** Requires other departments or resources
- C** Requires outside assistance and establishment of a Command Center

For more information, scan the QR code or visit bu.edu/ehs/procedures/emergency-communications

Emergency Telephone Numbers

- When in doubt, call **911**
- Charles River Campus (CRC)
 - BU Police Department: **617-353-2121**
 - Fires, medical emergencies, security issues
 - BU CRC Control Center: **617-353-2105**
 - Building or facilities-related issues
 - Environmental Health & Safety (EHS) Emergencies (e.g., spills, etc.)
 - Research Occupational Health Program (ROHP): **617-358-7647**
 - Medical assistance related to laboratory work
 - Report ALL lab injuries or illnesses

Protocol for Reporting Incidents

- Notify BTEC Manager/Assistants immediately
 - BTEC Assistants will message you to indicate that your concern has been noted
- When in doubt please let us know about an incident, no matter how small
- Having record of incidents will help us prevent similar incidents from happening in the future

SAFETY IS EVERYONE'S RESPONSIBILITY

Consequences of Disregarding Safety Rules

- You may be asked to leave BTEC for remainder of that day
- Continued disregard of safety rules may result in being barred from BTEC altogether
- Following the safety rules is intended to ensure that you are working and learning in a protected and safe environment

Other Trainings

- Additional online safety trainings must be completed to use BTEC's Molecular, Cellular, & Tissue Engineering Suite (BTEC 207 “wet lab”)
- Links for trainings are on the BTEC website

The screenshot shows the Biomedical Engineering website. The top navigation bar includes the BU College of Engineering logo and a search menu. The main header is "Biomedical Engineering". A left sidebar menu lists various categories, with "BTEC" expanded to show "Hours and Rules of Use" and "Newsletter". The main content area features the BIOENGINEERING TECHNOLOGY & ENTREPRENEURSHIP CENTER logo and the heading "Hours and Rules of Use". It lists the center's operating hours by day and notes that hours may expand based on demand. Under "Rules of use and required trainings", it specifies that BTEC 201 (dry lab) requires no reservation, while BTEC 207 (wet lab) requires a reservation with a description of intended use. A red box highlights the BTEC 207 requirements, which include Lab Safety Training, BSL 1 & 2 Safety Training, and Chemical Safety Training.

BU College of Engineering

Biomedical Engineering

BIOENGINEERING TECHNOLOGY & ENTREPRENEURSHIP CENTER
AT BOSTON UNIVERSITY'S COLLEGE OF ENGINEERING

Hours and Rules of Use

BTEC will be open during the following days and times:

- Mondays 9am-5pm
- Tuesdays 9am-5pm
- Wednesdays 9am-9pm
- Thursdays 9am-5pm
- Fridays 9am-5pm
- Saturdays 1pm-5pm

Hours may expand if there is sufficient demand.
BTEC is closed during university holidays and intersessions.

Rules of use and required trainings

BTEC 201 (dry lab): Come in any time the center is open (no reservation needed)

- Lab Safety Training

BTEC 207 (wet lab): Make a reservation that includes a description of your intended use

- Lab Safety Training
- BSL 1 & 2 Safety Training
- Chemical Safety Training

Stay connected with BU

Now You are Ready to Take the Safety Quiz!

- Stop by BTEC to review the slides with a BTEC Assistant and take the safety quiz
- The entire process will take 25 minutes or less
- To pass the quiz, you **MUST get 100%** or keep retaking the quiz until you get 100% and then show BTEC Assistant
- The quiz is good for one year