ROBERT A. W. CARLETON
STRENGTH OF MATERIALS LABORATORY

SAFETY POLICY

Carleton Lab is an active heavy civil engineering testing lab. This lab is not only subject to the standard safety regulations for chemical labs, as mandated by EH&S and FDNY, but also further safety regulations that are common in manufacturing facilities and construction sites.

RULES OF CONDUCT

- Guests must register with lab management. "Browsing" of the lab is dangerous and will result in expulsion from the premises.
- No person is allowed outside of white lines without completion of appropriate Training and receipt of Carleton Lab safety sticker.
- No laboratory property may be removed from the premises unless authorized by lab management.
- The entire lab is an active forklift and crane lift area. Persons without rigging training must always yield to cranes and forklift.
- Eating and drinking is prohibited in active lab space.
- Open shoes, high heels, loose clothing, shorts, and short skirts are prohibited in active lab space.
- Lab machinery and equipment may only be approached and/or operated with the express training and permission of the lab staff.

FLOOR MARKINGS

Important: colored cones forming a line are equivalent to floor lines.

Traffic Area – main traffic routes through lab; keep area clear of obstructions; beware of moving vehicles. Persons without safety training are to remain in these areas unless authorized by lab staff.

Physical Hazard Area – this area contains a physical hazard, entry with express permission by laboratory staff only.

Clean Area – enter only with clean clothes and shoes, and do not bring tools, chemicals into space. Food and drink are allowed in this area.

CEILING LIGHTS

Fire Equipment **First Aid Kit** **Campus Phone**

STROBE LIGHTS

Amber – active forklift and/or crane, yield to horizontal/vertical transportation and rigging at all times.

Green – hazardous test in progress, enter area only with express staff permission. Tests may be automated, so staff may not be present.

AUDIBLE WARNINGS

Siren (high pitch) – single blow signal when remote control crane is activated. Operator may also blow siren to signal users to clear area.

Buzzer (low pitch) – signal used to warn persons of active testing

- one blow – prepare for test, clear area
- two blows – area clear, test commencing – blown before each test
- three blows – test completed, area safe

Bell - fire alarm, evacuate building immediately, close but do not lock all doors on the way out.

Important: The Engineering Terrace building is equipped with a NYC Code Fire Alarm System; this system will only sound two sets of four bell rings. All personnel must evacuate, even if the bell stops ringing.

FORKLIFT SAFETY

- In the lab pedestrians must yield to the forklift. Due to the limited line of sight of the forklift operator in many loading and lifting situations, you must assume that the forklift operator cannot see you.
- Never walk directly in front of, behind, or beside the forklift when it is in motion.

RIGGING SAFETY

The lab is equipped with a number of remote controlled gantry cranes. Be aware of their presence at all times. The hi-bay area contains three trambeam cranes that can move within the entire hi-bay space and parts of the mezzanine.

- Never step under a crane, be it loaded or unloaded.
- Always look up and check for the position of cranes before entering the high-bay area. A flashing strobe indicates that the crane is active.

The lab also has a number of removable floor panels. Be aware of these when you are walking. Never cross an area that is cordoned off with yellow cones. This is a warning that hazards lie beyond this point. Ask the lab staff for a safe path in case a normal route is obstructed.

MACHINE SAFETY

Active machinery should be approached only with the permission of the operator of the machine. Appropriate Personal Protective Equipment (PPE) – i.e. earplugs, safety goggles, etc. – must be worn. Only authorized persons are allowed to use the machinery in the laboratory and in the machine shop. Machines may be used only by staff and students who have been properly trained by the lab personnel. Long hair must be tied back, loose clothing, and neckties are strictly prohibited. Machines may not be used by a person who is alone – an authorized "buddy" must be present at all times.

ACCESS & SECURITY POLICY

Access to Carleton Lab is controlled by Columbia University's proximo access system as well as a closed-circuit cameras. It is a violation of policy to swipe in unauthorized persons and will result in disciplinary action and loss of laboratory access.

CLASS ACCESS

Undergraduate and graduate students taking a class that contains a laboratory teaching component must apply for Class Access via the Carleton Laboratory website after completing online shop safety training. Access is restricted to the meeting time of the lab class and rescinds upon completion of the class. This application must be filed with the laboratory only once. Access will be granted automatically for all future classes if the student is registered for the class.

Absolutely no independent work may be performed with this level of access.

RESEARCH ACCESS

Undergraduate and graduate students may apply for daytime lab access via the Carleton Laboratory website only upon completion of online safety training. CEEM users who wish to work in the Carleton Laboratory on research projects beyond normal business hours may apply for 24 hour access. Mezzanine access may be granted to students with labs or offices on the mezzanine level. Persons working in active laboratory areas outside of lab operating hours must obtain a C-14 Certificate of Fitness (at one C-14 holder must be present in the Laboratory while work is being conducted after hours). Students using only office space within the laboratory (marked blue) must not obtain a C-14 but are strictly limited to these spaces outside of operating hours. Research access permissions rescind on 31 May annually but may be extended online.

HOW TO APPLY FOR ACCESS

To apply for laboratory access, go to: http://carleton.columbia.edu/access

ACCESS APPLICATION

Research Access is defined by the required uses any Research includes undergraduate and graduate independent research, student club work, Ph.D. research, and access to the mezzanine for SEAS tour guides. Undergraduate students may apply for daytime access while CEEM graduate students and researchers may apply for 24/7 access; the following requirements must be fulfilled:

1. Legitimate academic need to use laboratory.
2. Faculty liaison: all students and student groups must have a faculty advisor/sponsor
3. Trainings:

	RESEARCH ACCESS	CLASS ACCESS	VISITOR ACCESS
	Access to the Laboratory to perform independent work that is not directly associated with a constantly supervised laboratory class.	Access during class hours only. All work must be directly supervised by instructor or teaching assistant. The access application must only be filled out once. Students are given access automatically for all subsequent classes.	Visitors must be appointed by the University and accompanied by an authorized liaison in order to be allowed to perform any laboratory research. Visitors without an appointment are prohibited from performing any work in the laboratory.
Carleton Laboratory Site-Specific Training	Required	Required	Required
Shop Safety Training	Required	Required	Required
Laboratory Safety/Chemical Hygiene/Hazardous Waste/ Laboratory Fire Safety Training	Required - in person class for first training		Required - in person class for first training
C-14 Certificate of Fitness	Optional for Graduates only		

4. Access Application: fill out online application for the appropriate level of access and upload your training certificates
5. Carleton Lab Sticker: after filling out the application, go to the management office to receive your Carleton Lab sticker. The sticker acts as your authorization to be in the lab; go to the office for a replacement if you lose/replace your CUID.
6. With the exception of Faculty & Staff access, all access permissions rescind on 31 May of every year. You may extend you access by submitting an EXTEND ACCESS application online with trainings valid throughout the next academic

SAFETY TRAININGS

CARLETON LABORATORY SITE-SPECIFIC TRAINING

This training introduces Carleton Lab users to the policies and procedures pertaining to safety, hazard communication, equipment use, and emergency response. It also provides an outline to user amenities, equipment-specific training protocols, equipment reservation, machine shop use, fabrication requests, and guidance to obtaining all necessary trainings to work safely in the lab. This training program is required of all laboratory users.

Go to the Rascal Training Center to take the online Carleton Laboratory Site-Specific Training course and certification test: Training Center > Safety Courses > Carleton Laboratory Site-Specific Training.

MACHINE SHOP SAFETY TRAINING

This training program provides a basic overview of hazards associated with the use of hand and power tools that are found in academic machine shops. The training covers types of hazards, general shop safety rules, ways to keep shop clean, usage of safe work practices and use of proper personal protective equipment for the task. This training, however, is not a substitute for a machine specific safety training, which must be provided by lab staff before you use any machine in the shop.

Go to the Rascal Training Center to take the online Machine Shop Safety Training course and certification test: Training Center > Safety Courses > Shop Safety Training.

LABORATORY SAFETY/CHEMICAL HYGIENE/HAZARDOUS WASTE/LABORATORY FIRE SAFETY TRAINING

Environmental Health & Safety policy requires that all persons working independently in a laboratory attend an initial training session and perform a refresher training every three years thereafter. All users must attend an in-person class; the online RASCAL test is for refreshers only. Please see the EH&S Website for an updated training schedule.

CERTIFICATE OF FITNESS (C-14) TRAINING

New York City laboratories are required to have a C-14 Certificate of Fitness holder present at any time when the laboratory is in operation. All Carleton Lab officers hold C-14 certifications, so all activities performed during normal operating hours of the lab do not require the individual user to be certified.

Any researcher who works in the Carleton Laboratory (including Burmister Laboratory) outside of normal operating hours (9:00am to 5:00pm M-F) must obtain a C-14 Certificate of Fitness. Columbia Environmental Health and Safety (EH&S) holds a one-hour certification class every week . An important qualification for this certification is a completed M.S. degree or a B.S. degree with two years of laboratory experience. A copy of your diploma must be brought to the certification session. Please see the EH&S Website for further information on the C-14 Certificate of Fitness.