

eGarage: Phase I.5

Code of Conduct

The Phase I.5 eGarage is a common facility provided for the use of students and faculty at NC State University. Users of the eGarage are required to behave in a professional manner and leave the space in a condition that is appropriate for a shared use business space.

1. No smoking (includes vaping etc.) or alcoholic beverages are allowed.
2. All personal trash or material waste should be disposed of accordingly.
3. No one may use the Work Bays or Shop areas until they have completed a safety orientation with the eGarage manager or their designee.
4. All guests must sign in at the sign in station, and may only be on premises with a current eGarage member.
5. Professional conduct should be observed at all times.

Cover Sheet

Area Location: Ground Floor, Innovation Hall, Centennial Campus, NC State University, Raleigh, NC 27695-7911

Instructors: **David Cardarelli** Office Phone: **919.515.2485**
Office Location: **131, Innovation Hall.** Mobile Phone: **615-422-5532**

Campus Box Number: 1625
Department: NC State Entrepreneurship
Executive Director: Dr. Thomas K. Miller III

PERSONS AUTHORIZED TO WORK IN THE LAB AREA:

- a) Faculty and Staff of NC State Entrepreneurship Garage.
- b) Students enrolled in classes offered by the eGarage or its affiliates who have 1) filled out an application and been accepted and 2) completed the safety training.

If there is a need for others to work in this lab, they will be trained appropriately and their certification of training will be placed in this manual.

TELEPHONE NUMBERS: Telephone numbers given below are to be dialed as given without the dash (-). The dialing procedure is applicable only for university telephones, not pay telephones located on campus.

Emergency:	911
Campus Emergency:	919-515-3333
Campus Non-Emergency:	919-515-3000
NCSU EH&S:	919-515-6858
Rex Hospital:	919-784-3100
Wake Medical Emergency:	919-350-8000
NCSU Safety Hotline:	919-515-5445
NCSU Hazardous Material Management:	919-515-6863 or 919-515-6864
Carolinas Poison Control Center:	7-1-800-848-6946

SIGNATURES:

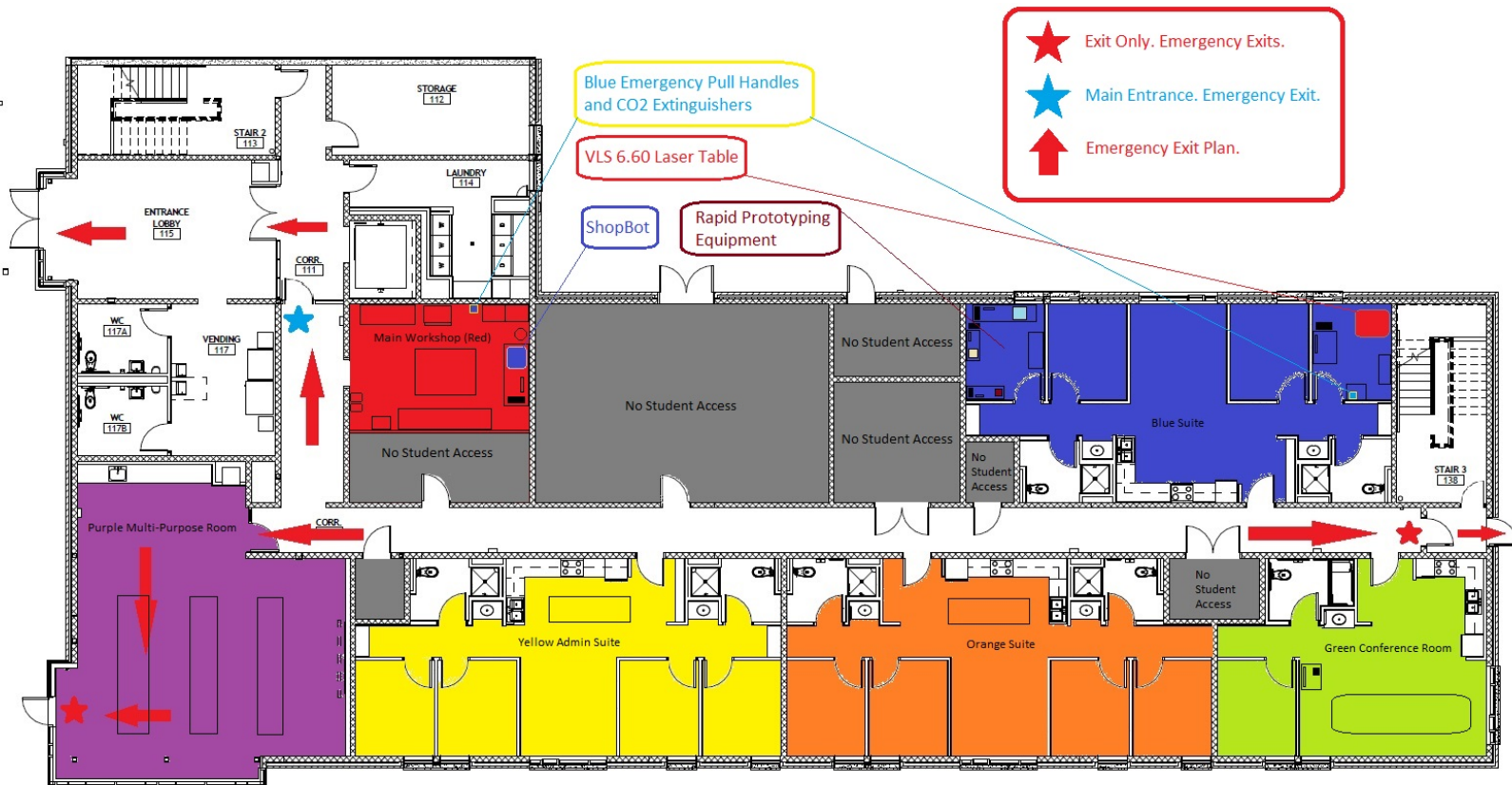
<hr/> <i>David Cardarelli</i> <hr/> Instructor	<hr/> 2018 <hr/> Date
<hr/> Environmental Health and Safety Center Representative	<hr/> Date

Evacuation Plan

The evacuation route for the rooms associated with this lab is marked on Figure 1. In the event of an evacuation, personnel working in the eGarage will exit any work suite and turn towards the back door (East) and exit 100 feet outside the exterior door. Alternatively, personnel can exit the eGarage through its front door, the main entrance to the building and through the multipurpose room at the corner of the building. They are then to proceed to the parking lot area to the North of the building behind EB3 (Engineering Building 3).

Occupants will be advised by Public Safety when it is safe to return. Whenever possible, turn off all electrical power. There are no gas lines in the eGarage. Avoid hindering any emergency operations in progress. In any evacuation, do not leave the designated meeting area. Your absence will be interpreted that you are still in the danger area and one or more persons may risk their lives looking for you.

Figure 1: Evacuation Plan



Environmental Health and Safety

NC State University Safety Plan Program

HOME Safety Plan Report Report Door Signs FAQ User Guide > Logout <

NC STATE UNIVERSITY Safety Plan Report

Plan Number 1086	Completed 05/16/2017
Building Innovation Hall-Wolf Ridge-Building 3	Expiration Date 05/24/2018
Room(s) 120, 136, 136C, 136D, 136E, 136F	Approved 05/18/2017
	Approval Notes No chemicals in this area

Investigators

David Cardarelli - Principal Investigator

Department Entrepreneurship	Office Phone 919-5152-485
Office Building	Home Phone 615-422-5532
Campus Box	Email dpcardar@ncsu.edu
Room	

Megan Greer - Secondary Safety Contact

Department NCSU Entrepreneurship Program	Office Phone
Office Building	Home Phone
Campus Box	Email mdgreer@ncsu.edu
Room	

Authorized Personnel

Personnel	Position
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Emergency Contacts

Contact	Number
Carolinas Poison Center	800-848-6946
Environmental Health and Safety Center	919-515-7915
Wake Medical Center Emergency	919-350-8000
Rex Hospital Emergency	919-784-3100
N.C Poison Control Center	800-672-1697

Target Equipment + Hazards	
3D printers	3-D printer may potentially produce nano-particles. Furthermore, based on the material used for filaments. they may release harmful chemicals vapors. Please contact EH&S (513-1282) for review and exhaust requirements/assessment
LASER Use	All Class 3B and 4 laser users require safety training before starting this process. Please make sure all employees involved with this equipment have completed the necessary training and are current.
Machine Shops - Machine Guarding	Make sure all moving parts are guarded to prevent users from touching or getting clothing caught in rotating shafts or bearings, in-running nip points, cutting or shearing tools, pinch points, or power transmission gear. Look for belts, gears, shafts, pulleys or other moving parts.

Target Chemicals	
None Apply	

Attachments

[El Garage Lab Safety Plan 1086_v6](#)
[Full SP Report from Version 1 as of 01/23/2017](#)

Chemicals With Fume Hood

Currently Approved - 05/18/2017

Processes

Equipment ONLY - Universal Laser Systems VLS 6.60 LASER Table

EQUIPMENT

CHEMICALS

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None Listed

None Listed

HAZARDS

Hazard	Controls
Mechanical - Caught in moving or rotating part(s)	Guard or cover all rotating and moving parts that might grab or pull clothing, tools or body parts to prevent inadvertent contact; ensure guards require a tool to remove; use warning labels or signs to alert others of the hazard; train users as to the hazards; conduct a Hazard Review.
Noise/Radiation - LASER use	All class 3B and 4 lasers require EH&S review and approval prior to purchase and use. Additional training is required for all personnel working with or around open laser sources.
Noise/Radiation - Infrared radiation	Intense sources of IR require appropriate shielding and may require EHS&S review and additional Personal Protective Equipment.
Noise/Radiation - High noise levels	

DESCRIPTION

- a) Process Description i) Class 3r and class 4 lasers which are used for processing materials. Both of these lasers are fully contained within a class 1 type enclosure. ii) The class 4 laser is a 10.6? far infra-red 60 watt CO2 LASER and is used for materials processing.

ENGINEERING CONTROLS

Equipment	Controls
Other	i) Ventilation exhaust with a minimum of 850m3/hr at 1.5kPa is required for all LASER related processing. This exhaust must ventilate outdoors. ii) Penn State Industries Heavy Duty Dust Collection System DC-3XL is rated at 1440+m3/hr at 28.8kPa and is ve

PERSONAL PROTECTIVE EQUIPMENT

Part of Body	Hazard	PPE Needed	PPE Type/Description
Eye	Impact	Safety Glasses	Safety Glasses to protect impact
Eye	Radiation	Safety Glasses	Safety Glasses to protect radiation

Equipment ONLY - ShopBot Desktop CNC Rotary Mill

EQUIPMENT

None Apply

CHEMICALS

None Listed

HAZARDS

Hazard	Controls
Mechanical - Caught in moving or rotating part(s)	Guard or cover all rotating and moving parts that might grab or pull clothing, tools or body parts to prevent inadvertent contact; ensure guards require a tool to remove; use warning labels or signs to alert others of the hazard; train users as to the hazards; conduct a Hazard Review.
Mechanical - Contact with sharp or pointed parts	Guard, cover or intentionally dull all sharp or pointed parts, edges, etc. to prevent inadvertent contact; ensure guards require a tool to remove; use warning labels or signs to alert others of the hazard; train users on the hazards; conduct a Hazard Review
Mechanical - Struck by moving or rotating part(s)	Guard or cover all rotating and moving parts that might strike or contact body parts to prevent inadvertent contact; ensure guards require a tool to remove; use warning labels or signs to alert others of the hazard; train users on the hazards; conduct a Hazard Review.
Noise/Radiation - High noise levels	

DESCRIPTION

- i) The ShopBot Desktop is a 3 axis CNC milling machine that uses a 1.5hp electrically powered rotary spindle.

ENGINEERING CONTROLS

Equipment	Controls
Other	i) JET Air Filtration system is required for all ShopBot operations. 556-1044CFM with 5 micron, and 1 micron filtration.

PERSONAL PROTECTIVE EQUIPMENT

Part of Body	Hazard	PPE Needed	PPE Type/Description
Eye	Impact	Safety Glasses	i) Safety glasses are required for all ShopBot operations

Equipment ONLY - Rapid Prototyping (3D Printing)

EQUIPMENT

None Apply

CHEMICALS

None Listed

HAZARDS

Hazard	Controls

Mechanical - Caught in moving or rotating part(s)	Guard or cover all rotating and moving parts that might grab or pull clothing, tools or body parts to prevent inadvertent contact; ensure guards require a tool to remove; use warning labels or signs to alert others of the hazard; train users as to the hazards; conduct a Hazard Review.
Mechanical - Struck by moving or rotating part(s)	Guard or cover all rotating and moving parts that might strike or contact body parts to prevent inadvertent contact; ensure guards require a tool to remove; use warning labels or signs to alert others of the hazard; train users on the hazards; conduct a Hazard Review.
Energy Sources - Hot surfaces > 120 F	Enclose or otherwise cover hot parts to prevent inadvertent contact; use signage or labels to indicate hot surface hazards.

DESCRIPTION

Our three machines utilize identical procedures. • Afinia H480 3D Printer • Afinia H800 3D Printer • Fusion F306 3D Printer i) The rapid prototyping equipment all use a heated thermocouple assisted extrusion process that is operated through a CNC system.

ENGINEERING CONTROLS

Equipment	Controls
Other	Our advanced machine Fusion F306 utilizes an electrical "tag-out" lock to restrict usage to those with the advanced user training only.

PERSONAL PROTECTIVE EQUIPMENT

Part of Body	Hazard	PPE Needed	PPE Type/Description
Eye	Impact	Safety Glasses	Impact related use. Post production only.
Hand	Heat/Burn	Gloves	Post production handling only.

Accident Report Form for Innovation Hall: Ground Floor: eGarage

Name(s) of accident victim(s): _____

Date of Accident: _____ Time: _____

Specific Location of Accident (Color): _____

Detailed Description of Accident: _____

Description of Treatment: _____

Where was Treatment Performed? _____

Additional Information: _____
