South Dakota State University
Jerome J. Lohr College of Engineering
School of Design

Architecture – Mathematics – Engineering (AME) Building
PRODUCTION, FABRICATION & PROTOTYPING LAB POLICY
AME 136 (All Areas)

I. AME Lab Hours

A. Lab hours will be posted at the main entrance and on the AME Webpage (https://www.sdstate.edu/ame-shops) at the beginning of each semester. Any updates or changes to these hours will be noted on the white board at the tool crib and posted on the website as soon as possible.

B. During open lab hours, a shop supervisor will be present to assure students are logged in, have appropriate personal protective equipment, and are working safely. Other adjoining lab areas such as the Architecture Fabrication Lab, the ME Fabrication & Prototyping Lab may have different schedules that will be posted each semester. The lab and its entrances are monitored at all times by a camera security system.

II. Authorized Personnel & Use of the Lab

A. No individual can work in the lab unless supervised. Supervision is considered to be a faculty member, lab manager, shop supervisor, or qualified graduate teaching assistant (hereafter called the lab supervisor). The lab supervisor must be physically present in the same room where work is being done.

B. Individuals may not work in any lab until they have completed a department administered lab safety orientation and passed the lab safety exam including signing acceptance of lab policies, rules, and consequences for violations. Upon meeting these requirements, the individual will be entered into the lab database and will be required to log in and out each time they use the lab. Badge holders for the SDSU student ID will be kept next to the log in area at the entrance to the lab. Badges and safety glasses must be worn at all times while in the lab.

C. No individual shall operate powered equipment in a lab until the appropriate safety examinations are passed and equipment operation skills have been verified. Verification includes taking one of the entry-level manufacturing processes courses offered in the ME/COM/ARCH departments. Exceptions may be made for transfer students who can demonstrate knowledge of safety, setup, and use of the piece of equipment they will be operating.

D. Laboratories may be used during open-lab periods by students provided they limit their activity to equipment which they are qualified to operate. All students using the lab during open hours must complete the log-in and log-out process. It is **mandatory** that you check in with the lab supervisor before beginning a project in the lab. Under no circumstances shall equipment be used without supervision in the lab.

E. The use of the lab is not permitted outside normal operating hours. Special access to the Production Lab (AME 136) equipment may be arranged ***well in advance of the date*** with the appropriate department head. Contact the lab supervisor who will

relay the request to *your respective department head* (Architecture – Construction & Operations Mgt. – Mechanical Engineering) for this permission.

F. Faculty, staff, and students other than those registered for a regularly scheduled class lab, must keep noise at a minimum when a lab demonstration is underway. Check with the lab supervisor or the faculty member doing the demonstration to determine when you may begin work.

III. Personal Protective Equipment (PPE)

A. OSHA approved safety glasses with side shields (marked with Z87.1) shall be worn at all time in marked areas – which is outside the safe zone at the main entrance to the production lab. **Street glasses are not OSHA approved PPE.**
B. All regular users of the lab must purchase their own safety glasses. Loaner glasses are for visitors or emergency situations only. Additional PPE will be required for operations such as welding, grinding, metal pouring, etc.
C. Hearing protection is required when noise exposure exceeds 90dBA for an extended period of time. Earplugs have been provided in designated areas.
D. The use of goggles for general lab use (i.e. chemistry goggles) is highly discouraged due to problems with fogging which creates a new hazard.
E. OSHA approved safety glasses or goggles shall be worn in outdoor work areas – specifically the north yard area when specified by the lab supervisor.
F. All PPE and safety precautions identified in the material Safety Data Sheets (SDS) shall be observed. The SDS log is located outside the tool crib in AME 136, i.e., the Production Lab.
G. Contact lenses should not be worn in the lab. Metal filings, wood dust, grinding fines, and particulate matter from various operations as well as chemical splashes will cause permanent damage to the cornea of your eye if contacts are in use.

IV. Safety Data Sheets (SDS)

Before bringing any paints, coatings, solvents, oils, flammable liquids or other chemicals into the shop, consult with the Lab Supervisor or your course instructor to verify the building is equipped to allow safe use of the chemical. When bringing an approved chemical into the shop, a printed copy of the Safety Data Sheet (SDS) must also be added to the SDS binder located at the Tool Crib to communicate the hazards of the chemical product for other users of the shop.
This is federal law – not negotiable.

IV. Personal Attire

A. Individuals with hair styles which seriously limit visibility or which constitute a hazard when working in a lab, shall wear a cap, headband, hair tie or other restraint.
B. Loose and dangling attire, such as hoodie strings or earbuds, are not permitted when working in the lab.
C. Shirt sleeves should not extend below the elbow. Long sleeves should be rolled up. Shirts with tails must be buttoned and tucked in.
D. Ankle-length pants should be worn. Shorts are not appropriate when running machine tools, welding, cutting, or grinding.

E. Individuals working in all labs must wear appropriate shoes. Open shoes or sandals that expose the foot are not permitted. This includes "crocs" and flip-flops. High-heels are not permitted outside the safe zone at the entrance to the lab. Cloth shoes are discouraged and prohibited when welding, grinding, or founding.
F. Ring(s), watches, necklaces, bracelets, dangling earrings and other jewelry presenting a potential hazard must be removed before working in the lab.

V. Equipment and Tool Use

A. All PPE, safety protection devices, and machine guards for any piece of equipment or operation must be used. Removing a guard, bypassing or disconnecting a safety device is forbidden and will result in disciplinary action. [See the document 'Policy & Procedures on AME Lab Use Violations in Appendix A].
B. No one may operate equipment which has been locked out/tagged out. This includes unlocking electrical panels by unauthorized persons, equipment with safety issues, or specialized setups for projects.
C. Individuals will not operate equipment unless they believe it can be operated safely. If an individual has a concern about a specific piece of equipment, immediately contact the lab supervisor. Do not use this piece of equipment until a competent person addresses your concerns.
D. If a piece of equipment (machine, drill bit, mill tool, saw blade, welder, etc.) malfunctions or breaks while in use, **let the lab supervisor know.** There is no penalty for this – we need to know so that the equipment can be repaired/replaced and the next person can use the equipment safely.
E. Under normal circumstances, tools or equipment will not be removed from the lab as these are university property. If an individual wishes to check out an item they should follow the departmental check-out procedure which can be initiated with the lab supervisor.
F. Any project that uses spray paint or other volatile organic compounds (VOC) material in aerosol cans must be reviewed and approved by the faculty member overseeing the project. This is to is to reduce or eliminate release of (VOCs) inside the building and exposing people to harmful vapors and off-gassing. A Safety Data Sheet (SDS) must be provided at the time of the request to enable the faculty member to make an informed decision.

VI. Lab Conduct

A. Anyone who sees a hazard or unsafe act must immediately report these to the lab supervisor. *Any faculty member, lab supervisor, or fellow student has the authority and the responsibility to correct or stop an unsafe activity.*
B. Do not lift objects heavier than can be easily managed without the aid of a hoist, lift, or assistance.
C. Every person using lab facilities is responsible for clean-up of the immediate area and equipment used. These tasks will be done at the completion of the work or during the activity. Taking care of your mess will maintain a safe and clean working environment for all. Failure to clean up will result in loss of lab access privileges per the shop rules policy

D. Watch for slippery conditions or tripping hazards, especially around high-speed equipment and the hot fabrication area. If you create a spill, clean it up immediately.
E. Disruptive behavior such as talking to a person who is running a piece of equipment causes accidents. Individuals creating hazardous situations will be warned with possibility of being banned from the lab. This includes messing around, running in the lab, acting like an idiot, and horseplay.
F. Individuals who are using prescribed medications which could affect their ability to safely operate equipment or follow procedures will not be allowed to work in the lab. If someone appears to be impaired, let the lab supervisor know immediately. Example: a person with low blood sugar may appear impaired and can hurt themselves and others. Let the lab supervisor know when you notice erratic behavior.
G. No one under the influence or in possession of illegal drugs and/or alcohol will be allowed in the lab. They are subject to disciplinary action prescribed by University policy.
H. Lab supervisors will not allow individuals to consume food or beverages near lab equipment to reduce the chance of making a mess and contamination of food.
I. Smoking and the use of smokeless tobacco is not allowed on the SDSU campus.

VII. Welding, Cutting, & Grinding

A. Proper shield and eye protection to prevent exposure of personnel to welding / cutting / grinding hazards must be used. This includes a welding helmet, cutting shield (cutting), face shield (grinding) leather gloves when welding or cutting, protective jacket or apron, and steel-toe shoes (preferably). It is best to wear ankle-length pants and clothing made of fabric that is resistant to spark, heat, and flame – cotton is the material of choice. Persons using welding equipment should ensure that the welding curtain is strategically placed so as to limit exposure of others in the lab to the welding arc.
B. Arc welding cables with damaged insulation or exposed, bare conductors must be replaced immediately. Report these conditions to the lab supervisor.
C. Check that the standing welding curtain is in place when using the plasma cutter to protect others in the lab from light exposure.
D. When using the cutting torch, be sure the molten metal stream is not falling on the compressed gas hoses laying on the ground. Check that the molten stream does not hit others working in the area or materials that might catch fire. For complex cuts, have a fire extinguisher ready next to the work area.
E. Grinding ferrous materials using the stand grinder requires caution and skill. First, be sure the steady rest is adjusted to leave no more than a 1/8th inch (3 mm) gap between the rest and the wheel. Second, when starting the grinder stand to the side as a cracked wheel can explode sending deadly fragments into your face. Third, use a pair of pliers when grinding small objects to reduce the chance of hitting the wheel with your fingers.
F. Never grind aluminum, brass, or composite materials using the grinding wheel. Soft metals gum up the wheel and composites can create dangerous off-gasses when heated.
G. Grinding small edges or non-metals is generally done on the belt sander rather than the grinder. Check with the shop supervisor to make sure you are using the correct piece of equipment.

UPD Direct: 605-688-5117.

VIII. If There is an Accident

A. All accidents, no matter how slight, must be reported immediately to the lab supervisor.
B. In case of an accident/injury, immediately contact the faculty or lab supervisor. Let the trained, certified faculty or lab supervisor handle the situation.
C. **An emergency phone is located at the tool crib in the AME 136 Production Lab. When you pick up the receiver, it automatically dials the University Police Department (UPD).**
D. If you cannot get to the emergency phone, the UPD Direct Number is (605)688-5117 and is posted at various locations around the lab.
E. Do not call 911 as this wastes time. The call will be routed from Brookings Emergency back to campus UPD. **Call UPD using the emergency phone at the tool crib.**

IX. Stacking Materials

A. Stack lumber no more than 10 feet (3 meters) high if it is handled manually, and no more than 15 feet (4.6 meters) if using the manual forklift. Remove all nails from used lumber before stacking.
B. Stack and level materials on solid supported bracing. Ensure that stacks are stable and self-supporting.
C. Do not store pipes or bar stock in racks in a way that will jut out into the walkway or the exit aisles. Do not lay round stock on the ground where it could roll out into an aisle or walkway.
D. Do not park, stack or store anything in front of the fire extinguishers, the electrical panel, or the eyewash stations.

X. Aisles, Floors, and Exits

A. The entrance to the lab via the double doors at the AME atrium is the established way into the lab. At the bottom of the ramp, the safe zone is marked on the floor with white paint. Anyone entering the lab this way can get to the tool crib, the sign in station, and the storage lockers without wearing safety glasses – this is the safety zone. Everyone MUST put on safety glasses if they step outside the safety zone.
B. Everyone entering the lab from the external doorways must have safety glasses on as soon as they enter the lab. This includes the door at the loading dock, the door from the ME design lab, and the door at the east entrance. All these entry points have signs stating 'Safety glasses beyond this point.'
C. Aisles to fabrication labs, between machines, and in front of workbenches must be kept clear of debris, tripping hazards, and other materials.
D. Areas around the lathes and mills will have metal chips on the floor. Be aware that metal shavings stick to shoes and can cause you to slip or will cling to the carpet when you get home. Check your shoes for shavings at the end of your time in the lab.
E. No material or equipment is allowed to block marked aisles and doorways that lead to the exits (means of egress).

XI. Storage Materials

A. All storage materials stacked in tiers must be stacked, blocked, interlocked, and limited in height so that they are secure against sliding or collapse.

B. Use the open metal racks in AME 136 for lengths of steel, copper, and aluminum material greater than 6 feet (1.8 meters). Smaller pieces should go in the appropriate bin or be recycled. See the lab supervisor for instructions.
C. Storage rack areas must be kept free from materials that constitute hazards from tripping, fire, explosion or pests.
D. Where the fork lift is used, assure there is safe clearance distance for aisles, at the loading dock, overhead doorways, and whenever wide turns must be made.

XII. Visitor Protection

A. Individuals who step outside the marked lines at the lab entrance must wear personal protection equipment. There are visitor safety glasses in a locker by the tool crib and loaner safety glasses at the doorway to the prototyping lab.
B. Pay attention to safety instructions when touring the lab.

XIII. Lab Use Violations

Students who violate lab policy will be penalized in accordance with the severity and impact of the violation. See the appendix starting on the next page for examples and resultant penalties.

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Departments of:
Architecture
Construction & Operations Management
Mechanical Engineering

South Dakota State University
Fall 2018

I have read the Lab Policy, understand my responsibilities, and will abide by these rules.

_____ _____

Name (printed) Student ID Date

_____

Signature

Policy and Procedure on AME Lab Use Violations

AME 136 (All Areas) – Production, Fabrication & Prototyping Lab Spaces

Students, faculty and staff benefit from a safe and productive lab environment when everyone follows the established rules. This policy and process to address minor through significant infractions has been written to teach safe work practices, help students be responsible for personal safety and the safety of others, and to assure the assets of the lab are protected from theft and unnecessary damage.

Level 1. Verbal Warning

The first level penalty is a verbal warning. Most of these infractions are simple issues of negligence or lack of knowledge. Examples include:

- Failure to sign in when entering and sign out when leaving; failure to wear an ID badge
- Failure to wear safety glasses or other required personal protective equipment (PPE)
- Improper clothing or footwear for the work being done in the lab
- Failure to remove jewelry including watch, rings, bracelets, and dangling earrings
- Failure to properly secure long hair to prevent entanglement in equipment
- Messing around or other disruptive behavior
- Minor violations that can be corrected with a verbal warning

Level 2. 24 Hour Ban from the Lab

If you or your project team will not comply after being verbally warned, you / the entire project team will be banned from the lab for 24 hours. You will be readmitted to the lab upon review of the infraction by the department head. In the verbal warning phase, the warning/instruction from the lab supervisor, faculty member, or graduate teaching assistant requires immediate compliance. Failure to respond to more than one (1) verbal warning or correction by supervisory personnel will result in being banned from the lab for 24 hours. Violations that will result in a ban from the lab include:

- Repeated disregard of verbal warnings or orders
- Use of equipment/machinery other than hand tools without permission
- Risky conduct that poses a safety hazard to yourself and/or others
- Failure to clean up equipment or workspace at the end of a session; this includes metal chips, filings, sawdust or similar debris, trash, scrap pieces, spilled liquids, or anything that creates a mess or hazard.

Level 3. Extended Loss of Lab Privileges

There are a few significant infractions that will result in loss of lab privileges for an extended period of time. This includes a time penalty as well as additional consequences that will be determined by the lab supervisor and the respective department head. Actions that willfully compromise security and safety as well as failure to care for the lab space and equipment fall into this category. *Lab users should be aware that some violations in this category could also lead to disciplinary action by the University and/or criminal or civil charges.* Violations that will result in extended loss of privileges include:

- Security violations, including propping locked doors for after-hours access
- Disabling access controls, bypassing security or safety features of a machine or device
- Bringing in unauthorized persons such as young children, non-SDSU students or employees, persons who are currently under a lab-use ban
- Gross negligence that compromises the safety of lab and/or building occupants
- Misuse or negligent actions that may lead to damage of lab equipment beyond normal wear and tear
- Actions that may deface or otherwise do damage to the building or equipment
- Failure to comply after receiving a Level 2 penalty for the same or similar infraction
- Theft of tools, materials, and/or equipment