Minutes
Department of Aeronautics & Astronautics
January 4, 2018

Attending: Acikmese, Bruckner, Dabiri, Ferrante, Hermanson, Holsapple, Knowlen, Livne, Lum, Mesbahi, Morgansen, Salviato, Shumlak, Waas, Williams, Vagners, Yang; McGrath, Maczko

Absent: Breidenthal, Golido, Jarboe, Kurosaka (sabbatical)

MINUTES
Minutes of the December 2017 meeting were unanimously approved.

ANNOUNCEMENTS
- The 2018 A&A Graduation Celebration will be held on Friday, 6/8/2018 at the Museum of Flight in Seattle, WA at approx. 6pm. All students completing degrees Autumn 2017 through Summer 2018 are eligible and encouraged to participate. Due to limited space at the venue, participating students will be limited to a fixed number of guest tickets. We anticipate that participants will have access to 2-4 guest tickets.
- Research Assistant Professor Owen Williams is now manager of the 3x3 wind tunnel. Any faculty needing to use the 3x3 should contact Professor Williams
- Faculty search update – There are currently approximately 80 applicants. The committee will meet next Tuesday to make a list of candidates. Round one will be a larger list of interviews conducted via Skype. Round two will be a shorter list of on-campus interviews. Eve Risken will also give a diversity presentation at the meeting.

REPORTS FROM STANDING COMMITTEES
No report from the following committees: Undergraduate Committee, Computer Committee, Faculty Search, Graduate Committee, Peer Evaluation Committee, Safety Committee, Aero/Astro Working Committees, Space Allocation Committee, Strategic Planning, AIAA, Sigma Gamma Tau, Boeing Professor Selection, Diversity, MAE-CMS Advisory, Space Systems Center, UWAL, PSI Center, Accreditation, Educational Policy, COE EDGE/UWEO, COE Executive, Promotion & Tenure, College Council, Academic Conduct, Engineering Manufacturing, FAA Center of Excellence, GISE, Technical Japanese, Certification Program, Faculty Fellows, Faculty Senate

EH&S PRESENTATION, Alex Hagen
(presentation attached)
Alex Hagen, Compliance Analyst for Environmental Health & Safety (EH&S) visited to discuss lab safety. The EH&S website has a page listing policy statements. These policies are institution
Section 10 focuses on health and safety and is relevant to PIs. The most important state regulation is code 296-828 which deals with hazardous chemicals in labs. These are all things the PI is responsible for. Some important terms to know are Chemical Hygiene Plan and Chemical Hygiene Officer. The chemical hygiene officer should be someone familiar with the work that’s being done in the lab. The chemical hygiene plan has already been written by EH&S, it’s called the UW Lab Safety Manual (LSM). There is a new version every year. Each lab should add information to the manual that is specific to their lab.

UW developed a chemical management system called MyChem that lists all chemicals. MyChem allows you to create caution signs, which provide valuable information to visitors and emergency responders. Helps responders know how to respond before entering space. Fire department permits are required by the fire department. The department is responsible for managing the permits, not the PI. Permits regulate the amount of chemicals allowed in that zone.

The most effective way to reduce hazards is to eliminate the hazard, or replace the hazard with engineering controls like fume hoods, or administrative controls like standard operating procedures and training.

Are there really risks in labs at UW? There have been fires and near-miss incidents, and chemical spills. There are approximately 15-20 incidents reported every month. EH&S is trying to help prevent accidents or reduce the severity of accidents. There are safety checklist available on the EH&S website and they are used by EH&S to inspect labs. A labs safety performance rating is based on questions from the checklist. Labs need a performance rating of 85 or higher. Anything below 75 means safety practices need to be reassessed. There is a dashboard on the website that PIs can access which shows the latest safety survey report and safety rating. EHS should have already sent lab managers a link to the dashboard. If a link was never received, then the survey still needs to be completed. Email Alex Hagen for a link the dashboard.

Common issues:

- Old chemicals – labs can get rid of these for free by submitting a chemical collection request.
- Improper storage – make sure to use the right chemical cabinet and shelves with lips, and don’t store chemicals with incompatibles chemicals.
- Avoid open containers. This is something that will be flagged in an inspection.
- Keep aisles and exits free and clear and make sure there are no overflowing trashcans.
- All chemical containers should be properly labeled.
- Avoid clutter on fume hoods – make sure to not use it as storage cabinet. If concerned about function of the fume hood, EH&S will service it.
- Power strips and extension cords – don’t daisy chain then or use on anything with a motor. If need to use on equipment with a motor, only plug in when actively using it.
- Compressed gas should be strapped or chained to a wall
- Safety equipment – have regular maintenance and make sure it is accessible. Don’t store stuff right outside the lab door.
Discussion:

• How do we avoid safety issues? Walk through your lab space and think about safety issues. Look for stuff you can get rid of.
• How do we stand compared to other departments? There are challenges in this department. Part of it is the age of the building. This building is not designed for the research being done in it, which can pose a risk to occupants.
• How do we cultivate a culture of safety? We have policies in place, but actually getting students to follow them is difficult. How do we get students to follow our policies or want to comply? Training, making people aware of what’s expected of them. If you keep having practices in place, that starts setting expectations, so that when it is not followed, it stands out. Look at incidents and assess what happened. Maybe the student didn’t understand the policy. Have a dialog with students frequently. Get feedback on issues. Consequences are up to the PI to set. Have safety as standing agenda item at meetings.
• Can the PI have access to modules to see if students have completed them? Yes, the dashboard will show all students who have completed training.
• The policy for not eating food in labs is a state regulation. They don’t want any chemicals to contaminate food or drinks, including coffee. Designate a place outside of the lab where students/employees can have food and keep drinks. You can have food in a lab as long as there are no chemicals, but even if there is only a small amount of chemicals, food is not allowed.

SAFETY COMMITTEE REPORT – Dana Dabiri, Chair of Safety Committee

Department Safety Protocols (attached)

In an effort to encourage a culture of safety in the department, Prof. Dabiri has developed a Departmental Safety Protocol document. Fiona Spencer has also put together a detailed safety document for the composites lab and Dzung Tran has put one together for the machine shop. This should be done for any lab space in the department.

Other departments are considering using lab safety in merit considerations. If there are multiple violations, it could affect merit.

If there are any questions, please direct them to Prof. Dabiri. If accident occurs, it needs to be reported immediately using OARS.

Student responsibilities – Recently, a student group felt there was a need to go to on the roof of Guggenheim Hall but since the students couldn’t access it, they undid the bolts. The department needs to promote a culture of safety to students. Ultimately, it is the responsibility of the instructor of the class to set rules and regulations at the beginning of class.

Sandpoint storage – Pam McGrath will issue an email stating that the department will only be storing equipment for a short period of time since there is equipment there that has been stored for years. A new policy is being developed for Sandpoint storage.

NEW BUSINESS
The department has made an offer of employment for the new Test Engineer for the wind tunnel. At this time, his start date has not been set.
The department is beginning to prepare for ABET. Prof. Morgansen will be sending out a template that will be used for all courses with a designated contact.
All instructors meeting coming up, 1/12. Please come to the meeting.

ADJOURNED
Meeting adjourned at 1:30pm.
Lab Safety

Alex Hagen
Compliance Analyst, Lab Safety Mentor
EH&S
Policy Directory

Administrative Policy Statements

Introduction to Administrative Policy Statements

00 Organization, Communications, & Information Management
10 Environment, Health, Safety, & Security
20 Academic Matters
30 Fiscal Management
Executive Order No. 55

**Policy:** The University of Washington is committed to providing a healthy and safe environment for faculty, staff, students, visitors, and volunteers in all sites owned, operated, or controlled by the University. This commitment includes supporting a culture of health and safety across the University.
Regulatory Requirements

- **WAC 296-828** - Hazardous Chemicals in Laboratories
  - Scope and Application
  - Chemical Hygiene Plan (CHP)
  - Evaluate Employee Exposures
  - Employee Training
  - Medical Consultation
Chemical Hygiene Plan (CHP)

A written program developed and implemented by the employer that establishes procedures, equipment, personal protective equipment, and work practices to protect employees from the health hazards of the chemicals used in the laboratory.
Chemical Hygiene Officer (CHO)

An employee designated by the employer who is qualified by training or experience to provide technical guidance in the development and implementation of the Chemical Hygiene Plan (CHP).
UW Lab Safety Manual (LSM)

Essential Laboratory Safety:

- UW Policies and Best Practices
- Regulatory Requirements (Appendix A)
- Reference Materials, Resources

http://www.ehs.washington.edu/manuals/lsm/index.shtm
Laboratory-Specific Additions

• Administrative Details
• MyChem Inventory
• Standard Operating Procedures (SOPs)
• Training Information
Welcome to MyChem

ALEX HAGEN (FISCHERA)

MyChem is a practical and convenient tool for UW employees to manage their chemical inventories, inventory contacts and Material Safety Data Sheets (MSDSs) or Safety Data Sheets (SDSs). MSDS/SDSs provide an overview of chemical hazards for chemicals and chemical products. By law, all employees must have ready access to MSDS/SDSs for the chemicals they use.

All hazardous chemicals and chemical products at UW owned or leased facilities must be entered into MyChem. MyChem fulfills federal, state and local regulations including the Emergency Planning and Community Right-To-Know Act (EPCRA), the Department of Homeland Security Facility Anti-Terrorism Standard, state Department of Labor and Industries Hazard Communication and Hazardous Chemicals in Laboratories rules and local fire department Hazardous Material Storage and Use Permits.

The PI, Supervisor and persons with inventory update accounts can setup inventory access for others as needed. If the PI or Supervisor is not currently setup in MyChem with chemical inventory locations, use this form to setup access now.

If you have any questions about MyChem, send email to mychem@uw.edu or call 206-616-4046.

Does your browser block pop-ups?
If so, you may not be able to view some MyChem reports or MSDS/SDS pages.

If you click the test button and a pop-up window does not appear, contact your support person for help, or configure your software to allow pop-ups originating at: cspc.admin.washington.edu/mychem.
UW Caution Sign
Fire Department Permits

Fire code requires permits for lab spaces:

- More than 5 gallons of flammable liquids; 250 cu. Ft. of flammable compressed gases; or any amount of toxic or pyrophoric chemicals
- Other chemicals in some specified amount will trigger a permit
Hierarchy of Controls

Most effective

Elimination
- Physically remove the hazard

Substitution
- Replace the hazard

Engineering Controls
- Isolate people from the hazard

Administrative Controls
- Change the way people work

PPE
- Protect the worker with Personal Protective Equipment

Least effective
Is there evidence that labs pose risk at the UW?

• Multiple **lab fires** in past 10 years
• **Near-miss incidents**: 2010 – 2017
• **Chemical Spills**: Foege (2012, 2014); Benjamin Hall (2013); Chemistry 2016; Hitchcock (2016); Wilcox (2013, 2016); MoleES (2017)
• **Severe employee injuries**: 2012, 2013, 2014, 2016, 2017
• **Reported injuries** – 15-20 lab-related incidents reported per month at the University of Washington; **over 1000 work-related injuries reported last year**
## Laboratory Safety Checklist

- **Survey Date:**
- **Surveyor:**

#### Lab Contact

1. **Select Hazard(s):**
   - Use of aqueous or peroxide solution
   - Use of aggressive glassware cleaning baths - acid or base
   - Presence of flammable or oxidizing agents
   - Presence of toxic or corrosive chemicals
   - Use of Schlenk lines
   - Use of solvent stills
   - Use of hot oil bath
   - Other hazardous materials or dangerous goods

#### Administrative Plans/Materials

1. Do the lab staff have access to the current version of the UW Laboratory Safety Manual?
2. Has the lab-specific information been added to the Laboratory Safety Manual?
3. [ ] Do all lab personnel have access to written SOPs that document safety procedures?
4. Do all lab staff know how and when to report accidents, incidents, or near-misses in OMS?
5. Was a safety self-audit performed within the last 12 months?

#### Signage

6. Are emergency contact numbers for lab staff, including after-hours emergency contact numbers, posted within the laboratory?
7. Is a lab hazard warning sign posted and current?
8. Is a biosafety door sign posted when agents are in use and removed when not in use?
9. Are additional hazard warning signs (laser, magnetic fields, high voltage, etc.) posted in lab near the hazard?
10. Is a laboratory floor plan as described in the Laboratory Safety Manual posted?

#### Hazard Communication

11. Has the lab's chemical inventory been reviewed and updated within the last year?
12. Is the lab's contact information current in MYCHEM?
13. Can all lab staff readily access an MSDS/SDS via MYCHEM or hardcopy in the lab?
14. Are all containers clearly labeled with their contents and primary hazard(s)?

#### Lab Training

15. Has a safety training assessment been completed for laboratory personnel?
16. Has DHS safety training been completed and documented for all lab staff?
17. Has lab specific training been completed and documented?

#### Personal Protective Equipment

18. Has a PPE hazard assessment been completed for all laboratory activity?
19. Have all lab personnel completed PPE training?
20. If cartridge respirators are being used, have personnel been fit tested?

#### Emergency Kits

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Survey Rating

Lab Survey Score Calculations

Survey score calculations are based on a survey's answers to 30 target questions (listed below) derived from the checklist. These target questions address the most pressing issues related to lab safety.

The survey score is calculated by counting the "Yes" answers to the survey's target questions and dividing that number by the sum of its "Yes" and "No" answer counts; formula: \((Y/N)*100\).

Example

<table>
<thead>
<tr>
<th>Survey</th>
<th>Survey Date</th>
<th>Yes</th>
<th>No</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>2203</td>
<td>03-Nov-15</td>
<td>23</td>
<td>3</td>
<td>88</td>
</tr>
</tbody>
</table>

Note that questions answered "NA" are not included in the calculation and do not affect the score.

Target Questions

<table>
<thead>
<tr>
<th>Ques #</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ADMINISTRATIVE PLANS/MATERIALS</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Do the lab staff have access to the current version of the UW Lab Safety Manual?</td>
</tr>
<tr>
<td>2</td>
<td>Do all lab personnel have access to the current procedures?</td>
</tr>
<tr>
<td><strong>HAZARD COMMUNICATION</strong></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Has the lab’s chemical inventory been reviewed and updated with the last year?</td>
</tr>
<tr>
<td>12</td>
<td>Can lab staff readily access an MSDS/SOS via MYCHEM or hardcopy in the lab?</td>
</tr>
<tr>
<td>13</td>
<td>Are all containers clearly labeled with their contents and primary hazard(s)?</td>
</tr>
<tr>
<td><strong>LAB TRAINING</strong></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Has a safety training assessment been completed for laboratory staff, students, and volunteers?</td>
</tr>
<tr>
<td>15</td>
<td>Has EH&amp;S safety training been completed and documented for laboratory staff, students, and volunteers?</td>
</tr>
<tr>
<td>16</td>
<td>Has lab specific training been completed and documented?</td>
</tr>
<tr>
<td><strong>PERSONAL PROTECTIVE EQUIPMENT</strong></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Has a PPE hazard assessment been completed for all laboratory activities?</td>
</tr>
<tr>
<td>18</td>
<td>Have all lab personnel completed PPE Training?</td>
</tr>
<tr>
<td><strong>EMERGENCY KITS</strong></td>
<td></td>
</tr>
</tbody>
</table>
All Labs Metrics

Most Recent Lab Survey - All Labs (N=1015)
Based upon 30 questions - unweighted
July 1, 2017

- 539 labs meeting expectations
  Rating >85%
- 252 labs nearing expectations
  Rating 75% to <85%
- 224 labs opportunity for improvement
  Rating <75%
- 32%
Common Issues – Chemical

Is the lab free of chemicals that are old and no longer needed?
Common Issues - Chemical

Improper storage
Common Issues - Chemical

Open Containers
Common Issues - Housekeeping
Common Issues – Labeling containers
Common Issues - Cluttered Fume Hood
Common Issues – Power Strips

Avoid jerry-rigged extension cords or power strips.
Common Issues – Compressed Gases
Common Issues – Safety Equipment
Common Issues – Corridor Spaces
Questions...?
Departmental Safety Protocols – Faculty/Staff Responsibilities

The goal of this document is to encourage a culture of safety at the departmental level by establishing safety protocols for faculty, staff, students, visitors and guests.

Research Labs

- Faculty, in consultation with EH&S, should determine what safety workshops/training/classes are appropriate for their labs. The list of training courses can be found here: [http://www.ehs.washington.edu/forms/pso/ehslabsafetytrainmatrix.pdf](http://www.ehs.washington.edu/forms/pso/ehslabsafetytrainmatrix.pdf).
- If the research is to be done outside of their laboratory, from a safety perspective, this needs to be double-checked with whoever’s space they will be doing their research in.
- Faculty will ensure that all activities will be engaged safely.
- Faculty will be responsible for ensuring the lab space is clean and organized.
- Any accident/incident should be submitted by a person with firsthand experience with the activity, and a UW Online Accident Reporting System (OARS) report should be filed, which can be found here: [http://www.ehs.washington.edu/ohsoars/index.shtm](http://www.ehs.washington.edu/ohsoars/index.shtm). Please be sure to also email this report to aasafety@uw.edu.

Undergraduate/Graduate Courses with Labwork

- Faculty and assigned staff for the course, in consultation with EH&S, should determine what safety workshops/training/classes are appropriate for these courses. The list of training courses can be found here: [http://www.ehs.washington.edu/forms/pso/ehslabsafetytrainmatrix.pdf](http://www.ehs.washington.edu/forms/pso/ehslabsafetytrainmatrix.pdf).
- If the work is to be done outside of their assigned laboratory space, from a safety perspective, this needs to be double-checked with whoever’s space they will be doing their research in.
- Faculty will ensure that all activities will be engaged safely.
- Faculty will be responsible for ensuring the lab space is clean and organized.
- Any accident/incident should be submitted by a person with firsthand experience with the activity, and a UW Online Accident Reporting System (OARS) report should be filed, which can be found here: [http://www.ehs.washington.edu/ohsoars/index.shtm](http://www.ehs.washington.edu/ohsoars/index.shtm). Please be sure to also email this report to aasafety@uw.edu.

The UG committee has agreed to these policies, stating in their minutes on 12/5/17: “ACTION: The committee decided to implement the policies in the document by making sure that all lab course instructors (i.e., the faculty member and/or TA) integrate these items into their syllabus. They will also be responsible for all safety trainings are completed before a final grade will be given. These courses include AA 320, 321, 322, 410, 411, 420, 421 and 448.”

Undergraduate/Graduate student organizations such as DBF & SARP

- Faculty and assigned staff for the teams, in consultation with EH&S, should determine what safety workshops/training/classes are appropriate for these activities. The list of training courses can be found here: [http://www.ehs.washington.edu/forms/pso/ehslabsafetytrainmatrix.pdf](http://www.ehs.washington.edu/forms/pso/ehslabsafetytrainmatrix.pdf).
- If the work is to be done outside of their assigned laboratory space, from a safety perspective, this needs to be double-checked with whoever’s space they will be doing their research in.
- Faculty will ensure that all activities will be engaged safely.
- Faculty will be responsible for ensuring the lab space is clean and organized.
- Any accident/incident should be submitted by a person with firsthand experience with the activity, and a UW Online Accident Reporting System (OARS) report should be filed, which can be found here: [http://www.ehs.washington.edu/ohsoars/index.shtm](http://www.ehs.washington.edu/ohsoars/index.shtm). Please be sure to also email this report to aasafety@uw.edu.
Capstone specific considerations

Preparation for flight tests and flight tests safety procedures

- Careful analysis, repeated ground tests, briefings, repeated checks by the mentors of all aspects of the new designs and their readiness for flight will be followed. Mentors are present during all flight tests. No step is taken without mentors' approval. The following procedures will be followed.
- Based on FAA Memorandum dated May, 4, 2016, entitled: "Educational Use of Unmanned Air Systems (UAS)", see Appendix A, flight testing of departmental capstone airplane design course UAVs must be in accordance with section 336 of the FAA Modernization and Reform Act of 2012, while also following the Safety Code of the AMA, which is a recognized Community Based Organization.
- A pre-flight briefing should be done so the pilot, advisor, and other participants know what is planned, what their responsibilities are, what safety precautions to take (as applicable), and have a plan as to how to respond to an incident (first aid, fire extinguisher, accounting for all the model parts that may present a safety hazard, documenting with photos if needed).
- All guidelines for part 107 of the FAA guidelines should be followed (see Appendix B).
- For any course where an autonomous vehicle will be flown, a set of test conditions, vehicle information and all information pertaining to part 107 compliance should be provided to both the course instructor and to the department administrator. Both the instructor and a second qualified faculty member (or research scientist) not part of the course should approve the flight before it can take place.
- The flight approval should include information indicating the flight stability and propulsion/actuation capabilities of the vehicle (stability derivatives, static stability, flutter, propulsion, actuator needs/capability).
- Data on outcomes of the test should be provided following the test (most likely, the data will be part of a report, so the report could just be submitted).
- Any accident/incident reports should be submitted by a person with firsthand experience with the activity.
- Collect Participant waiver forms
- A report will be submitted to the AA Safety Committee to review Autumn quarter to examine further response or procedures.

Waiver Forms

- Any activities involving potential risk or harm requires waiver forms:
  risk.uw.edu/advice/consulting/forms

Volunteer Forms

- Any student not enrolled and any non-UW student needs to fill out a volunteer form.

General Student Responsibilities

- Students will be performing their duties in a laboratory, whether for research or as part of a class, or as part of a student organization such as DBF, SARP, etc. As such, they fall under the jurisdiction of the faculty who is conducting the research, teaching the class, or overseeing the activities of the student organization. Therefore, they must ensure that they follow the safety protocols established by the faculty, EH&S, and UW. If they have any questions/concerns, they should be encouraged to voice them.
Departmental Safety Oversight
• If a group violates safety policies, a warning is issued first, followed by an OARS report for a second violation and termination of department funds for activities related to projects for which the Department contributes funds.

AA Composites Shop RM107: Rules & Policies: Attached to this document as Appendix C are the rules and policies established for using the AA Composites Shop. In addition to the general student responsibilities stated above, students are responsible for adhering to these policies and procedures.

AA Shared Capstone Workspaces AERB RM120: Rules & Policies: Attached to this document as Appendix D are the rules and policies established for using the AA Shared Capstone Workspace AERB RM120. In addition to the general student responsibilities stated above, students are responsible for adhering to these policies and procedures.

AA Machine Shop: Rules & Policies: Attached to this document as Appendix E are the rules and policies established for using the AA Machine Shop. In addition to the general student responsibilities stated above, students are responsible for adhering to these policies and procedures.
APPENDIX A:

Federal Aviation Administration

Memorandum

Date: May 4, 2016

To: Earl Lawrence, Director, Unmanned Aircraft Systems Integration Office, AUS-1
John Duncan, Director, Flight Standards Service, AFS-1

From: Reginald C. Govan, Chief Counsel, AGC-1

Prepared by: Dean E. Griffith, Attorney, AGC-220

Subject: Educational Use of Unmanned Aircraft Systems (UAS)

This interpretation addresses: (1) use of unmanned aircraft for hobby or recreational purposes at educational institutions and community-sponsored events; and (2) student use of unmanned aircraft in furtherance of receiving instruction at accredited educational institutions.

There is uncertainty in the model aircraft community about when an unmanned aircraft is a model aircraft operated for hobby or recreation or is an operation requiring FAA authorization. The FAA has received many inquiries from students and educational institutions offering coursework in the design, construction and operation of small unmanned aircraft with respect to the types of activities in which students and faculty lawfully may engage pursuant to the existing legal framework.

In light of these questions, we are issuing this interpretation to clarify that:

- A person may operate an unmanned aircraft for hobby or recreation in accordance with section 336 of the FAA Modernization and Reform Act of 2012 (FMRA)\(^1\) at educational institutions and community-sponsored events\(^2\) provided that person is (1) not compensated, or (2) any compensation received is neither directly nor incidentally related to that person’s operation of the aircraft at such events;

- A student may conduct model aircraft operations in accordance with section 336 of the FMRA in furtherance of his or her aviation-related education at an accredited educational institution.

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\(^{1}\) Pub. L. 112-95, § 336(a)(1)-(5)

\(^{2}\) Community-sponsored events would include demonstrations at schools, Boy or Girl Scout meetings, science clubs, etc.
• Faculty teaching aviation-related courses at accredited educational institutions may assist students who are operating a model aircraft under section 336 and in connection with a course that requires such operations, provided the student maintains operational control of the model aircraft such that the faculty member’s manipulation of the model aircraft’s controls is incidental and secondary to the student’s (e.g., the faculty member steps-in to regain control in the event the student begins to lose control, to terminate the flight, etc.).


Separate from these two actions, the FAA continues to receive a number of questions on the use of model aircraft to conduct demonstrations and on student use of model aircraft in connection with participation in coursework at educational institutions. The FAA finds it necessary to clarify the applicability of section 336 of the FMRA and of the FAA’s operating requirements for UAS. The FAA recognizes that UAS increasingly are being used in education, including science, technology, education, and math (STEM) education, which is the focus of President Obama’s Educate to Innovate Initiative.

Hobbyist Use of UAS to Conduct Demonstrations

Section 336(a) of the FMRA provides special rules for model aircraft that require the aircraft to be:

1) Flown strictly for hobby or recreational use;

2) Operated in accordance with a community-based set of safety guidelines and within the programming of a nationwide community-based organization;

3) Limited to not more than 55 pounds unless otherwise certified through a design, construction, inspection, flight test, and operational safety program administered by a community-based organization;

4) Operated in a manner that does not interfere with and gives way to any manned aircraft; and

5) When flown within 5 miles of an airport, the operator of the aircraft provides the airport operator and the airport air traffic control tower (when an air traffic control facility is located at the airport) with prior notice of the operations (model aircraft operators flying

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3 A model aircraft means an unmanned aircraft that is: (1) capable of sustained flight in the atmosphere; (2) flown within visual line of sight of the person operating the aircraft; and (3) flown for hobby or recreational purposes. Pub. L. 112-95, § 336(c).

4 http://www.whitehouse.gov/issues/education/k-12/educate-innovate
from a permanent location within 5 miles of an airport should establish a mutually-agreed upon operating procedure with the airport operator and the airport air traffic control tower).

If an unmanned aircraft is operated as a model aircraft in accordance with the above, then it is does not require FAA authorization. A key element in determining whether an operation may qualify as a model aircraft operation is that it must be flown for “hobby or recreational” purposes.\(^5\) The FAA’s interpretation of section 336 relies on common definitions of the terms “hobby” and “recreational.” Previous agency guidance addressed the parameters of hobby or recreational use:

Any operation not conducted strictly for hobby or recreation purposes could not be operated under the special rule for model aircraft. Clearly, commercial operations would not be hobby or recreation flights. Likewise, flights that are in furtherance of a business, or incidental to a person’s business, would not be a hobby or recreation flight.\(^6\)

The FAA interprets “hobby or recreational” use to include operation of UAS to conduct demonstrations at accredited educational institutions or at other community-sponsored events provided the aircraft is not being operated for compensation, in furtherance of a business or incidental to a business. Therefore, a model aircraft hobbyist or enthusiast lawfully may fly UAS at accredited educational institutions or other community-sponsored events to promote the safe use of UAS and encourage student interest in aviation as a hobby or for recreational purposes provided the hobbyist receives no compensation of any form (including honorarium or reimbursement of costs), or any such compensation neither directly nor indirectly furthers the hobbyist’s business or operation of the UAS and he or she follows the provisions of section 336.

**Student Operation of Model Aircraft for Educational Purposes**

If not operated as “model aircraft” under section 336 of the FMRA, currently there are three ways to lawfully conduct unmanned aircraft operations in the United States: (1) as public aircraft operations pursuant to the requirements of the public aircraft statute and under a Certificate of Waiver or Authorization (COA) from the FAA; (2) as limited commercial operations by type certificated UAS, provided the operator obtains a COA from the FAA; or (3) pursuant to a Section 333 of the FMRA grant of exemption based on the Secretary of Transportation’s determination that a certificate of airworthiness is not required, and provided the operator obtains a COA from the FAA.\(^7\)

Each of these three methods is available to educational institutions (including their faculty and students) that want to operate UAS, including for commercial, research and development, and any other non-hobby or non-recreational purpose. Each, however, requires the educational

\(^5\) P.L. 112-95, § 336(e)(1) and (e)(3).

\(^6\) 79 Fed. Reg. at 36174

\(^7\) On February 23, 2015 the FAA proposed a rule that, when finalized, will provide a framework for small UAS operations. See Operation and Certification of Small Unmanned Aircraft Systems Notice of Proposed Rulemaking, 80 Fed. Reg. 9544.
institution or its faculty and students to meet statutory prerequisites and obtain from the FAA the requisite approvals (in the form of exemptions and COAs).

Many educational institutions are keenly interested in having students operate unmanned aircraft as model aircraft under section 336 of the FMRA in connection with their academic coursework at those schools. The educational community contends that these operations not only meet the definition of model aircraft but also meet the unique need of students, which is learning how to design, construct and operate small unmanned aircraft as a component of a variety of science, technology and aviation-related educational curricula. Students also are interested in operating small unmanned aircraft for other educational purposes such as in connection with television, film, or photography courses.

The FAA has considered whether a student’s course work of learning how to operate and use a UAS constitutes a hobby or recreational activity within the meaning of section 336’s definition of model aircraft. The FAA believes students operating UAS as one component of a curricula pertaining to principles of flight, aerodynamics and airplane design and construction promotes UAS safe use and advances UAS-related knowledge, understanding and skills. UAS also may provide students a useful tool in other academic curricula such as television, film production or the arts generally. Although it may be argued that the student’s knowledge and skills obtained through such coursework are necessary for a diploma or degree, which subsequently can lead to an aviation-related job or increased earning potential, the FAA finds this link simply too attenuated to transform student UAS use, as a component of an accredited educational curriculum, into a non-hobby or non-recreational use within the meaning of section 336. A person that operates a UAS strictly for hobby or recreation learns about principles of flight, aerodynamics, and airplane construction may subsequently use such knowledge when gainfully employed, but that does not transform what is otherwise a hobby or recreational activity into a non-hobby or non-recreational pursuit.

Therefore, we find that the use of small unmanned aircraft by students at accredited educational institutions as a component of science, technology and aviation-related educational curricula or other coursework such as television and film production or the arts more closely reflects and embodies the purposes of “hobby or recreational” use of model aircraft and is consistent with the intent of section 336 of the FMRA. Accordingly, the FAA concludes that student use of UAS at accredited educational institutions as a component of their science, technology and aviation-related educational curricula, or other coursework such as television and film production or the arts, is “hobby or recreational use” within the meaning of the FMRA. The student is, however, responsible for meeting and complying with all other elements required for lawful model aircraft operations pursuant to Section 336 of the FMRA, including the student not receiving any form of compensation (including reimbursement of costs, honorarium, etc.) directly or incidentally to his or her operation of the model aircraft.

Faculty Use of Model Aircraft

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8 Small unmanned aircraft are those weighing less than 55 pounds. See FMRA § 331(6).
9 The prohibition on receiving compensation, while broad, does not preclude a student from operating UAS in connection with fulfilling a specific course’s requirement while also receiving financial aid, participating in work-study programs or being a paid research assistant to a faculty member teaching such course.
The FAA recognizes that faculty participation in the student’s learning experience often is an integral component of the student’s educational experience and that faculty should be able to participate in and contribute to the unmanned aircraft activities in which students can engage as hobbyists. However, a faculty member engaging in the operation of an unmanned aircraft, as part of professional duties for which he or she is paid, would not be engaging in a hobby or recreational activity. Rather, the faculty member is being compensated for his or her teaching or research activity, including any UAS operation arising from or related to the faculty member’s teaching a course or conducting research.

Likewise, a student operating UAS for research on behalf of a faculty member is associated with the faculty member’s professional duties and compensation and, thus, is not hobby or recreational use by the student pursuant to section 336. Student operation of UAS for the professional research objectives of faculty renders the operation non-hobby or non-recreational. Accordingly, a faculty member conducting research may not rely on section 336’s concept of “hobby or recreational use” to either operate a UAS or direct student UAS operations in connection with such research.

Nevertheless, faculty teaching a course or curricula that uses unmanned aircraft as a component of that course may provide limited assistance to students operating unmanned aircraft as part of that course without changing the character of the student’s operation as a hobby or recreational activity or requiring FAA authorization for the faculty member to operate. The FAA finds that de minimis limited instructor participation in student operation of UAS as part of coursework does not rise to the level of faculty conducting an operation outside of the hobby or recreation construct.

This limited circumstance would apply to courses at accredited institutions where the operation of the unmanned aircraft is secondary to the design and construction of the aircraft, such that the primary purpose of the course is not operating an unmanned aircraft. For example, an instructor teaching an engineering course in which construction and operation of UAS are one part of the curriculum would be able to conduct limited UAS operations. In that case students would fly UAS to test the validity of design or construction methods to show mastery of the principles of the course. The faculty member’s UAS operation would be secondary to the purpose of instructing engineering courses. In contrast, this limited circumstance would not apply to a course related to UAS flight instruction. In that case, the student’s primary purpose for taking the course is to learn to fly a UAS and flight would be expected to be demonstrated on a regular basis. In that case, the faculty member’s UAS operation is closely tied to his or her purpose of instructing how to fly a UAS.

Conclusion

UAS may be used to conduct demonstrations at schools or other community-sponsored events provided the person operating the aircraft is (1) not compensated, or (2) any compensation received is neither directly nor incidentally related to that person’s operation of the aircraft at such events.

Students that operate model aircraft in connection with fulfilling an accredited educational institution’s curricula lawfully may conduct model aircraft operations for hobby and recreational
purposes pursuant to section 336 of the FMRA, provided they do not receive compensation, directly or incidentally, arising from or related to such operations. Faculty at these educational institutions teaching such curricula may assist students with their model aircraft operations under section 336, provided that the operations are used to teach such curricula to students enrolled in those courses and the faculty member’s participation is limited to de minimis participation in the student’s UAS operations. We emphasize that these operations must be conducted under the provisions of section 336.

The FAA emphasizes that faculty members who wish to operate UAS outside of these parameters must seek authorization though one of the three methods discussed above. We also note that this interpretation was drafted prior to issuance of the final rule for Operation and Certification of Small UAS Rule and this interpretation may need to be revisited depending on its provisions. See 80 Fed. Reg. 9544 (Feb. 23, 2015) (Notice of Proposed Rulemaking).

Please contact my office with any questions about this memorandum.
certificated UAS pilots will be required to obtain an FAA-issued remote pilot certificate with a small UAS rating.

A remote pilot in command must:
- Make available to the FAA, upon request, the small UAS for inspection or testing, and any associated documents/records required to be kept under the rule.
- Report to the FAA within 10 days of any operation that results in at least serious injury, loss of consciousness, or property damage of at least $500.
- Conduct a preflight inspection, to include specific aircraft and control station systems checks, to ensure the small UAS is in a condition for safe operation.
- Ensure that the small unmanned aircraft complies with the existing registration requirements specified in § 91.203(a)(2).

A remote pilot in command may deviate from the requirements of this rule in response to an in-flight emergency.

<table>
<thead>
<tr>
<th>Aircraft Requirements</th>
<th>FAA airworthiness certification is not required. However, the remote pilot in command must conduct a preflight check of the small UAS to ensure that it is in a condition for safe operation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model Aircraft</td>
<td>Part 107 does not apply to model aircraft that satisfy all of the criteria specified in section 336 of Public Law 112-95. The rule codifies the FAA’s enforcement authority in part 101 by prohibiting model aircraft operators from endangering the safety of the NAS.</td>
</tr>
</tbody>
</table>
APPENDIX C:

AA Composites Shop RM107: Rules and Policies
Revised: Sept 1 2016

Lab rules will be followed very strictly. You may be prohibited from using the lab, if you handle chemicals and/or carbon fibers carelessly. (Refer to Shop Manual, page 2).

Training
1. Before you start working in the lab you must have completed, passed and emailed documents of completion to Shop Supervisors for the following:
   a. Hazard Communication (HazCom) training – online
   b. Respirator Training with Fit test for respirators – class
      As needed by Shopmaster for other work ie. Printers, ovens, composites
   c. Fume Hood Training – Online
   d. Electrical Safety, Basics – Online
   e. Fire Extinguisher Training – Online
   f. Managing Laboratory Chemicals – Online
      http://www.ehs.washington.edu/psotrain/corsdesc.shtm
2. All users must complete a composites safety training that will be scheduled once per quarter.
3. It is strongly recommended that you also become machine shop certified.

Lab Access and Supervision
Limiting and controlling access is critical to preventing untrained or unauthorized persons from incurring injury. This is particularly true in an academic setting where a shop may be part of a group of rooms in a large building with hundreds of occupants.

1. The lab is only open during normal operating hours or scheduled hours.
2. Sign in/out of the composites lab every time you enter or leave.
3. Check in with the shopmaster/supervisor each time before using 3D printers, ovens, hot press.
4. Schedule an appointment online 24 hours in advance to ensure access.
5. Perform experiments under supervision of designated lab supervisor. Volunteers are not allowed to work without supervision from leads/supervisor of their respective research groups

General Rules
1. No food or drink is allowed in the lab.
2. Closed toe shoes and full length pants are required.
3. Wear a lab coat or chemical apron (when working with composites, resins and epoxy)
4. Wear safety glasses at all times while in shop.
5. If you break any equipment please report it immediately. Do not use broken equipment (ie fume hoods).
6. Do not leave items long term in fume hood. This is a shared facility so others will need to use the hood. The hood is designated for using chemicals, not storing them.
7. Violation of shop rules will result in restriction of your room access privileges.

**Lab Housekeeping**

1. Be respectful to other users
   a. Leave work area cleaner than you found it
   b. Ask someone if you don’t know where something is stored

2. Always cover your work surface with cardboard, paper, aluminum foil, etc. before using anything sticky. This includes inside the fume hood.

3. No cutting, sanding, drilling, etc. of cured carbon fiber in RM107
   a. Use carbon cutting tools and downdraft table in ME machine shop G32A
   b. Consult with AA machine shop for alternative solutions

4. No dry sanding of any materials
   a. Keep dust out of your parts

5. If you spill it, wipe up the spilled material immediately and properly dispose of the waste.

6. Before you leave, sweep or vacuum your work area, including both the table and floor, empty any full trash cans.

7. Use materials from your research lab. Classroom materials must be approved for use by instructor or shopmaster.

8. Avoid creating trip hazards by using overhead electrical drops and promptly putting away extension cords

9. Space is limited. Only short term storage of mold/parts is permitted.

10. Room is not meant for storage. After work is completed clean your area and carry work back to your respective labs. This includes all consumables, chemicals, materials and parts.

11. If you need to leave a part overnight let the shopmaster know in advance, post a name, email address, phone number and time the part will be moved. Absolutely no long term storage of any part

**Chemicals Hygiene/ (see Spill SOP).**

1. Read the Safety Data Sheet (SDS) or MSDS for chemical products that you will be using. Follow the instructions related to handling and storing.

2. Identify locations of all chemicals in the lab, SDS/MSDS folder, emergency phone numbers, emergency eye wash fountain and drench shower, first aid kit, aprons, gloves, safety glasses, and emergency exits.

3. All small containers (having cured or uncured resin) must be placed under fume hood and MUST be labeled with a marker to indicate their content. These containers are called secondary containers.
4. When possible always use secondary containers to transport chemicals (see Moving Hazardous Chemical Policy SOP). If larger containers of chemicals need to be used then place items in a bin on a cart. This way spills between labs to the shop can be minimized. After completion immediately return chemicals to their storage location (ie research lab).

5. Wear gloves when handling chemicals, including uncured prepreg composites.

6. Wear safety goggles when handling or working near hazardous chemicals.

7. Use fume hood for chemicals and sprays (must check what hood is designed for?).

8. Any parts larger then fume hood must consult with shopmaster before using hood.

9. Use mold releases that are labeled as low-odor or low-VOC. This is a shared facility and various user will have varying degrees of sensitivity that can result in headaches, dizziness, respiratory irritation, eye irritation, visual disorders, memory impairment, coordination loss, and damage to liver, kidney, nervous system, skin reaction. If you must use a mold release or resin that constitutes an odor nuisance for quality or research reasons, make prior arrangements with the shopmaster for scheduling & ventilation. ‘We need to use it because this is what we brought/donated’ is not sufficient reason for using high-odor chemicals.

10. If you bring a new chemical into the lab, send a copy of the SDS to the shopmaster at fspencer@aa.washington.edu. This must be approved by shopmaster before using chemical in RM107.

11. Must use a chemical container in secondary plastic bottles labeled container with safety data sheet. If larger containers are required, for transporting chemicals, use a tub on a cart to that can be easily moved from point of usage and back to storage cabinets (i.e. located in research labs). This will reduce the likelihood of spillage.

**Carbon Fiber and Resins**

1. Respirator training must be completed where the proper respirator will be recommended to student and/or PI.

2. Must wear respirator when handling materials contain carbon fibers and polyurethane resin.

3. Must wear appropriate Personal Protective Equipment (PPE) while working in the lab, especially when handling liquid chemicals.

4. If respirator is required must schedule work so that other users of a shared space can be properly informed.

5. If you create a mess (resin spill, fabric cutting) it is your responsibility to clean your mess immediately. Failure to do so will result in revoking lab access and privileges.

6. If you are heating/curing any material/part overnight or for long hours, you MUST place a note on indicating the material type and when it will be removed.

7. Follow protocols for cured, uncured resin, rags, VARTM bagging material etc. Do not throw anything in the garbage container. Please take garbage back to you own lab and contact EHS for proper disposal procedures.
8. All carbon fiber contaminant waste such as wipes, rags, beakers, napkins, respirator cartridge etc. Must be put in Zip-lock bag and kept in separate containment areas. Students work for PI’s with their own labs must take item back to their labs

Respirator Protection
1. If work requires respirators all others sharing space will also need to use respirators. Scheduling will avoid conflict and improperly exposing others hazards
2. Training includes medical, fit test, storing of respirators, cleaning respirators

Tools
1. Use tools only for their intended purpose. Screwdrivers are not chisels or pry bars. Wrenches and drill are not hammers
2. Protect vacuum pumps from resin and use resin tamps for wet layups
3. Put away tools and materials even if they were out when you found them

Freezer
1. Wear gloves when handling materials or working in freezer
2. Only use material labeled for your lab or class
3. Freezer is small and priority goes to classroom material

Incident and Accident Reporting
1. Report unsafe conditions to shopmaster fspencer@aa.washington.edu
2. For near misses, accidents fill out oars reports http://www.ehs.washington.edu/ohsoars/
3. Report accidents, spills immediately to Fiona (RM317), Dzung (AA machine shop). For emergencies call 911

3D printer (to be completed when equipment is setup)
Priority for printers and other equipment donated to the research labs that are donating it.

1. Schedule time with shopmaster. Some jobs might be days while others hours or minutes. Some jobs might need better design to prevent instrument breakage or unbuildable parts. So scheduling is critical to maintain proper operation.
2. Schedule enough time to clean your part and mess in and around printer after job is done.
3. If you are designated user by shopmaster then follow SOP’s (Standard Operating procedure) located by each instrument
4. The Object uses Resin. Make sure you clean up any resin buildup and mess according to SOP’s
5. Mcor uses paper. There will be a lot of paper to clean up after part is built

6. Mcor uses glue follow cleanup procedure on SOP

Name (Print):_____________________________Signature:_____________________Date:________

Class or Research group:___________________________

Instructor:_______________________________________
General Instructions for Research Students

1. Your performance is measured on metrics: High Quality Research, Publications, and Instruction.
2. Must use lab during normal operating hours, posted hours or scheduled by laboratory Shopmaster/Supervisor.
3. Fiona Spencer is in charge/supervisors. They should know about all your planned experiments, absences, and changes in schedule.
4. Please select working hours so the times coincide with the schedules of experienced students, staff, and supervisors and occur during normal operating hours of the shared composites lab.
5. Two people MUST be in lab while work. Working alone is prohibited.
7. Take all required safety training and forward emails of completion of lab supervisors.
8. Keep lab clean and tidy.
9. Always cc Fiona Spencer when writing emails related to composites lab.

Name (Print):_____________________________ Signature:_____________________ Date:________
Research Group:___________________________
PI:_____________________________________
APPENDIX D:

AA Shared Capstone Workspaces AERB RM120: Rules and Policies
Issued: August 8 2016

Shared Workspace rules will be followed very strictly. You may be prohibited from using the lab, if you handle chemicals improperly, cut/grind composites, bring food into room, or store storage items. (Refer to Laboratory Safety Manual).

Training
1. Before you start working in the Workspace you must have completed, passed and emailed documents of completion to Supervisors for the following:
   a. Hazard Communication (HazCom) training --online
   b. Fume Hood Training -- Online (Project dependent. Discuss with supervisor)
   c. Electrical Safety, Basics -- Online
   d. Fire Extinguisher Training -- Online
   e. Managing Laboratory Chemicals -- Online

   http://www.ehs.washington.edu/psotrain/corsdesc.shtm
2. It is strongly recommended that you also become machine shop certified.

Lab Access and Supervision
Limiting and controlling access is critical to preventing untrained or unauthorized persons from incurring injury. This is particularly true in an academic setting where a shared workspaces maybe part of a group of rooms in a large building with hundreds of occupants.

1. Workspace is access limited to students that need to complete Capstone or course related projects. 
2. Work within the projects allocated spaces. Anyone using more than their allocated space, will be given a warning and opportunity to correct. If corrections are not made in a timely manner, then individuals or groups will be banned from using the space.
3. Sign in/out of the lab every time you enter or leave. 
4. Volunteers are not allowed to work without supervision from leads/supervisor of their respective research groups.

General Rules
1. No food or drink is allowed in the lab.
2. No Alcohol or smoking is allowed. May result in permanent ban.
3. Wear safety glasses when necessary.
4. If you break any equipment please report it immediately. Do not use broken equipment (ie glassware, tools).
5. Do not move into other workspaces or block access. This is a shared facility so others will need to access and complete their work within deadlines.
6. Violation of rules will result in restriction of your room access privileges.
Housekeeping
1. Be respectful to other users
   a. Leave work area cleaner than you found it
   b. Ask someone if you don’t know where you need direction.
2. Always cover your work surface with cardboard, paper, aluminum foil, etc. before using anything sticky.
3. No cutting, sanding, drilling, etc. of cured carbon fiber, fiberglass, wood in AERB RM120
   a. Use carbon cutting tools and downdraft table in ME machine shop G32A
   b. Consult with AA machine shop for alternative solutions
4. No dry sanding of any materials
   a. Keep dust out of your parts
5. If you spill it, wipe up the spilled material immediately and properly dispose of the waste.
6. Before you leave, sweep or vacuum your work area, including both the table and floor, empty any full trash cans.
7. Classroom materials must be approved for use by instructor or supervisors.
8. Avoid creating trip hazards by using overhead electrical drops and promptly putting away extension cords
9. Space is limited. Only short term storage of project is permitted.
10. Room is not meant for storage. After work in complete, for the day, remove any items not designated to be in workspace ie personal items, consumables, chemicals, materials and parts.
11. If you need to leave a parts overnight or until project is completed let the supervisors know in advance, post a name, email address, phone number and time the part will be moved. Absolutely no long term storage of any part

Chemicals Hygiene/ (see Spill SOP).
1. Read the Safety Data Sheet (SDS) or MSDS for chemical products that you will be using. Follow the instructions related to handling and storing.
2. Identify locations of all chemicals around the room, SDS/MSDS folder, emergency phone numbers, and emergency eye wash fountain and drench shower, first aid kit, gloves, safety glasses, and emergency exits.
3. All small containers MUST be labeled with a marker to indicate their content. These containers are called secondary containers.
4. No fume hood is present in Aerb120. Consult with supervisor on alternative locations for resin and hazardous chemical work.
5. When possible always use secondary containers to transport chemicals (see Moving Hazardous Chemical Policy SOP). If larger containers of chemicals need to be used then place items in a bin on a cart. This way spills between labs to the shop can be minimized. After completion immediately return chemicals to their storage location (ie research lab)
6. Wear gloves, safety goggles when handling or working near hazardous chemicals.
7. Use fume hood for chemicals and sprays (see supervisor for fume hood accessibility)
8. Any parts larger then fume hood must consult with supervisor before using hood
9. If you bring a new chemical into the lab, send a copy of the SDS to the supervisor at fspencer@aa.washington.edu. This must be approved by supervisor before using chemical in Aerb RM120
10. If larger containers are required, for transporting chemicals, use a tub on a cart that can be easily moved from point of usage and back to storage cabinets (i.e. located in research labs). This will reduce the likelihood of spillage.

11. Do not store hazardous chemicals on workbenches, leave opened containers or leave containers on floors. Containers that are not secondary containers must be returned to appropriate flammable cabinets. Discuss with supervisor and instructors where appropriate flammable cabinets can be found.

Respirator Protection
1. If work requires respirators, further training is required. We will need to know far in advance to schedule a respirator training.
2. Do not attempt to purchase your own respirators without this training.
3. Since all others sharing space will also need to use respirator, discuss with supervisor about scheduling time in the composites shop.
4. Training includes medical, fit test, storing of respirators, cleaning respirators

Tools
1. Use tools only for their intended purpose. Screwdrivers are not chisels or pry bars. Wrenches and drill are not hammers
2. Put away tools and materials even if they were out when you found them

Incident and Accident Reporting
1. Report unsafe conditions to supervisor fspencer@aa.washington.edu
2. For near misses, accidents fill out oars reports http://www.ehs.washington.edu/ohsoars/
3. Report accidents, spills immediately to Fiona (RM120), Eliot George (RM120. For emergencies call 911

Name (Print): ____________________________ Signature: ______________________ Date: __________
Class or Research group: __________________________
Instructor: _________________________________
APPENDIX E:

AA Machine Shop: Rules and Policies

Equipment Access
For personal safety and equipment security, access to the machine shop, its tools and equipment is restricted. Access to the Machine Shop and its equipment must be granted by AA Shop manager. Permission is strictly limited to the use of the equipment on which the user has been certified by designated AA staff.

- Access is only available to university employee and students.
- Off Limits Area
  - Tool Room
  - Any machines labeled ‘SHOP PERSONNEL ONLY’
  - Toolbox labeled ‘NO AFTER HOUR ACCESS’

Shop Safety Policy
Because machine tools are "old school," and somewhat familiar to most of us, it may be easy to forget how dangerous they can be. Users are reminded to tie back, tuck in, or otherwise safely stow long hair, loose clothing, scarves, ties, jewelry and other items of personal style or adornment that could be a safety hazard while working with the equipment. Know the location of the first aid equipment and who to contact

- All other individuals must have taken the shop safety course.
- If supervisor has to leave for over 30 minutes, at least two individuals must be present in shop without the presence of the supervisor.
- Any emergency off hour access must have at least the proxy present at all times

Shop Job Policy
While AA Shop resources need to be available to qualified staff and students, it is important to determine which jobs must be carried out by AA Shop staff and which may be suitable for users. With this in mind the following policy will apply:

Any job brought to the AA Shop that meets either of the two criteria below shall be carried out by Shop personnel:

- The job involves more than 4 hours total Shop time;
- Significant design assistance is required from AA Shop personnel. This is defined to mean more than 30 minutes of design help.

AA Shop jobs that do not fall under either of the above categories must be carried out by designated "proxy" staff or others under their supervision.
Work in the absence of AA Shop staff

- The AA Shop is normally available throughout the week, from 9:30 AM – 5:30 PM (subject to change for summer). It is expected that all Shop-related activities be conducted during those working hours.

In the unusual and infrequent case where off-hours access to AA Shop facilities is required, the following policies shall apply:

- With the permission of the AA Shop Manager, Dzung Tran, shop keys shall be checked out by AA Administrative staff (Kim Maczko) and returned promptly on the business day following the activity.
- Two people must be present in the AA Shop during any such activity at least one being the proxy.
- Failure to follow shop policies will result in the loss of key privileges.

Under no circumstances may AA Shop equipment be used without AA Shop staff or designated proxies present. The shop and equipment must be left in the condition in which it was found. Shop doors must be locked when the shop is unattended.