

EYP/® minutes

To:	Attendees	Date of meeting:	June 11, 2019
Project Name:	Bull Run Hall Addition	Time of meeting:	9:00-10:30
Project No.:	1019004.01	Location of meeting:	Sci Tech, IABR, Conf Rm 1004
		Meeting Number:	2.5

Meeting Purpose: Programming for Student Design Spaces

Attendees:

George Mason University:

- Oscar Barton, VSE
- Joyce Rose, VSE
- Shari Ross, Bio-E
- Johnnie Hall, ME VSE
- Beth Lattanzi, ME VSE
- Amanda Jervis, MIX-OEI
- Ben Allen, ITS
- Laura Manno, Provost/Planning
- Colby Grant, Sci Tech Admin
- Debbie Brady, Facilities
- Virginia Steele, Facilities
- Joy Staulcup, Facilities
- LeAnn Pittman, CaLT/Learning Space Design

EYP:

- Melissa Burns, Academic Planner
- Brian Tucker, Lab Planner
- Rebecca Ross, Planner/Architect
- Suzanne Klein, Project Director

Minutes:

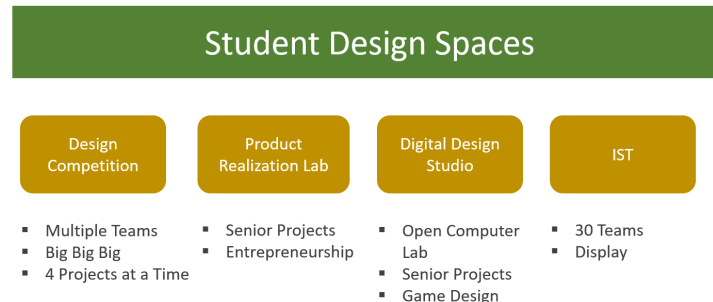
General Comments:

The group met on George Mason University's SciTech campus. The purpose of the meeting was to discuss each functional space type in more detail and to identify the following for each space:

- Number of students
- Type and style of teaching
- Timing of courses (Fall/Spring/Summer, Frequency, Time)
- Key adjacencies,
- Prep/Storage needs
- Major equipment

1. **Introductions:** Laura Manno introduced the meeting and provided a brief project overview to the group for new attendees that were not in the last programming meeting. She explained the process and purpose of the building and that there will be ongoing conversations on

scheduling, logistics and budget. There were diagrams on the wall which were presented at the last building committee meeting and were the starting point for this set of interviews.



The green bar represents a typology in the building and the gold groups represent a function of the type followed by a list of uses. The function could be representative of one or more spaces and are a way to think holistically and collaboratively about space within the building.

2. General:

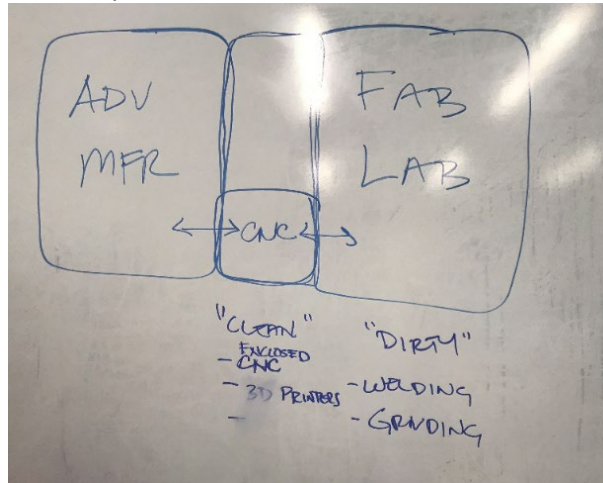
- a. Oscar clarified that the Fab Lab and the Advanced Manufacturing Lab are two different spaces. The Advanced Manufacturing Lab is an instructional space and the Fab Lab is a non-scheduled support space for the capstone student projects and design competitions.
- b. Oscar also noted that since the ME program started, they have grown from supporting 4 capstone teams to this semester supporting 22 teams combined with Bioengineering. Additionally, the department supported 7 design competition teams. They will need more of these student design spaces.
 - Students currently doing everything they can to get space to work.
 - The need is not slowing down.
 - Spaces are a good opportunity for interdisciplinary collaboration opportunities. Other students will see the space and want to use it.
- c. Joyce added that the biggest needs for Design Competition and Senior Design are:
 - First floor
 - Loading dock / exterior access with roll-up doors
 - Deliveries

3. Fabrication Lab:

- a. Equipment:
 - Lathe
 - Milling
 - Welding
 - Air Compressor
 - Water Jet CNC
 - Plasma Cutter
 - Laster Cutters
 - Paint Booth (large)
 - Finishing Booth
 - Powder Coating

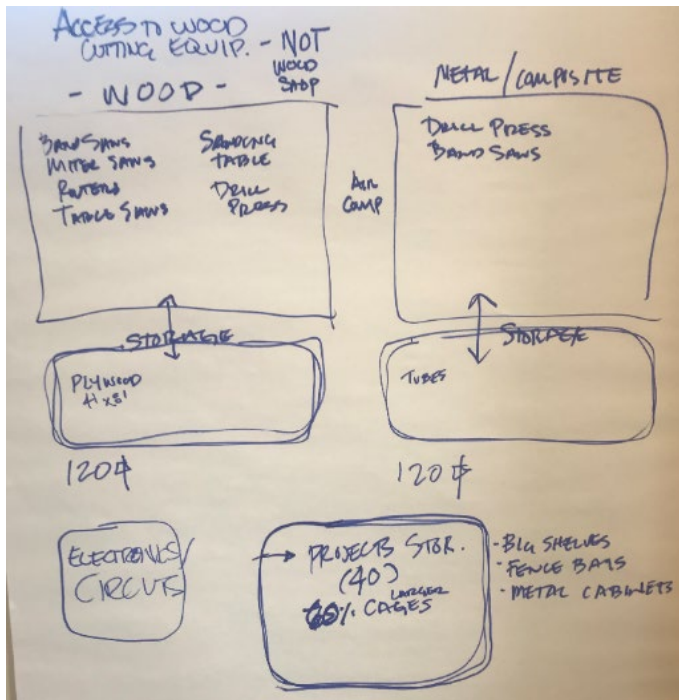
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- Soldering
- Snorkel
- b. Brian drew a diagram on the board to show a shared zone between the Fab Lab and the Advanced Manufacturing Lab.
 - Some of the equipment for the Advanced Manufacturing Lab will be in the Fab Lab shared spaces.
 - The group agreed on this approach.
 - Fab Lab would house the “dirty” functions such as welding.
 - Shared Space would have “clean” functions such as CNC, and 3D Printers.



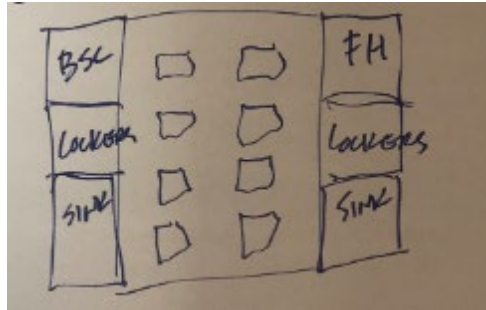
- c. Distribution of materials will drive the equipment for that space.
- d. Wood Materials:
 - EYP noted that by building code woodworking needs to be isolated from other materials.
 - Access to wood cutting equipment, not necessarily a “wood shop”.
 - Wood storage should be in the “wood space”.
 - Equipment: Bandsaws, Miter saws, Routers, Table saw, Dust collection, Sanding table, Drill press
 - Access to compressor
 - Space to maneuver 4x8 sheet of plywood
- e. Metals and Composites:
 - Predominate use of the Advanced Manufacturing Lab and Fab Lab will be processing of metals
 - Metals and Composites storage is smaller: long tubes, smaller pieces.
 - Equipment: Drill Press, Band Saws, Snorkel
- f. Project Storage:
 - Students store their projects in lockers.
 - Need larger, bay-like, fenced-off space
 - Students store raw materials and project work
 - Plan for 40 individual student project bays
 - 75% of the space should be for larger projects.
 - 3' x 3' x 4' is a good standard size for large projects.

- g. Electronics / Circuits Lab:
 - Dedicated space for electronics, circuits, and clean project work.
 - Can accommodate some of the Bioengineering projects that don't need wet lab space.
- h. Diagram below illustrates various needs for Fab Lab.



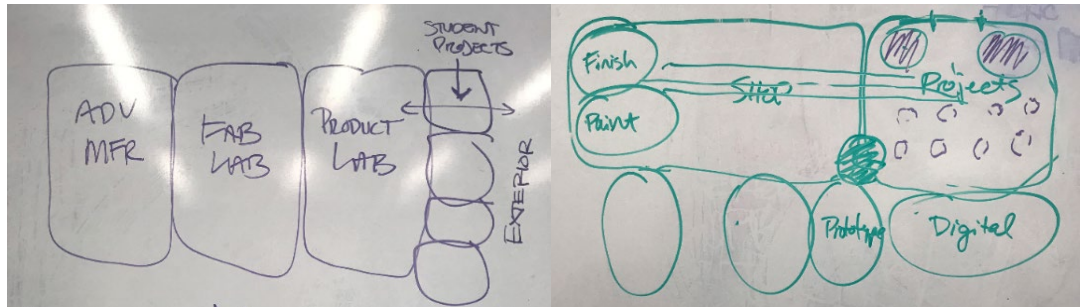
4. Bioengineering:

- a. Biomaterials based projects; Bio printing, tissue samples, cell culture (wet lab).
- b. Brian asked if students go back to the lab after hours to do this project work.
 - Shani responded, yes. They go back to do cell culture and need access to a Biosafety Cabinet, Fume Hood, Mechanical testing etc.
- c. Equipment:
 - Cell Culture /BSC
 - Fume Hood
 - Mechanical Testing- Tissue Sampling
 - Centrifuge
 - Oxygen and Nitrogen
 - Microscopes
 - Utilize Central Autoclave
- d. # of Students: 10-20% of the Senior Design Projects.
 - Plan for 4-5 projects (group of 4-5 students)
- e. Brian drew diagram of College of New Jersey concept (see diagram below). It was agreed this was more than what is currently needed to meet project needs for Bioengineering. Students can use other wet lab space in the building and for non-wet lab, but clean work, can use Electronics / Circuits Lab in Fab Lab.



5. Product Realization Lab:

- a. Less equipment intensive, more open space tables for students to put together projects and meet.
- b. # of Students: 30 students
 - 5 or 6 groups
 - Group size is 4-5 students; ideally 4
- c. Equipment/Needs:
 - Tables (4' x 6'); mix of Resin top, Metal top, Wood Butcher Block top (12)
 - Sinks
 - Place to dispose of liquids and oils (not down the drain)
 - Recycle station
 - Lockers
 - Deep Cabinets (under bench) w/work surfaces
 - Pegboards
 - Hand tools / soldering
- d. Melissa asked the group to think interdisciplinary uses.
 - Amanda responded to include areas of congregation, presentation space or space to practice presentations with groups.
 - Pitch rooms
 - Locate building shared study spaces strategically nearby the Product Realization Lab
 - "Collision" space nearby
 - Plan for 50 students, including interdisciplinary uses.
- e. Adjacencies:
 - Adjacent to the Fab Lab
 - Oscar asked for a "Jack and Jill" layout: Advanced Manufacturing on one side and the Product Realization Lab on the other side (of the Fab Lab).
 - Students will build in the Fab Lab, cut pieces, and meet their team in the realization lab to put it all together.
 - The design team drew two diagrams on the board:



6. Design Competition Space:

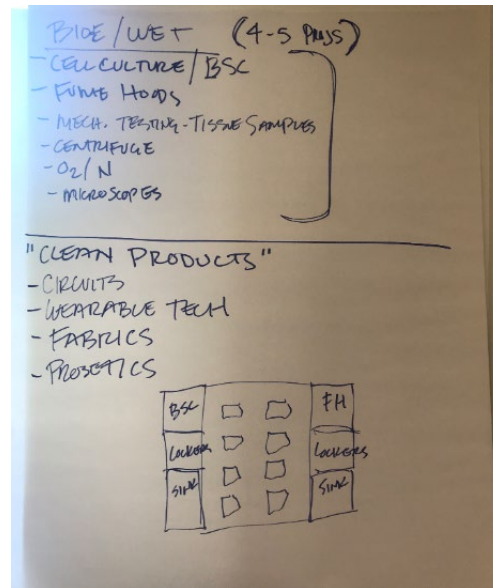
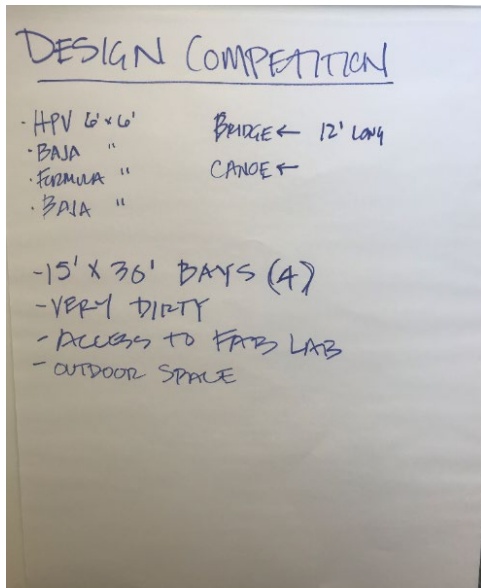
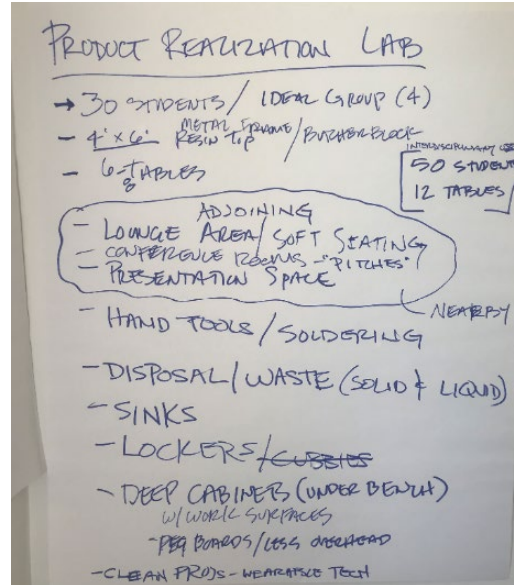
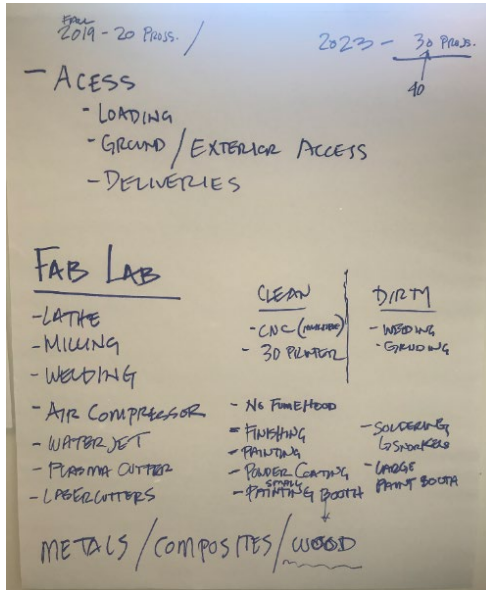
- a. Assume 4 competition projects at a time.
- b. Example Competitions:
 - Concrete Canoe
 - HPV Bike
 - Baja
 - Formula
 - Solar Car
 - Steel Bridge, 12' long
- c. 15' x 30' Bays
- d. Very dirty spaces
- e. Outdoor Space
- f. Could there be a cleaner space for "clean fabrication"?
 - Electronics, Gel Materials, Textiles
 - Potentially part of the Bioengineering lab
 - Clean Electronics
 - Soldering area within the Product Realization Lab

7. Digital Design Lab:

- a. Modeling something virtually
- b. Learn skills to run the CNC machine and laser cutters
- c. Modeling and simulation
- d. Synergy of being near the Fab Lab
- e. Students will bring their own device. Need space for students to plug in.
 - Large Monitors for students to connect to
 - Teams can work around the monitors
 - "Computer Commons"
- f. Discussed that this space could be part of larger building commons or informal learning spaces

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Notes from Meeting:



End of Meeting

The above constitutes my understanding of the items discussed and the decisions reached. If there are any additions or corrections, please, contact the undersigned.

Signed: Rebecca Ross / Brian Tucker

Cc: Attendees

Date: June 26, 2019