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ME 410 Kaizen

Goal: Develop a 5s system for senior design teams in the senior design suite and methods for the suite that allow for continual improvement projects.

- **Kaizen:** The philosophy of continual improvement, that every process can and should be continually evaluated and improved in terms of time required, resources used, resultant quality, and other aspects relevant to the process.
- **5S -** refers to the five words **seiri**, **seiton**, **seison**, **seiketsu**, **shitsuke**. These words are shorthand expressions for principles of maintaining an effective, efficient workplace
  o **Seiri (*Sort*)** - eliminating everything not required for the work being performed. Sort what is not needed. Use the red tag system of tagging items considered not needed, then give everyone a chance to indicate if the items really are needed. Any red tagged item for which no one identifies a need is eliminated.
  o **Seiton (*Straighten*)** - efficient placement and arrangement of equipment and material. Straighten what must be kept. Make things visible. Put tools on peg board and outline the tool so its location can be readily identified. Apply the saying "a place for everything and everything in a place."
  o **Seison (*Scrub*)** - tidiness and cleanliness. Scrub everything that remains. Clean and paint to provide a pleasing appearance.
  o **Seiketsu (*Spread*)** - ongoing, standardized, continually improving *seiri, seiton, seison.* Spread the clean /check routine. When others see the improvements in the Kaizen area, give them the training and the time to improve their work area.
  o **Shitsuke (*Standardization*)** - discipline with leadership. Sustain and self-discipline. Establish a cleaning schedule. Use downtime to clean and straighten area.

Needs:

  ➢ A system for groups to gage their performance with.
  ➢ A room that allows groups to continually improve their performance by meeting their high tempo needs.

Objectives: 5s system will:

  ✓ Eliminate the need to find tools in the assembly room
  ✓ Eliminate disorder in the assembly room
  ✓ Provide a method for cleanup
  ✓ Eliminate theft
  ✓ Set a standard of continual improvement and leadership that embodies University of Idaho Engineering.

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Constraints:

- Floor Space
- Cost
- Number of Available tools
- 11 worktables
- Utilities access

Outcomes:

⇒ Everything has a place and is in its place
⇒ Room will be clean and remain clean
⇒ Teams will function more effectively and efficiently in their workspaces.
⇒ Reduce and eventually eliminate muda (waste).

Philosophies:

❖ *Ownership* creates responsibility: Teams take ownership of there own projects but right now have no ownership over workspace. If we assign teams spaces for the year they will be more responsible with them.

❖ *Competition* promotes change: Teams that are vying for some award/incentive for workspace will continually improve to better each other. Even though the University is the winner in the end, a little competition forces us to change to compete.

❖ *Ways* create muda (waste): If there is only one way of doing something, you can't do it wrong. The right way is the only way and that's what the assembly room must require.

Methods:

✓ Assign each team a work table and associated space with their name on it (this is each team's footprint, footprint size varies with project and team size)

✓ Each work table has a tool holster that affixes to the edge with basic tools (calipers, screwdrivers, vice grips, etc), each tool has its own hole so at the end of the day it is easy to see which one is missing.

✓ A centralized tool box will cater to all of the teams with a checklist for every tool, in it, these more specialized tools (not as often used) will be easily found as the person and team using them must sign off on them to take them out of the room (similar to shop).

- ✓ Lines color coordinated and painted or taped on the floor will coordinate and separate tools (color painted handles) and team areas.

- ✓ A caged area underneath each work space with a lock would allow students to store valuables in the shop, reduce theft and keep others from tampering with projects.

- ✓ A portable cart with garbage and room cleaning supplies similar to the cart in the machine shop.

- ✓ A lubrication, chemicals, tapes, and fasteners cabinet for everything all ready in the shop and be treated similarly to the central toolbox on a check out item basis.

- ✓ Posters containing relevant information such as decimal equivalents etc, would help cover the drab walls.

- ✓ A system for continual improvement would be a Kaizen Star. Each team will have a Kaizen Star. A group of peer evaluators will be responsible for awarding each of the five points to the Kaizen Star. When a team has an efficient work area day after day, they should have a complete Kaizen star. Once each team's Kaizen star is complete they will be eligible for weekly or monthly prizes based on the level of there performance and continual improvement.

Plan:

1. To begin the process the senior design suite needs to be sorted. The red tag system would work.

2. Put everything in order starting with all of the tools in the room. Once an inventory is created we can separate and paint the tools to set them in there individual categories.

3. Build system for the tool storage on each individual table top.

4. Construct locker system underneath the tables.

5. Construct or designate a cabinet for fasteners, chemicals and lubricants.

6. Put all the tools and necessary items in there place.

7. Clean everything that remains.

8. Put up posters about the Kaizen project and how individual teams can work with it.

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9. Put up posters about relevant information.

10. Establish a cleaning schedule.

11. Assign ownership of teams to there work areas.

12. Implement rewards system to promote cleanliness.

Sample Budget:

Sample Budget for Senior Design Suite Methods		
Task:	*Time Commitment:*	*Financial Commitment:*
Painting/taping Floor and Tool handles	Moderate	low $20 for gallon of paint
Cleaning Room	Large	none
Organizing Tools	Large	none
Build Tool Holsters	Moderate	Moderate, $30 material
Cleaning Cart	Moderate	Large, $100 material supplies
Lockers underneath tables	Large	Large, $100 material supplies
Cabinet	Moderate	Large, $100 if bought
Posters	Small	Moderate, depends on posters
Kaizen Star	Large	Moderate, $30 material
Everything in it's place	Moderate (ideally)	none

Appendix :
I. A clean work table:

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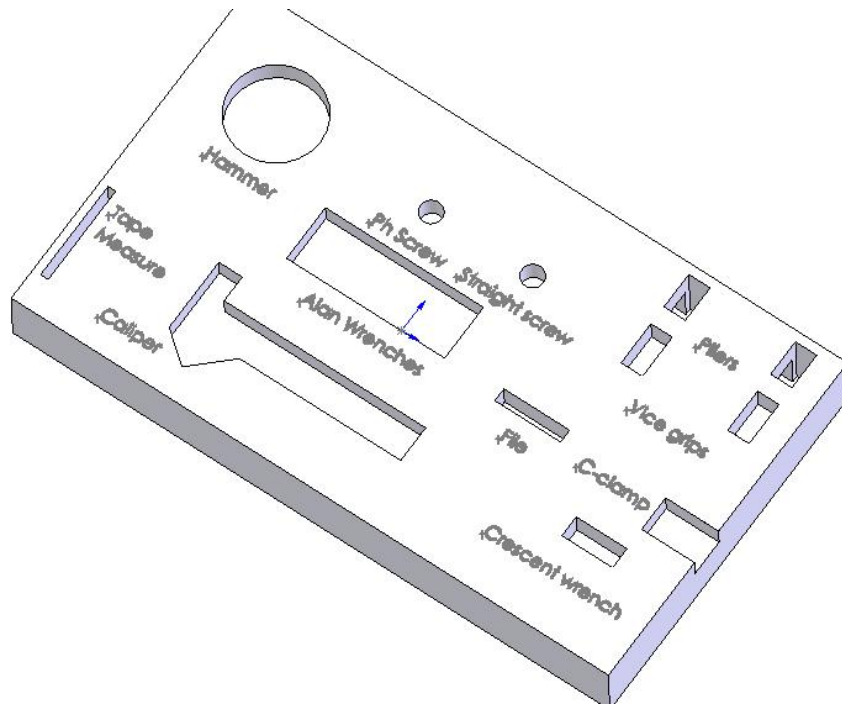## II. A messy work table:

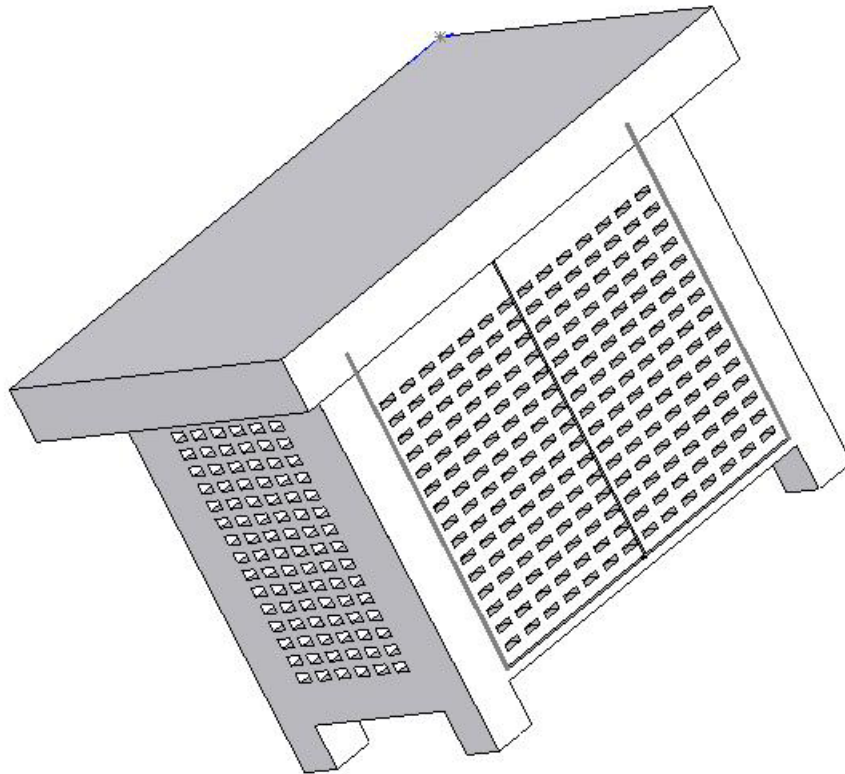## III. Sample Cleaning Cart:

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IV. Sample Tool Holder:

V. Sample Locker/worktable:

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VI. A sample Kaizen Star:

Sort

Standardize

Straighten

Efficiency

Spread

Scrub