Dynamic Design: The Cleanroom

Putting It All Together

SCORING RUBRIC

Planning

	4	3	2	1
Materials needed based on array map. Tools and component parts are accounted for in the planning process.	• Planning takes into account all materials and tools needed. • Plans include accounting for all materials at all stages of project.	• Planning takes into account most of the materials but not at necessarily at all stages of project	• Planning takes into account some of the materials but there is a poor accounting system throughout the project.	• Many necessary materials are not included. • There is no way to track materials throughout the project.
Stages of project: • Obtaining correct number and type of material. • Washing tools, screws and retainers. • Cutting out the correct number of each type of wafer. • Assembly	• All stages are included in planning. • There are very detailed procedures for each of the categories. • Plans include places for recording comments and places for responsible group members to sign.	• All of the stages are included, however the level of detail for completing each of the stages is not adequate for completing each stage.	• All of the stages are included. There is no plan under each category.	• Most of the stages of the project are included, but one or more step is missing.

Washing

	4	3	2	1
Washing Procedure: • Gloves worn. • Hot soapy water one tub. • Clean water in the other tub. • First side rubbed 10 times. • Second side gets rubbed 10 times. • Placed in rinse tub. • Repeat. Change water. • Repeat. Cascade Tank	• All students participate by demonstrating and describing each step in the washing procedure.	• Most students participate by demonstrating or describing most of the steps in the washing procedure.	• Some of the students participate by describing some of the steps in the washing procedure.	• One student shows some of the steps of the procedure.
Knowledge of Washing Details: • Water Temperature (65 degrees Celsius). • Soap breaks surface tension. • Keep it wet. • Don't let it dry with soap on it.	• The students in the group know **all four** of the washing details.	• The students know **three** of the four washing details.	• The students know **two** of the four washing details.	• The students know **one** of the washing details.

Assembly

	4	3	2	1

Assembly Procedure:
• The array is assembled in the vertical position.
• Three roles are demonstrated.
  - wafer holder
  - retainer holders
  - screws
• Gloves are worn and proper tools are used.
• Sequence
  - bottom retainers
  - wafer placement
  - top retainer
  - screw
	• All three roles are demonstrated throughout the simulation.
	• Gloves are worn at all times.
	• Array is vertical during assembly.
	• Proper tools are used when holding parts.
	• The proper sequence is demonstrated.
		• All three roles are demonstrated most of the time.
		• Gloves are worn at all times.
		• Array is vertical during assembly.
		• Proper tools are used most of the time when holding parts.
		• The sequence is close to being correct.
			• The three roles are demonstrated during some of the simulation.
			• Gloves are worn most of the time.
			• Array is vertical during assembly.
			• Tools were used sometimes but there were times when wrong tools or no tools were used.
			• The sequence is not correct most of the time.
				• The roles are not demonstrated during the simulation.
				• Gloves are not worn.
				• Tools were used at times.
				• No sequence is shown.
				• Wafers are just placed on the frame.

Product

	4	3	2	1
• The frame is assembled such that the wafers are in the same sequence as the map. • The map has clearly a clearly identified key. • Silicon is on the outer border of the frame. • No two wafers are touching.	• Array frame matches perfectly with the map. • Map has a key that makes identifying the different materials easy on the array. • Silicon is on the outer border of the array. • No wafers are touching their neighbors.	• Array frame matches the map for the most part. • There may be one or two wafers out of place. • Silicon is on the outer border in the majority of the frame. • Most wafers are not touching their neighbor.	• There are several inconsistencies with the map. • Several non-silicon wafers are located on the border of the array. • Several wafers are touching their neighbor.	• The array frame does not match the attached map. • There are very few silicon wafers on the outer border of the array. • Most wafers are touching their neighbor.