

Spider – Lesson Plan #2

***Instructors MUST fill out the attendance sheet.**

1. Assembly of body and gluing (10 mins)

- First, assemble the entire body without applying any glue. Do so in order for the students to understand what the body is supposed to look like (they will not be able to assemble it wrong due to the parts' symmetry)
- Next, take out one part at a time and apply glue on the connections. When finished, wipe out all remaining glue so that the parts dry faster.
- Take apart the other side of the body and, again, apply glue on the sides of the connections. Then put each part back in its place, and wipe remaining glue.

2. Screwing of Servo heads (crosses) onto legs (15 mins)

- Explain and demonstrate how to assemble the hinges on the legs using a driller screw that widens and locks the hinge in its place (we don't care about the side of the screwing, but notice where the legs are placed)
- Explain how to insert screws in parallel manner. Insert one screw halfway, then insert another screw halfway. Only once they are both in halfway, they should start strengthening them a little on each side until both screws are locked and strengthened (notice students do not screw too tightly so that the cross does not break)

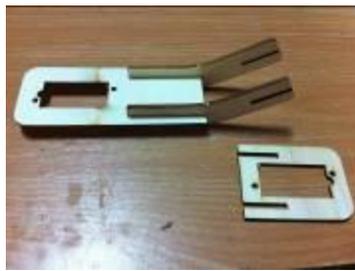
3. Disassemble and file legs (15 mins)

- Emphasize that while disassembling and filing, students must be careful with the screws that have already been inserted, because they are sharp on the tip.
- Demonstrate correct disassembly (round motion) without creating too much pressure on the parts to avoid breaking them.
- File unnecessary wood chips off legs.

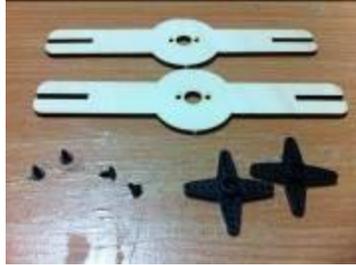
4. Collect robots (5 mins)

- Check gluing, screwing and connections in each student's robot.
- Write student's name on each robot and store in safe place.

Time in minutes	Name of activity	Additional comments
10	Assemble body and glue	Verify that there are no spaces left
15	Screw hinges onto legs	Teach parallel screwing
15	Legs disassembly and filing	Emphasize sharp screws and being careful while filing
15	Assembly and gluing of legs	Make sure the hinge is facing upward
5	Collect robots	
Total: 60 minutes		



Assemble the body, and make sure all parts are connected well.



Disassemble the part and screw in the servo crosses. Clarify to students how to insert the screws correctly!!! The photos below show how to insert screws correctly step by step.



Bug screw is always screwed into the wood first, and only then into the cross!

Screw in parallel manner – Insert the 2 bug screws until their tip sticks out a bit from the other side. Then continue tightening the screws until they are fully inserted.



Place the servo cross exactly in the middle of the wooden circle. **The servo's part that sticks out should face upward (and not go inside the circle)**

The screws should be inserted into the most inner holes of the cross. After the screws are inserted, double check and make sure there is no space between the cross and the wood!



This is what the parts look like after inserting and strengthening the screws.



Disassemble and file the remaining wooden parts – the legs
Glue the legs as shown in the center photo!

Put an emphasis on direction of gluing!!! The cross MUST be at the leg's top part (as seen in the left photo)