



WEEK 1 UPDATE

We have started another difficult but rewarding six week build season. As always, each FRC team is given an identical challenge at the exact same time. How they go about it is an entirely different matter.

We watched the game release with our Lakeshore FIRST coalition, as well as a guest rookie teams from Green Bay and Kiel. This years' game is Recycle Rush. Recycle Rush is a recycling-themed game played by two Alliances of three robots each. Robots score points by stacking totes on scoring

platforms, capping those stacks with recycling containers, and properly disposing of pool noodles, representing litter.

Once we had a solid concept of the overall game we broke down into separate groups within each team. Each group took a portion of the game rulebook and wrote up key information that they found. After lunch each team broke off again, and voted on team strategies for the season.



During our first meeting, we decided on our drive base. We drew up a Pugh matrix, which rates mechanisms mathematically based on performance and importance. Using this information, we decided to use a meccanum drive, which is able to move in any direction at any time.

Due to a major rule change in this years' game, we literally started thinking outside the box. In years past, we've had a 112" frame perimeter with a limited size and length of extensions. This year, our robot can extend to any size, as long as it starts in a 42"-28"-78" transport configuration. We shot around some ideas, which included a second robot tethered to our mother bot, and a Gantry crane.

Our next task was to begin our prototyping for this season. We collected the ideas from the previous days, and ran them through another Pugh matrix. Our top three winners are currently being prototyped. During this design process our mentors have been helping us applying as many engineering principles as possible. This is helping us draw a comparison to what we will see in real world industry.

**STEMpunk # 4531
DRIVE-TRAIN Pugh matrix**

| QUALIFICATIONS | WEIGHT | Meccanum | swerve/crab | tank | 2 omni/2 paxion |
|-----------------------------------|--------|------------|-------------|------------|-----------------|
| 5 = GOOD/EASY 1 = BAD/HARD | | | | | |
| ease of programming | 3 | 4 | 2 | 5 | 5 |
| agility/maneuverability/precision | 5 | 4 | 5 | 1 | 2 |
| speed | 1 | 3 | 4 | 5 | 5 |
| cost | 1 | 3 | 1 | 5 | 5 |
| traction | 1 | 3 | 5 | 5 | 4 |
| complexity/ease of mfg | 5 | 4 | 1 | 5 | 5 |
| aesthetic | 1 | 4 | 5 | 2 | 3 |
| weight | 4 | 3 | 2 | 4 | 4 |
| power consumption/ # of motors | 2 | 3 | 1 | 5 | 5 |
| packaging | 4 | 4 | 3 | 2 | 5 |
| ability to play the game | 5 | 5 | 5 | 1 | 1 |
| reliability | 4 | 4 | 1 | 5 | 5 |
| TOTAL | | 140 | 102 | 121 | 138 |

**Thank you for your continuing support!
FIRST Team STEMPunk #4531**