BASIS OF 781's DESIGN PERSPECTIVE

When you design something, you are coming up with a solution to an existing problem. Here is the basis behind how we, as a team, try to come up with solutions to our design problems.

FIND OUT WHAT, THEN HOW

To find out HOW to solve the problem, you must first find WHAT the problem actually is. This way, you explore all the options of the problem, and methods of achieving your goal, without conforming to any pre-conceived ideas on how it is "supposed" to be done.

DON'T ASSUME

Don't assume that an action has to be performed in a certain way because of convention, innovation is key to coming up with better solutions.
Don't assume certain problems exist if they do not. Lay out the details, order your priorities, and test to see what you might run into.

LAYOUT YOUR DESIGN PRIORITIES

After finding out what problem you need to solve and brainstorming on different ways of solving it, you will have to choose the system that works best for your design (or a few to do further testing on).
To do this, you will need to prioritize different qualities that each system may have, and then use Weighted Objective Tables to rank them. If there is a question how certain systems score on certain qualities, or how they would compare, try to design a test that would find the solution, instead of guessing. More info on WOTS by JVN of 148 (http://www.chiefdelphi.com/media/papers/2175).
There are plenty of factors that could be listed depending on the situation, but we find, that there are 3 that are always there.
1. Reliability
2. Accuracy
3. Speed
We also always put them in that order.

Reliability is most important, because at the very least, your robot needs to be able to work, maybe not score points, maybe not even play defense, but you had better not be that dead robot that got in your teammates way…

Ok, so your robot is working and you don't need to fix it all the time, good. Next is accuracy, because if you do something wrong over and over again very quickly, that will not help you. It is more important to make what you are doing with your time more worthwhile by being accurate.

Speed is last. Still very important of course, if you can get the first two criteria done, you can continually try to decrease the time that it takes you to score, but in the end, if you don't have the first two, this one doesn't matter. No one cares how fast you could possibly be driving across the field … if your drivetrain wasn't broken. No one cares how fast you could be scoring those points…if your system was more accurate of course.

We also believe that this order carries on outside of just FRC robot design, and that this is how many systems already do, or should order their priorities.