Structure

Robolancers

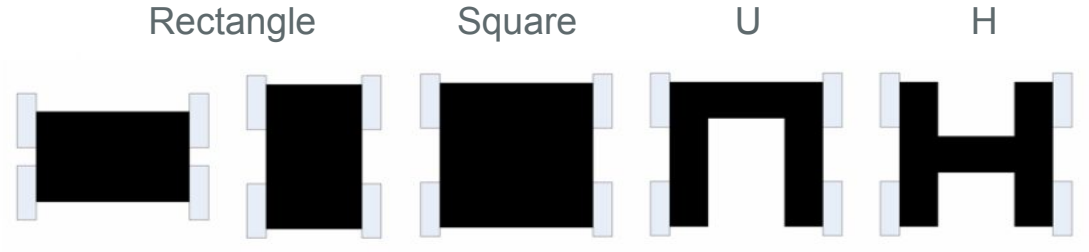
What will you use?

TETRIX Kit of parts

- C-Channel
- Brackets (L, Flat)
- Plates
- Connectors
- Bolts
- Nuts
- Hubs
- Gears
- etc.

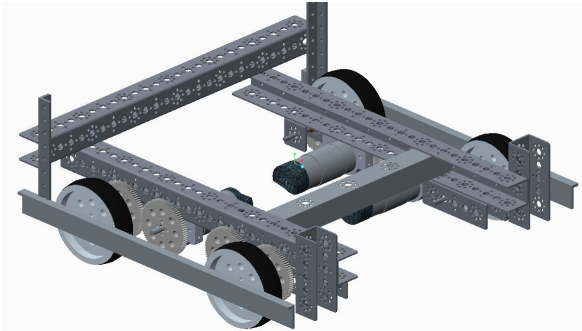
Chassis

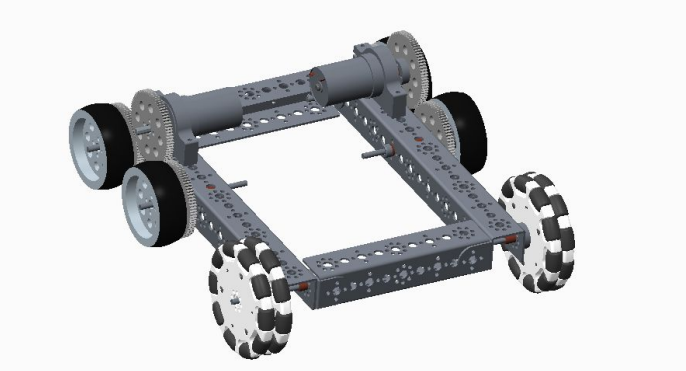
- Foundation of your robot
  - Will be the base in which everything else will be mounted on
- Shape depends on your goals
  - Square - Middle ground/ typical design
  - Rectangular - Can be useful for turns, structure integrity
  - “U” - More space in the “front portion”
  - “H” - Has space on the front and back of the robot



Wheels and Chassis Design

- Be mindful of space
  - Matter takes up space
  - No unnecessary restrictions
- How many wheels?
  - More Wheels - More motors takes up more space taken up and heavier, but more traction
  - Fewer Wheels - Less motors, takes up less space and lighter, but less traction
  - Omni Wheels -Wheels that can go both
    - Forward and backwards
    - Side to side





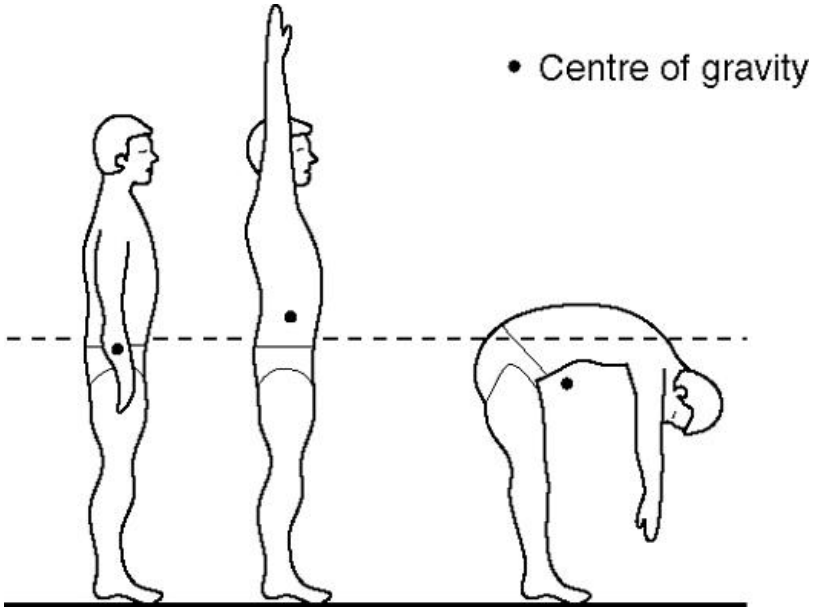
Physics Concepts

Weight

- Weight= gravity x mass
- Mass measures inertia (Property of staying in place unless moved by something external)
    - E.x. Bowling balls and soccer balls
- More weight and more inertia
    - Harder to be moved and move self
- Less weight and less inertia
    - Easier to be moved and move self

Center of Gravity and How to Find It

- Average distribution of the weight of the object.
- Methods of finding center of gravity
  - Poke Test - you poke something at something on a low friction surface and it moves straight, you have found the center of gravity
  - Physics Equations



Triangles

Triangular structures are good for reinforcement.

- Maintains shape
- Try to use when connecting two perpendicular parts together
- Cannot deform without breaking
    - E.x. bridges and trusses