Overview
The controls for the John Deere WHP36A walk behind mower are not intuitive for the user and cause strain in the hand when used for prolonged periods of time. The goal was to eliminate two Operator Presence Levers, and two steering levers and replace them with integrated electronic controls for comfort and ease of use. Force Sensors were used to replace the Operator Presence Levers, and joysticks were used to replace the steering levers.

Objectives
- Research ways of replacing Operator Presence System
- Generate Concepts for replacing the Operator Presence and Steering
- Design a prototype that demonstrates the concept
- Build a working Prototype for the Design Showcase
- Create Bill of Materials, Part Drawings, Installation Instructions, Operator Instructions, and Parts removed list

Approach
- The customer needs were given to us by John Deere. The mower should be comfortable and intuitive to use for extended periods of time
- Our team used a 6-3-5 method of concept generation to generate concepts and scored them to get the winning concept
- Our team found the design requirements from inspection of the mower
- We set about building and completing the stages of the prototype
- The prototype was tested under simulated mowing conditions
- Data was qualitative to see if comfort and/or intuitiveness improved

Outcomes
- The sponsor has a working prototype for future improvement
- The joysticks reduce the strain on the operator’s hand by reducing force applied
- The mower is intuitive in the sense it will not move if the operator releases controls
- An additional safety measure was added; The mower will not move if the operator is not pushing the joystick forward.