

Capstone Class Project: Lawn Tractor Loader

The Associates Degrees from both the Mechanical and Manufacturing Engineering Technology areas at Lakeland Community College currently require students to complete a project based capstone course. Three students chose to make a working prototype of a loader bucket for a lawn tractor. A detailed list of criteria was created for the loader bucket mechanism which included the following:

- It can be attached to either the front or rear of a lawn tractor.
- It will use only one 12 volt winch for power.
- The bucket will raise high enough to dump into a trailer.
- For safety reasons, the bucket will lock in position if the lifting mechanism fails.
- The bucket can be detached to permit other implements using the same winch such as a plow blade, crane, dump trailer, or winch.
- The cost is to be less than \$300.

The students brainstormed several versions, made a test version to determine functionality, and decided to proceed with the version shown in the pictures. They created CAD drawings for the parts and assemblies, determined the costs for the parts, analyzed the critical areas of functionality, and machined, bent, and welded their project to completion. Thanks to Lake Erie Lawn & Garden who graciously provided the John Deere tractor, the students were able to test how well their creation worked. As the videos show, both the students and the loader bucket attachment were successful!

Pictured left to right: Justin Miller, Jeff Nosse, and Derrick Sanislo

