Registration Form

TEAM INFORMATION

Team Name/Project Title: Odyssey/NASA Human Exploration Rover Challenge

Department: Mechanical Engineering

Faculty Advisor: Joe Cullen

Team Members: Josh Brill, Jeffrey Deutsch, Will Glass, Jessie Kreutzer, Luke Makowski, Ryan McCort, Kayla McDermott, Kyle Osborne, Bobby Sallee, Khyrsten Tatum, Tony Tieu, Alex Wamain, Nathan Webster, Tyler Wilson

PROJECT INFORMATION

Description:
A human powered rover capable of traversing hazardous off road terrain found on various celestial bodies.

Abstract:
The Odyssey Rover was designed to compete in a 2018 NASA Human Exploration Rover Challenge in Huntsville, Alabama. It was designed to overcome various different terrains that are experienced on other celestial bodies, such as the moon and Mars. The 14 member team of mechanical engineering students split into 6 sub teams focusing on the various different components; drivetrain, frame, seats, steering, suspension and wheels.

The drivetrain focused on component selection and sizing to improve low-end performance and remove the gearbox from the forward section of the frame and rear wheel hub to free up room for other components and design considerations. The frame team focused on the adaptation of a modular stringer design for better ergonomics, and utilization of cutting edge composite materials to replace steel components to produce a lighter more robust rover. The seats were designed to incorporate ergonomics and adjustability to NASA astronaut ergonomic guidelines. The steering team sought to create a control system for the driver that provides proper Ackerman steering geometry to navigate the terrain. Suspension focused on creating a stable vehicle with fully independent suspension that adapts to various types of terrain. The wheels team developed a hollow carbon fiber wheel with a foam-rubber tread that provided a proper contact patch with the ground that gave the vehicle the traction it required to navigate various types of terrain.

During the competition, CU Denver Odyssey Rover placed second among college teams as well as gained the featherweight award for the fastest and lightest rover to complete the course.

(rev 03/16/2018)