



## SENIOR DESIGN ORGANIZATION SYNOPSIS – SPRING 2014

### REMOTELY OPERATED UNDERWATER VEHICLE (ROV)

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The purpose of this project is to design and build a Remotely Operated Vessel (ROV) in order to participate in the Marine Advanced Technology Education (MATE) ROV competition. This competition requires our team to design and construct a vessel that can submerge, conduct surveys, collect data, and perform tasks related to ocean conservation. This vessel must provide operator feedback and be designed to accommodate the requirements set forth by the competition guidelines.

Currently our team is evaluating our preliminary design and determining the various requirements which the onboard hardware will have to meet. This early design stage is being performed with a goal of identifying areas in which improvements can be made and to begin outlining control systems for the platform. The focus of this project is to complete an ROV capable of multiple tasks at a low budget without sacrificing operational capabilities. One of the team’s primary objectives is designing the ROV to be modular. This will allow for easy repairs and upgrades, expanding the platform’s ability to accommodate many other tasks relevant to underwater work and research outside of the MATE competition.

This project encompasses many disciplines of engineering which will allow our team to develop as engineers and demonstrate our abilities. Some of these disciplines include control systems integration and development, designing a pressure vessel, Fluid Dynamics, and Electrical system implementation. As mechanical engineers our skills in areas like electrical systems and coding control systems may not be advanced, but through the full development and manufacturing of this vessel we can strengthen our weaknesses so that in our future endeavors we will be able to succeed beyond expectation and work as engineers with well-rounded skill sets.

The completed project will have many applications outside the competition which will be expounded upon with further research and development of our ROV platform. With further development, our vessel can be used for tasks as small as surveying coral reefs, to as vast as aiding in live-saving operations in maritime catastrophes. Beyond the MATE competition, our aim for this project is to develop a versatile and inexpensive maritime tool, which can aid in many tasks and the struggle for ocean conservation. With a successful project completion we can achieve this goal as well as push in the right direction for others to further advance the realm of marine technology.