With the aging of the kayak-crazy boomer generation, and the advancement of battery and submersible motor technology due to the multi-billion dollar bass fishing market, we see both a need and an opportunity to design and manufacture the world’s first practical, no compromise, commercially viable electric-powered kayak, the Electro Yak.

Electric boats of various designs have existed for more than a century. The Electric Boat Co., for example, was founded in 1899 and today makes many of America’s advanced nuclear submarines for General Dynamics. With concerns about gas prices, pollution and noise from conventional outboard motors, several recreational boat makers have been experimenting with electric vessels lately and see an increasing market potential. But even though the kayak’s slippery hull form lends itself especially well to electric propulsion, no one has yet designed and marketed an electric kayak for commercial sale.

We think its time has come, but several design issues need to be resolved, including: making the vessel as light as possible so it doesn’t lose its portable appeal; designing the right hull form and features so that the Electro Yak can be both powered and paddled; making both the battery(s) and the motor removable for easy transport; selecting the best battery technology(s) and motor-propeller design; locating the center of gravity correctly to enhance, rather than limit, kayak stability, and producing it all in an elegant, safe, silent, intuitive, user-friendly product that is instantly easy and fun to use.

The ultimate design goal is to produce a reasonably-priced boat that is functionally equal to a conventional kayak – the Electro Yak can be easily paddled if desired, but it has enough power to run for hours and enough speed to equal or surpass a skilled human paddler. We think a product like this will sell
well to the existing kayak community, to resorts worldwide, and to people who enjoy the kayak experience but cannot or do not wish to paddle for hours.

The deliverables will include patent mining, analysis and protection for unique design aspects; a proof-of-concept vehicle (to be completed in the Fall semester); a full examination of the design space and subsequent choice of a final design, with consideration of manufacturing objectives as well as customer experience; and the construction and testing of a final prototype vehicle, suitable for real-world use and demonstration to interested manufacturers.