The following students were selected for 2016:

Amanda Fontenot, coastal environmental science major, School of Coast and Environment
Faculty advisor: John R. White, Department of Oceanography & Coastal Sciences
Fate of Wetland Soil Carbon in Coastal Louisiana's Eroding Coastal Wetlands in Barataria Bay

> The project objective is to gather organic wetland soil cores from eroding coastal marshes. The objectives are to determine organic matter decomposition rates with soil depth intervals. Second objective is to calculate CO2 release to atmosphere annually from coastal land loss maps. Once that is completed, the DOC release rates from eroding marshes need to be determined.

Coleen Cecola, biological services major, Louisiana State University
Faculty advisor: Morgan Kelly, Department of Biological Sciences
Testing for local adaptation among populations of eastern oysters (Crassostrea virginica) inhabiting a natural salinity gradient in in the Gulf of Mexico

> Operating RAD- sequencing quantify genomic variation among populations of *C. virginica* in the Gulf of Mexico. Specifically preparing genomic sequencing libraries for populations from different salinity regimes, and analyzes and sequence data to identify loci that may be responding to salinity.

Connor Tiersch, petroleum engineering major, Louisiana State University
Faculty advisor: Dr. Todd Monroe, Department of Biological and Agricultural Engineering
3-D Printing of Practical Vitrification Devices for Germplasm Repository Development in Aquatic Species

> The project goal is to create self-contained devices to be used in the multiple steps of cryopreservation that can be 3-D printed, permanently labeled, and will standardize methods for vitrification of aquatic species sperm. The development of the vitrification devices consist of prototype designs, testing each design for a standardized level of desired utility, redesigning each prototype and retesting to improve utility, and fabricating enough of the product for beta testing with user groups.

Kelsey Van Dam, biological sciences major, Loyola University
Faculty advisor: Frank Jordan, Department of Biological Sciences and Environment Program
Assessment of recruitment of blue crab larvae into Lake Pontchartrain estuary

> The primary objective of this project is to quantitatively sample and compare abundance of blue crab larvae interior and exterior to the IHNCSB. The data collected will be used to test the hypothesis that construction of the IHNCSB has not adversely affected recruitment of blue crab larvae. The results may be used to inform the design and construction of future projects intended to minimize the effects of the storm surges in coastal Louisiana.

Sara King, renewable natural resources major, Louisiana State University
Faculty advisor: Wei Xu, Department of Renewable Natural Resources
Selection of Dermo disease resistant eastern oyster (Crassostrea virginica) strains with immune related markers

> The project goal is to select natural eastern oyster strains with high dermo-disease-resistance. The strains can potentially used as brood stocks in selective breeding to produce dermo-disease-resistance oysters. In order to attain this goal, it's imperative to select molecular markers, which are closely associated with the eastern oysters with high resistance to infection of *P. marinus* under laboratory conditions. Also, it's important to identify the wild eastern oyster strains with selected molecular markers and select the strains, which can be potentially used for selective breeding.

Sarah Soorya, biological sciences major, Nicholls State University
Faculty advisor: Rajkumar Nathaniel, Department of Biological Sciences
Purification and characterization of bacteriophage protein(s) isolated from V. parahaemolyticus in oysters

> The first goal of the project is to enrich and purify phage preparations in order to obtain sufficiently high enough quantities of phage for SDS-PAGE analysis (protein separation). The final goal of the project is to evaluate phage proteins by subjecting purified phage to protein to gel electrophoresis in order to characterize the bacteriophage.

Shannon Matzke, coastal environmental science major, School of Coast and Environment
Faculty advisor: Tracy Quirk, Department of Oceanography and Coastal Sciences
Influence of Nature Availability, Sediment Supply, and Elevation on Productivity of Spartina patens

> The primary goal of the proposed research is to examine the interaction between nutrient availability, sedimentation, and elevation on the productivity of *Spartina patens* in a controlled greenhouse experiment.

Viet Dao, environmental science and research major, School of Coast and Environment
Faculty advisor: Crystal Johnson, Department of Environmental Sciences
Fire and bacterial diversity in marsh oils

> The goal of the project is quantify the extent of bacterial diversity before and after prescribed fires and compare this diversity to the diversity in non-burned areas.

Ryan Brown, biology major, Nicholls State University
Faculty advisor: Raj Boopathy, Department of Biological Sciences
Does Salinity have an Impact on Antibiotic Resistant Bacteria and Antibiotic Resistance Genes in the Bayous of Southeast Louisiana?

The most important goal of this project is to monitor the presence of the antibiotic resistant bacteria and antibiotic resistance genes in three differing salinity gradients in southeast Louisiana for a 10-month period. The objectives to accomplishing this goal are to monitor the fecal coliform levels each month using the fecal coliform assay, quantify the abundance of bacteria sing heterotrophic late counts, and monitor the presence of *Enterobacter cloacae/aerogenes*, *Enterococci spp*. and *E. coli* and their resistance to select relevant antibiotics. Along with those objectives, it's essential to monitor the presence of antibiotic resistance genes (ARGs), *namely, ermB, sull, tet A, tetX, tetW,* and *mecA* using molecular techniques. Observing the variance in the presence of ARGs in comparison to site salinity concentration and monitoring water quality along with educating the local public on the importance of preventing pollution and keeping good water quality.

Cary Michelle Darbonne, environmental science major, University of New Orleans
Faculty advisor: Malay Ghose- Hajra, Department of Civil and Environmental Engineering
Use of Unmanned Aircraft Systems (UASs) to monitor coastal hazard, design mitigation measures, and evaluate long-term health of Louisiana coastline

There are several objectives for this project. First, usage of an unmanned aircraft system (UAS) is important to conduct geospatial aerial survey of coastal Louisiana to evaluate and monitor coastal and loss. Second, use an UAS to monitor performance of coastal protection features like levees (erosion, seepage, etc.), floodwalls (erosion, tilt, settlement, etc.) and pumping stations (settlement, flow, etc.). Next, use the aerial survey data and georeferenced imagery to develop a GIS based database of coastal features that can be used by researchers, engineers, and scientists during the planning, design, and construction of coastal restoration and protection projects. Finally, develop guidelines for beneficial use of UAS in Louisiana coastal restoration and protection projects.

Ryan Hoffman, biological sciences major, Louisiana State University
Faculty advisor: Fernando Galvez, Department of Biological Sciences
Physiological resilience of coastal marine fish to hypoxia

The objectives of the proposed research are two-fold. First, we will assess the tolerance of various species of related marsh fish to acute hypoxia exposure. Adaptation to fluctuating environments has rendered some species within the family Fundulidae more physiologically plastic. In particular, species such *as F. grandis, F. confluentus, F. similis*, and *L. parva*, are likely to be exceptional in their capacity to tolerate low environmental oxygen due to their persistence in variable, estuarine environments (Griffith, 1974). Other species, such as *F. olivaceus, L. goodei,* and *F. catanatus*, live in comparably more stable environments, and, at least from the perspective of salinity tolerance, have been shown to be much less physiologically plastic (Griffith, 1974; Whitehead, 2010). Second, we will determine how acclimation to either chronic hypoxia or to diurnal fluctuations in dissolved oxygen influence hypoxia tolerance limits and metabolism in marsh fish. This study will provide information about the physiological plasticity of hypoxia tolerance as a function of both hypoxia acclimation regime and the variability in species habitat.

TBD, coastal engineering major, Louisiana State University
Faculty advisor: Pl - Navid H. Jafari and CO- Pl –Qin J. Chen
Effect of Soil Strength and Vegetation on Marsh Edge Erosion for Louisiana Coastal Protection and Restoration

The proposed project aims to enhance the fidelity of marsh edge erosion predictions in coastal Louisiana, specifically in Terrebonne Bay and Breton Sound, for improved coastal restoration and management. The major objectives are to identify the soil and vegetation properties that influence erosional resistance; and to propose a field-validated marsh edge erosion model that incorporates coastal, geotechnical, and ecological engineering parameters.