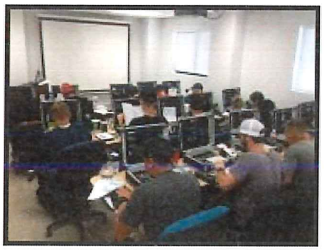
THE UNIVERSITY OF SOUTHERN MISSISSIPPI

Unmanned Maritime Systems (UMS) Certification

Autonomous vehicles are becoming increasingly involved in routine, innovative, and emergency data collection in the marine environment yet few curricula exist worldwide to train operators for this equipment. This certification will provide students with a working knowledge on the operation of a variety of autonomous marine survey vehicles and to help them to understand the environment in which vehicles operate and how that environment factors into decisions and mission planning.



Students will learn foundational material upon which to build more detailed training on specific platforms, including UUVs (Unmanned Undersea Vehicles including powered vehicles as well as gliders) and USVs (Unmanned Surface Vehicles) intended to provide sufficient background to safely and efficiently operate these vehicles in challenging marine environments. AUV's examined include the ISE Explorer Class AUV, the Woods Hole Seabed AUVthe Bluefin AUV, both Webb and Kongsberg gliders, and Navy vehicles such as the IVERS AUV and Wave Glider. In addition students will be provided electronic workstations and glider kits to assemble and test.

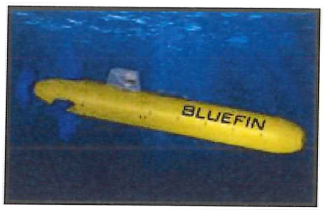
Plan of Study:

- MAR 431: Basic Marine Instrumentation (3 hours)
- MAR 432: Operating Instrumentation in Marine Environments (3 hours)
- MAR 433: Marine Autonomous Vehicles (3 hours)
- MAR 433L: Marine Autonomous Vehicles Lab (1 hour)

Student Learning Outcomes/Objectives:

- SLO1: Students will be able to evaluate the specific requirement of a given mission, consider the environmental limitations, and select the appropriate hardware for the task.
- SLO2: Students will be able to read schematics, assemble electronic components, and program micro-controllers similar to those used in modern undersea vehicles.
- SLO3: Students will be able to properly determine and adjust the ballast and trim of several types of autonomous undersea vehicles varying conditions.
- SLO4: Students will be able to troubleshoot failures in cables, connectors, and simple electronic components.
- SLO5: Students will be able to properly plan a glider mission and write the operational program with which to execute it.
- SLO6: Students will be able to properly plan a powered AUV (Ivers, Remus, ISE, Seabed) mission and write the operational program with

which to execute it.



Navy Unmanned Certification Begins 5/2/2017

- NAVY Students will be first in the nation to earn a certification in Unmanned Maritime Systems at USM. Read Navy article *here. (http://www.navy.mil/submit/display.asp?story_id=100218)*

If you are interested in the USM program, please send an email to Marine Science (mailto:marine.science@usm.edu) or contact us at (228) 688-3177.

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USM Makes History with First Graduating Class of Unmanned Maritime Systems Course

ARTICLE | WED, 06/07/2017 - 8:47AM | BY JAMES SKRMETTA

Students participating in the Unmanned Maritime Systems program learned core fundamentals of using gliders, powered unmanned underwater vehicles, and autonomous surface vehicles.

The University of Southern Mississippi made history on June 1 with 15 students completing a first-of-its-kind certification in Unmanned Maritime Systems (UMS).

"This is akin to what NASA first did with spaceflight," Rear Admiral Timothy Gallaudet said. "This class should be mighty proud because the national impact of this certification and the skills taught throughout the course will be felt for decades."

The UMS program spanned over an intensive five weeks with students studying nautical science, 3-D positioning, ocean policy, and autonomous systems.

"This program was designed to provide a rigorous, hands-on academic program to introduce the students to unmanned maritime systems and the decision processes needed to operate them, " said Monty Graham, Director of USM's School of Ocean Science and Technology (SOST). "Students developed skills in disciplines such as electronics, programming, policy and application."

The 15 students were made up of civilian and military personnel from the Naval Oceanographic Office, Fleet Survey Team and Naval Oceanography Mine Warfare Center based at the John C. Stennis Space Center; Submarine Development Squadron 5 based in Bangor, Washington; Naval Oceanography Special Warfare Center based in San Diego; the National Oceanic and Atmospheric Administration in based in Norfolk, Virginia; and the Naval Undersea Warfare Center based in Newport, Rhode Island.

The class's instructor, SOST's Dr. Vernon Asper, was challenged with packing 10 semester hours of teaching into just five weeks of class time.

"Scheduling was crucial because of how intensive the nature of the class is," Asper said. "Seeing how quickly the students began to grasp the concepts and truly grow their understanding of the unmanned systems was incredibly gratifying as their teacher."

In the five weeks, students learned core fundamentals of using gliders, powered unmanned underwater vehicles, and autonomous surface vehicles. Not only were students responsible for learning how to chart and pilot these vessels, but they also learned how to build them.

"Building the glider really brought a lot of the topics together for the class," Asper said. "Seeing how the vehicle you're using is made from inside to out put everything into perspective for them."

Graham applauded the graduates as they received their certificates from USM President Rodney D. Bennett and Rear Admiral Gallaudet.

"In a normal academic world, 18 hours takes about 15 weeks," Graham said. "These graduates worked every day, all day, for five weeks. Each of you should be very proud of the hard work you've put in to earn these certificates.

The UMS class is the first tier in a 3-tier program. Students going through the entire tier structure will graduate with a full graduate degree.

"Look around the room at your fellow graduates," Gallaudet said. "Each of you has embarked on a journey no one else has attempted. The work you have put in for the last few weeks has advanced the defense of the United States immensely and we can't wait to see what you do next."

About the Author »

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