2015 AWARD WINNER

EXCELLENCE IN ACTION

Science, Technology, Engineering & Mathematics CAREER CLUSTER

BACKGROUND

The ***Marine Academy of Science and Technology (MAST)*** in Highland, New Jersey is a 34-year-old program with a thematic, research-based focus on technology and the marine sciences. To support this theme, MAST utilizes a number of resources, including a nearby National Oceanic and Atmospheric Administration (NOAA) lab, a 65-foot research vessel, *Blue Sea*, and a four-year Naval Science program delivered through the NJROTC.

About the Marine Academy of Science and Technology (MAST)	
Number of Students Served	294
Male: Female Ratio	56% : 44%
Minority Students	7%
Low-income Students	5%

The Marine Biology and Oceanography components of the program evolved from a traditional "marine trades" vocational program into the Career Academy it is today in response to an identified need from the surrounding community. Located on Sandy Hook within the Gateway National Recreation Area, the MAST program of study takes full advantage of the surrounding marine and estuary environments to prepare students for college and careers in the marine sciences. The Systems Engineering component of the program was added in 1999 to prepare learners for marine engineering majors in college and provides students with both the foundational and advanced skills in the design process, technical writing and technical drawing.

COLLEGE *AND* CAREER PREPARDNESS

This unique program of study focuses on academic rigor, utilizing a range of marine themed courses – ninth grade Marine Biology, tenth grade Marine Chemistry, eleventh grade Marine Physics and three marine themed 12th grade capstone courses. Students also can earn up to **17** college credits through dual enrollment and articulated credit agreements with two in-state colleges.

"MAST's efforts are incredibly beneficial to me as a maritime employer and maritime engineering company…The best and brightest are not born, they are made, and MAST makes the best and brightest in a setting that delights the students and the parents and is a source of pride to our community."

Rik van Hemmen, President, Martin, Ottaway, van Hennen & Dolan Inc.

To provide a work-based approach to learning, all science classes are laboratory based, and fully integrated. Instruction is reinforced through field study on land and aboard the school-owned vessel, *Blue Sea*. As seniors, students select a final capstone course that concentrates their study in Marine Research, Systems Engineering II or Directed Field Research, and culminates in a performance assessment, project or portfolio. The year-long course requires students to work with mentors from the private and public sectors, enabling students to appreciate the expectations of industry while applying their academic knowledge, problem-solving and critical thinking skills.

PARTNERSHIPS ARE KEY

Partnerships are integral to the success of MAST's program of study. Not only do they provide work-based learning and mentorship opportunities for students, but they also allow students access to nationally-recognized labs with some of the best scientists in the country. For example, MAST maintains its own research wet lab at NOAA's North East Fisheries Science Center, a major federal laboratory, allowing students to work hand-in-hand with scientists on actual research projects. Students volunteer, intern and return as researchers themselves.

> *"We feel Marine Academy is perfect example of how CTE programs need to evolve as workplace evolves. We rely on partners in community and stakeholders to give us info we need to keep pace with the workforce."*
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> ***Earl Moore, Principal, MAST***

The National Park Service (NPS) is another key partner, and NPS scientists, resource managers and environmental engineers work one-on-one with MAST students as mentors. NPS also provides students field research jobs, providing insights into what a career in the Marine Sciences might look like.

STUDENT SUCCESS BY THE NUMBERS

So what does this all mean? Through exceptional academic expectations and research-based opportunities in the lab and in the field, 100 percent of students in the class of 2014 graduated and continued onto postsecondary education, 50 percent of whom enrolled in a STEM field of study.