

DECEMBER 2012: USNA STEM NEWSLETTER



INSIDE:

LEARNING MATH & SCIENCE THROUGH SAILING

GIRLS' STEM DAY

TEACHERS' TRAINING

MINI-STEMS

TIGER WOOD'S FOUNDATION STEM DAY

NASEC 2012

MESA DAY



STEM SPOTLIGHT

NAME: Eric Emerling

COMPANY: 27

HOMETOWN: Germantown, TN

MAJOR: Chemistry

MSTEM POSITION: President

What is MSTEM?

The MSTEM extracurricular is the organization involved in creating interest in and opportunities for Midshipmen within the Brigade to perform STEM outreach to younger students. While some of the programs are aimed towards candidates interested in attending the Naval Academy or other service academies, many are simply for younger students who may not otherwise get the opportunity to experience what the world of science, technology, engineering, and mathematics has to offer.

What STEM activities have you participated in?

I have participated in SeaPerch building, both with students and training other educators. I worked with the local Young Engineers and Scientists program in Annapolis. For the past two summers I have been involved in running the Summer STEM program held at USNA. In September of 2012, I was able to attend the Czech-U.S. Sustainable Energy Conference in Prague, where I met the current Secretary of the Navy, Ray Mabus.

Your favorite STEM activity?

My favorite activity was the Young Engineers and Scientists program held at local public schools in the Annapolis area. Going to these afterschool programs and watching these young students become excited about science is an amazing sight to see. I was able to work with the students, acting as a mentor and discussing how they can develop a passion for and a future in a STEM field.



Pictured above: USNA STEM meets the Honorable Ray Mabus, Secretary of the Navy with LCDR Woods and MIDN Emerling at the Czech-US Energy Conference in Prague.

What has being part of the STEM program meant to you?

I have been given the opportunity to help both the local community and a larger audience across the nation. Witnessing first-hand the activities that are available to these students and how willing these students are to learning about new topics is incredible. I have been able to help the community and educate in a small way the future of the U.S. and the world. I only wish that I began volunteering and helping out with the STEM programs earlier. I recommend anyone interested in community service or the STEM fields participate in some capacity.



USNA STEM WELCOMES PROGRAM 38 SUPPORT

Navy Reserve Officers in the Science and Technology Units of the Office of Naval Research (Program 38) have been using their drill time to participate in various STEM programs at USNA. In 2012 over 20 officers have participated in 5 separate programs. The intention is to reinforce the officers' role in educational support for ONR, to facilitate their understanding of and skillset for STEM outreach, and especially to support the ONR SeaPerch Program. Thirty officers have been trained by USNA faculty in construction and troubleshooting SeaPerch ROVs. The reservists have subsequently helped train over 80 middle school and high school teachers and will be available to the National SeaPerch program to do the same at sites all over the country.

The P38 crew have assisted in other UNSA programs as well. For three weeks this past summer, seven officers facilitated and taught modules in electrical engineering, naval architecture, human robots, cyber security, chemistry, and code breaking to Summer STEM attendees. Five officers came to SET Sail teacher training camps to teach math, oceanography, fluids, and facilitate the small group discussions. This Fall, reservists have assisted with the EYH and MESA STEM days as well as NASEC.



CDR Jill Richards co-developed and taught a STEM module on Heart Health and Biology at EYH Day



CAPT Mule and CAPT Klicek instruct on the finer points of soldering to teachers learning to build a SeaPerch.



CAPT Boettcher explains the Archimedes Principle at Expanding Your Horizons



CAPT Sean Nolan leads a teacher and reservist SeaPerch build group.

2012 GIRLS STEM DAY

On October 12, 2012, USNA and ONR presented Expanding Your Horizons Annapolis, a day-long conference consisting of hands on workshops for middle school girls. The girls participated in interactive modules in Astronomy, Biometrics, Computer Simulation, Computer Engineering, Engineering Design, Math, Mechanical Engineering, Physics, Medicine, Dentistry, Robotics, Biology, Underwater Explorations, and more!



The goal was to encourage young women to pursue science, technology, engineering and mathematics careers by providing STEM role models and engaging activities for middle and high school girls. Over 25 female midshipmen and 30 female faculty, staff and officers participated as team leaders or module instructors.



The conference aimed to motivate girls to become innovative and creative thinkers ready to meet 21st Century challenges. Attendees were introduced to women scientists from the past and the present, including Admiral Grace Hopper, who opened the door to a world where women are able to work in all STEM fields, and Sally Ride, the first woman in space. Present day female scientists and engineers spoke on their careers and what steps they took to get there.

Story continued on next page

2012 GIRLS STEM DAY CONTINUED ...



The closing session was a time for the girls to debrief and think about opportunities and goals and answer the question:
What do I want to be?



I WANT TO BE ...



NASEC 2012

The annual Naval Academy Science and Engineering Conference (NASEC) 2012, sponsored by the Naval Academy foundation and the USNA Research Office, was held November 4-6 and included undergraduates from Harvard, Drexel, Rose-Hullman, UVA, Tulane, University of Maryland and others.



The goal of the conference is to bring together policy makers, science advisors, university faculty and students to meet and discuss significant science and engineering challenges.

The conference had three themes this year: Energy and Alternative Fuels, Cyberspace and Cybersecurity, and Water and Sustainability. The participants were able to attend lectures given by subject matter experts as well as distinguished speakers, including Dr. Subra Suresh Ph.D. (the Director of the National Science Foundation), Mr. Charles O. Holliday, Jr. (Chairman of the Board of Bank of American Corporation) and the Honorable Zachary Lemnios, Assistant Secretary of Defense for Research and Engineering.

The STEM Office faculty regularly supported the Hands-on/Minds-on session which offered the student participants an opportunity to explore specific research interests in each topic area. CDR John Schedel (Mechanical Engineering Department) led a session focused on the midshipmen-designed water purification system, Associate Professor Jim Cowart (Mechanical Engineering Department) led the session on alternative fuels combustion, and Associate Professor Chris Brown (Computer Science Department) focused on cyber security.



MESA DAY

About 45 midshipmen travelled to Johns Hopkins University Applied Physics Laboratory on Monday November 19, 2012, to stage a full day of hands on activities for 350 elementary students from Charles County and Baltimore City in collaboration with Maryland Mathematics Engineering Science Achievement (MESA). Professors Gwen Gray and Angie Moran as well as two vans full of equipment and supplies accompanied the midshipmen who provided eight different age-appropriate interactives on robotics, hull design, fluids principles, underwater vehicles, materials properties, and more, as well as mini engineering design competitions. Several midshipmen remembered their experiences as MESA club members and all commented on the value of the experience.

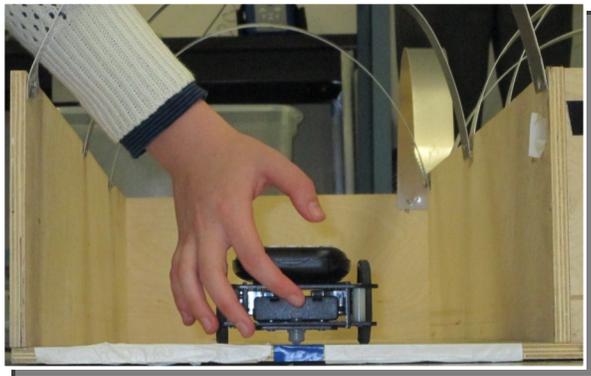
“I’d like to thank you for the wonderful opportunity in allowing me to participate with STEM last Monday. I had a great time and look forward to being able to participate in future events.” - MIDN Eilinger



MINI-STEMS

*OCTOBER 19
2012*

Six schools from NYC attended project based learning workshops in bioterrorism, storm-chasing, ALICE computer simulation, and Cryptology.



*NOVEMBER 2
2012*

Technical schools from Atlanta, Georgia, attended workshops in robotics, ALICE, storm-chasing, and physics and light.



LEARNING MATH & SCIENCE THROUGH SAILING

Learning Math & Science Through Sailing National Consortium held its annual conference at USNA Robert Crown Sailing Center on Friday, October 5, 2012. Speakers from the Smithsonian, NOAA, US Sailing as well as from USNA were featured. The STEM Office's Angie Moran and Mark Murray were invited to talk on Project Based Learning in STEM programs as well as the new USNA Lift and Drag: the Mechanics of Sailing modules. The talk included a demonstration of The Bernoulli and Magnus Effects in sailboating.



TIGER WOODS FOUNDATION:



The Tiger Woods Foundation hosted a STEM Career Day at McKinley Technology High School in DC on November 3, 2012. The USNA STEM Office was invited to provide a workshop on engineering. Beth Mutch, Mark Murray, Angie Moran, and MSTEM Leader Eric Emerling demonstrated fluids concepts and hull design for the attendees.



TEACHER'S TRAINING

On October 18, 2012, USNA STEM once again invited teachers to USNA to participate in the popular SeaPerch Teacher Training program. 60 teachers from Prince George and Anne Arundel counties attended the training, which went through the building, operation, and concepts of SeaPerch. Another training session was held December 1 for teachers in Baltimore City, Baltimore County and PG County.



STEM

At the United States Naval Academy

Science * Technology * Engineering * Mathematics

The USNA STEM Office is focused on addressing an urgent national priority—persuading more young people to pursue careers in science, technology, engineering, and mathematics while engaging our own midshipmen in quality STEM programs and outreach to the community.

The Odgers Professorship was established in 2010 by a private testamentary gift to the US Naval Academy Foundation from the Carol and Ralph E. Odgers Family Trust.

STEM OFFICE

Rickover Hall Room 367

590 Holloway Road

Annapolis, MD 21402

p: 410-293-6534

f: 410-293-3041

You can follow the USNA STEM Office online on our website and our Facebook page:

www.usna.edu/STEM



www.facebook.com/USNASTEM

COMING NEXT TIME:

- ◆ Mids host competition in Tulsa
- ◆ NESA takes on STEM Merit Badge Day
- ◆ Aligning with JHU for East Baltimore Kids
- ◆ STEM Spring Break Tripsalready?!