



NAVAL POSTGRADUATE SCHOOL

UPDATE
NPS

DCNO for Warfighting Development Honors NPS Graduates During In-Person Ceremony

By MC3 James Norket

For the first time in more than a year, the Naval Postgraduate School (NPS) celebrated a graduating class in person during a graduation ceremony for its Spring Quarter graduates, June 18, honoring and recognizing their remarkable achievements and resiliency. While these graduates mostly completed their education in a remote learning environment, during their time at NPS they were able to effectively adapt to overcome the adversity.

NPS President retired Vice Adm. Ann E. Rondeau addressed the graduating class praising them for their resilience during a global pandemic.

“As we reflect on what 2020 was like, this pandemic may have had the closest thing to the effects of what the Great Depression did, it forced on us separation and disassociation,” said Rondeau. “And there was this extraordinary thing that happened in that virtually there was great learning going on, and you met the expectation of the mission. At NPS, we are you. We are military leaders, educators and staff serving those who serve our nation and serving each other. Together we solve hard problems and create solutions. You are the decisive advantage that we deliver. We are you. And that’s the magic of NPS.”

Commencement speaker, Deputy Chief of Naval Operations for Warfighting Development (N7) Vice Adm. Jeff Hughes, congratulated the 364 graduates, including 23 international students from 15 countries, conveying how the nation’s warfighting advantage in the era of Great Power Competition will hinge on intellectual capital and technological innovation driving solutions.

“My charge to you is get comfortable being uncomfortable. Be bold, seek advocacy for change, take calculated risks, fail fast and adapt. Never cease your desire for continued learning and drive it to tangible, measurable outcomes. And be resilient and gritty. The nation expects nothing less, and deep down, neither do you.”

—Deputy Chief of Naval Operations for Warfighting Development Vice Adm. Jeff Hughes

“Germane to the mission of NPS is the rapidly changing character of war,” said Hughes. “Whomever successfully develops and fields proven operating concepts that capitalize on emerging disruptive technologies will stand a higher probability of success within the competition continuum.”

“While the fight must be prevented, that prevention is never guaranteed,” he continued. “Central to our success is the strength of our intellectual capital and creativity. We require leaders of competence and character who think freely and leverage the strength of diverse thinking from their teams.”

To read the full story, please visit our [website](#).

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Happy
Independence
Day

July 2021

Aquatic Laboratory Adds Maritime Domain to JIFX Field Experiments

By MC3 Lenny Weston

The Joint Interagency Field Experimentation (JIFX) program at the Naval Postgraduate School (NPS), held quarterly, recently added another warfighting domain to its range of venues used to conduct field experiments – water.

Situated just across the street from NPS’s main campus, the Sea Land Air Military Research Initiative (SLAMR) facility houses a series of open-air water treatment tanks that were recently renovated and now serve as SLAMR’s aquatic environment laboratory. The addition of these water tanks to the JIFX portfolio of regional facilities, test ranges, and experiment venues, including controlled air and ground space at California National Guard base Camp Roberts in South Monterey County, allowed JIFX to offer opportunities for not just air, land or cyberspace experiments, but for experiments with sea-based surface and subsurface technologies as well.

JIFX aims to foster collaboration between military, commercial industry, and academia to experiment with and evaluate emerging technologies for defense-related applications. This latest JIFX iteration, held May 24-28, hosted 220 participants representing 73 unique organizations that took advantage of the JIFX field and aquatic labs.

Participants were able to showcase their latest technologies, and in some cases, test and evaluate them either in simulation or live on location at Camp Roberts or in Monterey where underwater, ground and airspace were available.

“The new SLAMR facility here is intended to allow us to simultaneously engage terrestrial systems, subterranean systems, aerial systems, surface systems and subsurface systems in one,” said JIFX Director Dr. Raymond Buettner, NPS Associate Professor of Information Sciences. “The Aquatic Laboratory adds water experimentation, the

key naval warfighting domain, offering a chance for participants and NPS faculty and students to conduct water-based experiments focused on maritime defense capabilities and applications.

“Through these experiments, private industry can learn what the government is interested in, and the government can get a look at what the commercial world is developing,” continued Buettner.

The new facility also offers students who are considering maritime research projects, or whose rigorous academic schedules may not always allow them to visit Camp Roberts, a chance to participate in JIFX. Buettner added there are future plans to add dry tanks for ground exercises and a structure to allow for limited flight experimentation at the SLAMR facility.

NPS PhD student U.S. Navy Lt. Nabil Tahan was on hand at the aquatic lab to observe and evaluate JIFX as a venue for his own future research. He specifically was able to take a look at a high-performance computing system developed by Texas-based TMGcore, which has a proprietary liquid cooling system that reduces the hardware down to a very mobile platform. Having served in a medical unit in Kandahar, Afghanistan, Tahan immediately recognized how the mobile computing capability could help forces downrange.

“Field medical facilities can range in their capabilities, and a high-performing system could manage medical data on trauma victims and help move critical data quickly potentially saving lives,” said Tahan.

Tahan went on to note that the majority of NPS students have significant operational experience, and having seen JIFX firsthand, he believes it is an avenue that allows students to translate that experience, their academics, and emerging technology into field experiments.

“A fully operational laboratory and experimentation incubator, especially a maritime experimentation tank designed for student and industry use, right in the backyard of NPS is of utmost importance,” said Tahan. “The focus on maritime research adds a critical layer of credibility and power to student research connecting experimentation to NPS’ naval roots in the maritime domain.”

For Buettner, expanding facilities and their capabilities should open more doors for future experimentation, and he believes the biggest benefit for JIFX will be one that JIFX has been doing for two decades – an enhanced ability to connect technology experts, evaluators and end-users to further develop technologies for national defense.

“When you think about what we try to accomplish at JIFX, we’re trying to create a learning environment where each of the learners gets what they need,” said Buettner. “NPS is perfectly appropriate because it creates the learning environment, and companies come to learn about what the latest government requirements might be and what the national security challenges are, and then the government entities come to learn what the cutting edge of the industry looks like.”



SeaSatellites Chief Executive Officer Mike Flanigan, left, and Chief Technical Officer Dylan Rodriguez use SeaSats Unmanned Surface Vehicle (USV) to conduct water experiments at the Naval Postgraduate School’s (NPS) Joint Interagency Field Experimentation (JIFX) 21-3 at NPS’ Sea Land Air Military Research (SLAMR) Facility in Monterey, Calif. (U.S. Navy photo by MC3 Lenny Weston)

NPS Team Earns Design Inspiration Award at HACKtheMACHINE Competition

By MC3 Lenny Weston

For this year's HACKtheMACHINE (HtM) Navy digital competition, NavalX implemented "Heavy Metal," an additive manufacturing challenge to use metallic 3D printing for fabricating shipboard parts to withstand specific environmental conditions.

A team of eight faculty and one student from the Naval Postgraduate School took on the challenge back in March using the on-campus Xerox ElemX Liquid Metal Printer to design and fabricate a shipboard light fixture able to withstand rigorous shocks and vibrations of a navy ship, a feat that earned the team the competition's Design Inspiration Award, an honorary award for teams using a unique and practical approach to producing a part. As a control, every team in this challenge had to produce the light fixture bracket, but the judges decided it was the NPS team's innovation in materials, manufacturing process and also the part's durability that earned them the award.

Now in its sixth iteration, and sponsored by the Office of Naval Research, HtM was hosted virtually at the NavalX facility in Alexandria and brought together people from across the Navy Research and Development Enterprise, government, academia and industry to tackle some of the Navy's most complex problems. This year's HtM focused on three tracks: data science [public health related], metal 3D printing as it relates to shipbuilding, and maritime cybersecurity – its signature challenge track.

The "Heavy Metal" track challenge called for teams to accelerate the adoption of Advanced Manufacturing (AM) using metallic 3D printing in the U.S. Navy. The track underscores how the Navy will be looking to metallic 3D printing capabilities to enable ships and shipyards to produce key components with the effect of shortening supply chains and meeting critical mission timelines.

The award-winning NPS team, led by Research Associate Professor Dr. Walter Smith, comprised of members from three different academic areas: Mechanical and Aerospace Engineering (MAE), Computer Science, and NPS' Energy Academic Group.

Smith noted the goal of the competition was three-fold.

"For the team members, it is about growth and learning about new fields and technology. For students, it is going through an entire design cycle with the faculty and seeing what that involves and how much they can achieve in their other work. For the school, it provides a level of visibility to the Navy on the capabilities and depth and breadth of knowledge that resides here at NPS."

For MAE Research Associate David Dausen, collaboration is the main focus in these types of events.

"Everyone sees the challenge or problem in a different way and they come up with a solution together," said Dausen. "The participants are looking for that "Aha" moment which will define the work they are trying to achieve."

Recently installed on campus in February, the [Xerox ElemX](#) provided



Using the on-campus Xerox ElemX Liquid Metal Printer, a team of eight faculty and one student from NPS took on the HACKtheMACHINE (HtM) challenge to design and fabricate a shipboard light fixture able to withstand rigorous shocks and vibrations of a navy ship. (U.S. Navy graphic by MC3 Lenny Weston)

the team with the capability to make a competitive product for HtM. The ElemX uses aluminum wire rather than hazardous powders making the ElemX a much safer choice for users in shipboard environments. By heating up aluminum wire, which is melted to liquid form, the printer can then disperse the liquid metal by creating jet droplets that layer on top of each other repeatedly to make a product.

NPS student U.S. Navy Lt. William Kimberl, whose thesis research is in material science focusing on the fractography of the aluminum used in the ElemX, noted the team printed the bracket as a collective while he performed destructive testing of the initial light bracket validating the part had all mechanical properties, strength and durability they desired.

"The NPS community is comprised of many faculty and students with diverse backgrounds experiences," said Kimberl. "Each person was able to contribute to the project in different, meaningful ways which led to a successful product."

For students like Kimberl, this competition offers them a chance to apply their research into real world applications on a national playing field.

According to Dr. Amela Sadagic, Co-director of NPS' Center for Additive Manufacturing, this effort was very typical for any interdisciplinary endeavor at NPS, whereas each person enriched their understanding of a technological domain.

"Once students graduate from NPS they will then become part of the adoption and application of additive manufacturing across the Naval domain," noted Sadagic. "This award is a great recognition of the combined effort and input that everyone brought to this project. We hope that next year NPS will have several teams in all tracks of HtM Navy digital experience furthering innovative solutions for the Navy."

ONR Awards Two NPS Faculty with Young Investigator Program Honors

By MC3 Lenny Weston

Two Naval Postgraduate School (NPS) professors recently earned the Office of Naval Research (ONR) Young Investigator Program (YIP) Award, a highly competitive early-career award program for academic scientists and engineers that recognizes creative research with potential for a significant scientific breakthrough.

Assistant Professor of Oceanography Dr. Derek Olson and Assistant Professor of Mechanical and Aerospace Engineering Dr. Andy Nieto were among 38 participants selected from 260 applicants for the prestigious research award, which provides funding over a three-year period to further their research for the U.S. Navy and Marine Corps.

“Early career awards are critical for building our new generation of scientific leaders, and even more so in this era of more limited research funding availability,” said previous YIP awardee NPS Professor of Oceanography John Colosi, noting also that the selection of two faculty members reflects exceptionally well on NPS.

Not only will this facilitate recruitment of talented young scientists, he said, but the YIP committee specifically looks for institutions with strong mentors to develop young researchers into future national and global leaders.

While both Olson and Nieto are junior professors, they both showed exceptional creativity in their various research.

Olsen’s work is focused on reducing false alarms while using Sound Navigation and Ranging (SONAR). An invaluable tool for all mariners, SONAR works by sending out a signal and measuring the returned signal as it bounces off different surfaces under the water. An underwater image of a seafloor littered with rocks, barrels and the like, however, might look similar to one filled with underwater mines.

His research, entitled “The Structure of Complex Seafloor Environments: Acoustic Remote Sensing and Inference,” is able to discern between these by utilizing ocean acoustics to hone in on specific mapping of objects with SONAR.

“Think of SONAR like the light from a flashlight in a dusty room,” Olsen said. “You shine the light and are able to see dust because the light is bounding back off of the particles. If we understand the way false alarms show up, we can do a better job of rejecting them so we don’t waste our time looking for rocks when we should be looking for mines.”

Moving above the water line, Nieto’s research – “Functionally Graded Cold Sprayed Hybrid Coatings for Multi-Material Structural Repair and Wear Protection” – focuses on cold spraying metal for wear resistance.

“Cold spraying” is not necessarily cold, he noted, but uses lesser temperatures than most metallurgy processes use. Nieto likened the process to spray painting your house, only the paint is heated with gas and then sprayed at supersonic speeds to create layers as it impacts metal particles.



Naval Postgraduate School (NPS) Assistant Professor of Oceanography Dr. Derek Olson, left, and NPS Assistant Professor of Mechanical and Aerospace Engineering Dr. Andy Nieto were selected for the Office of Naval Research’s Young Investigator Program Award, a highly competitive early-career program recognizing creative research with potential for a significant scientific breakthrough. (U.S. Navy photo by Javier Chagoya)

“The first half of the project is developing wear resistant coatings for metals, mostly magnesium and aluminum,” Nieto said. “Then the second half of the project is going to take that learning of new composite compositions and use the nanomaterials for better adhesion strengths to protect polymeric materials.”

Nieto and Olson were elated to find out they had been selected to receive ONR’s YIP Award.

“I couldn’t believe it,” Nieto said. “It’s just about as prestigious an award as any young faculty could win at any university.”

Olson noted, “It’s really competitive and not like a usual grant. I’m extremely happy and honored to be named a recipient!”

The award will enable Nieto and Olson to procure costly equipment and materials necessary for their research and provide the opportunity to conduct their thesis work on these emerging, relevant technologies.

“For students, it enriches their curriculum,” said Nieto. “We’re equipping naval officers to be subject matter experts, and when they leave here with new techniques and innovations that are relevant are being used, then I think it motivates them and really enriches their education.”

The Office of Naval Research (ONR) Young Investigator Program seeks to identify and support academic scientists and engineers who are in their first or second full-time tenure-track or tenure-track-equivalent academic appointment, who have received their doctorate or equivalent degree in the past seven years, and who show exceptional promise for doing creative research. The objectives of this program are to attract outstanding faculty members of institutions of higher education to the Department of the Navy’s Science and Technology (S&T) research program, to support their research, and to encourage their teaching and research careers.

NPS Oceanography Professor Wins National Science Foundation CAREER Program Grant

By MC3 Lenny Weston

Naval Postgraduate School (NPS) Assistant Professor of Oceanography Dr. Mara Orescanin was recently awarded a five-year grant through the highly-competitive National Science Foundation (NSF) CAREER program. The grant will afford Orescanin with an opportunity to build on her already existing research exploring intermittent rivers, bar-built estuaries and beach breaches and closures, all of which can have considerable impact on amphibious operation planning and execution.

The NSF Faculty Early Career Development (CAREER) program supports high-performing early-career faculty who have the potential to both serve as academic role models in research and education, and the ability to lead advances in the mission of their department or organization. The program aims to help researchers build a firm foundation for a lifetime of leadership.

“It was pretty awesome getting [this award],” said Orescanin. “In the academic world, when you get that, it’s a validation of the relevance and significance of your work. My goal is to tailor my research and provide relevance to the warfighter, so I’m excited to see how it transpires.”

Her research titled, “Hydrodynamic and Morphodynamic Evolution of Beach and Breaching Closure,” will provide insight on how coastal areas change in environments that go through wet and dry seasons providing valuable information for amphibious operation planning. As the wet and dry seasons shift, the waterline can change from one day to the next as an area that have water flowing as a river can be a coastal beach the next day. This sudden shift in waterline can make an area unpredictable and affect operations.

When referring to intermittent rivers as part of beaches, Orescanin noted, “Rivers are going to change the structure of your beach and it’s going to change the firmness of the sand and currents in the surf zone. So, if you think down to the human level of special forces or

ship-to-shore movements, doing a beach landing and having strong currents that are resulting from these rivers, this propagates changes affecting their safety and operations throughout the surf zone.”

While she is the one at the front of the classroom, Orescanin said she often learns as much from her mid-career Navy and Marine Corps officer students as they do from her, providing an informed perspective on what the navy’s operational needs are for amphibious and littoral operations.

According to NPS Dean of Research Jeffrey D. Paduan, the award reflects the quality of the applied research underway at NPS, and how this environment benefits the students.

“The recognition shows NPS faculty are among the best in the nation,” said Paduan. “The five-year project funding is also a benefit for that it is designed to allow Dr. Orescanin time to plan and execute a significant research program in her area of coastal oceanography. Several METOC [Meteorology and Operational Oceanography] students are expected to participate in and benefit from the program over the course of those five years.”



MORS Tisdale Competition Recognizes Marine Corps Officer for Outstanding Thesis

By MC2 Tom Tonthat

Four Navy and Marine Corps students from the Naval Postgraduate School (NPS) Department of Operations Research (OR) presented theses examining applicable improvements to operational dynamics in ship and maintenance schedules, aircraft inspection procedures, manpower management and unmanned autonomous systems to an online panel of judges for the spring quarter Military Operations Research Society (MORS) Stephen A. Tisdale Thesis Award, May 27.

Following the presentations and deliberations, the judges awarded U.S. Marine Corps Capt. Ryan Martinez with the spring quarter MORS/Tisdale Award, citing that his research represented the most near-term operational relevance to the service. Martinez’s thesis focuses on how to modernize the Recruit Distribution Model to more efficiently assign Marine recruits into a more specialized and capable fighting force by minimizing idle time between training schools, maximizing fit pairings, and ensuring that assignments through the year meet

Marine Corps Manpower and Reserve Affairs staffing goals.

Martinez was very grateful to receive the MORS Tisdale honor while tackling something even more important to him – tangibly making the Marine Corps better.

“My favorite part of Operations Research is its applicability, and I wanted to utilize the skills I learned at NPS to tackle a project that could improve the Marine Corps,” said Martinez.

He noted that he found the research topic from the Naval Research Portal (NRP), where military organizations post research topics that NPS students and faculty can tackle.



NPS Launches “Cyberspace and Military Operations” Course Open to all Students

By MC2 Tom Tonthat

Understanding the role of cyberspace in military operations is not limited to just the cyber experts and practitioners, especially in this modern era of Great Power Competition. With this in mind, the Naval Postgraduate School (NPS) is launching the all-new CY4000 “Cyberspace and Military Operations” course, a new one-credit online class for the upcoming Summer Quarter, starting July 6, and it is open to all students.

Developed by a diverse group of NPS professors, including those from the Computer Science and National Security Affairs departments, CY4000 goes beyond the technology of cyberspace to explore its workings, uses and significance.

“Many people know something about some of the topics in CY4000, but not everyone is familiar with the broad set of issues associated with the use of cyber-related technology,” said NPS Distinguished Professor of Computer Science Dr. Cynthia Irvine, representing the group that developed CY4000. “This class is intended to provide everyone with a baseline, and then a springboard from which to increase their knowledge and understanding of this complex domain. Because both the technology and geopolitical context in which it operates is rapidly evolving, we hope that this course can be regularly updated to reflect change.”

Students will not just learn about different aspects of cyberspace, but also how they interconnect, which is essential when formulating a cyberspace strategy.

“There are a lot of moving parts to understanding what goes on in cyberspace, and all of these have to be understood to some extent,” said Irvine. “For example, our military may consider taking out networks in a certain area as part of an operation, but that may affect humanitarian activities as well as allied military missions. The course is intended to touch upon many issues and allow students to view cyberspace from the perspective of Great Power Competition.”

CY4000 joins the NPS catalog of one-credit courses, and will consist of 21 pre-recorded lectures taught by several professors and subject matter experts (SME) covering cyber power in the GPC, the cyber enterprise, cyber technology, the operational domain, and strategy, power and policy.



Naval Postgraduate School (NPS) will offer the CY4000 “Cyberspace and Military Operations” course to teach NPS students the various interconnecting aspects of cyberspace and its uses in Great Power Competition, starting July 6. (U.S. Navy graphic by MC3 James Norket)

“The philosophy behind the course is that by having SMEs give the lectures, the central ideas associated with each topic will be carefully conveyed,” noted Irvine. “A total of 18 members of the NPS faculty and staff are teaching the course. We are very lucky to have such a large number of faculty members with deep, diverse knowledge of cyberspace-relevant topics.”

While open to all NPS students, the course’s developers would like to see it extended beyond the NPS campus to reach a large number of Naval officers.

“I think it will be very useful to ensure that everyone has a good appreciation of cyberspace and its place in military operations because it’s a very fast-moving ecology,” Irvine said. “Not only do we want to touch NPS students who are shaping the future, but we want to make sure that decision makers and those in the rest of the force have this broad perspective.”

NWC-at-NPS Awards Academic Honors for Winter AY’2021 Quarter Class

By Office of University Communications

The Naval War College (NWC) Monterey program for Joint Professional Military Education (JPME) recognized 15 graduates from its latest class earning academic honors for the Winter AY’2021 Quarter.

Graduates earning “with Highest Distinction” honors by completing the JPME program in the top five percent of their class are Army Majs. Kevin A. Butler and Frank G. Foss; Army Capt. Mark E. Mayor; Marine Corps Capt. Melanie J. Molano.

Graduates earning “with Distinction” honors by completing the JPME

program in the top 15 percent of their class are Army Majs. Kurt A. Carlson and Richard M. Lofthouse, Jr.; Marine Corps Maj. Jordan T. Lester; Navy Lt. Cmdrs. Jami Garrett and Austin C. West; Navy Lts. Tyler J. Barker, John J. Heyde, Brian A. Howell, Alex J. O’Konski, Daniella P. Sepulveda, and Wei Y. Wu.

Through the NPS-NWC partnership, a total of 5,980 officers have earned their Joint Professional Military Education Phase I certification since the program’s inception in September 1999.

NPS Students Use ARP to Present Research on Streamlining Acquisition Process

By MC2 Tom Tonthat

During the 18th annual Acquisition Research Symposium (ARP) in May, Naval Postgraduate School (NPS) students presented theses and research projects to the Department of Defense (DOD) acquisition community during a virtual Graduate Student Research Poster Show.

The students' research covered various aspects of acquisitions such as price analysis factors and developing international wireless solutions. They spent a lot of time on their research to find improved ways to bring relevant technology from developers and experts to the warfighter, bridging the gap known as the Valley of Death that separates the two.

"The [Graduate Student Poster Show] has always been a cornerstone of the symposium, and I consider this the highlight of the entire symposium," said retired Vice Adm. David Lewis, NPS Chair of Acquisition. "This is really our seed corn for the school because all of what these students learn here will be applied to the rest of their Naval careers. And I'm sure every one of them, if you ask them ten years from now, they'll tell you this is the class that made the difference for them. Each of the students will find something that they've learned here and will use it repeatedly."

Ideas for their theses originated from sponsors looking to explore new directions, or from acquisition issues they experienced firsthand during previous operational tours.

Symantha Loflin, an earned value management analyst for the Defense Contract Management Agency (DCMA) who had previously worked with the Joint Acquisition Task Force for COVID-19 to work on glove production, said her thesis focused on how to expedite products into the national stockpile and into the hands of frontline workers who need it.

"I'm using my education to build up the industrial base of bringing back manufacturing to the United States by Americans for Americans," said Loflin. "Through my research at NPS, I was able to use

more than my earned value management experience and my production quality and manufacturing experience to assist with government contracting needs."

In addition to streamlining the process to bring goods from industry to end user, students researched how well their intellectual and educational resources were reaching out.

Lt. Cmdr. Aaron Smith, a Navy Supply Corps Officer, helped analyze the Navy Supply Corps 810 Program which allows Navy Supply Corps officers the opportunity to attend a top-30 U.S. business school for an MBA.

"It was a great opportunity," said Smith. "[The 810 Program] is one a big investment, and we were able to show our sponsors how well the program was at retaining officers, and found potential for greater follow through on using the skills at commands where they're needed."

DOD attendees provided feedback on the students' theses, asked questions, and acknowledged their work and potential new avenues to explore to make the Valley of Death narrower.

According to ARP Principal Investigator Dr. Robert Mortlock, "The students brought a unique, different perspective allowing us in the acquisition community to answer some of these really difficult research questions. This really highlights the critical thinking, problem solving, and resource management parts of the Student Poster Show, and we end up solving problems that I don't think we'd be able to solve if we didn't have the student researchers asking those tough questions and bringing their perspective into view."



FACULTY news & notes

Team NPS,

The NPS Command Climate Assessment process initiated in April is still in progress.

Once again, thank you to all of you who participated in the assessment survey and provided valuable feedback to the command. Moving forward, NPS stills need your support in the coming weeks to continue the process.

The next step in the annual command climate assessment is focus groups, and we really desire to hear more from you.

- **Make a difference.** The purpose of these focus groups will be to gain and clarify trends, concerns, and perceptions identified in the April survey. The information gained from the focus groups will then be evaluated by the Command Resilience Team to make recommendations on how to improve NPS and enhance our culture.

- **Voluntary and for non-attribution.** Participation in these focus groups is strictly voluntary. Any and all comments made during the focus groups are for non-attribution to protect your anonymity.

- **Add your voice.** How are we doing? What are we doing right? Where can we improve?

Participants will be selected at random, but if you don't want to miss this chance to be involved, you can request to be specifically included in the invitations. Just contact our CMEC Coordinator LCDR Michael Larson at michael.l.larson@nps.edu.

I look forward to hearing your voices and your feedback on ways to continually improve the command climate at NPS.

Dr. Scott S. Gartner
Provost and Academic Dean
Naval Postgraduate School

Send your campus news and notes to update@nps.edu.

Game On! NPS' Wargaming Week Ties Tactics, Strategy to Improve Defense Planning

By Javier Chagoya

The Naval Postgraduate School (NPS) just took on some of the nation's most critical national security issues ... through analytic wargaming.

NPS' program has evolved into a national leader in the field of analytic wargaming, where the goal is to design a wargame that facilitates the collection and analysis of information provided by players immersed in a carefully, deliberately-crafted scenario. Results are either fed directly into a practitioner's decision-making process or are used to develop further analytic products as deliverables to sponsors from the DOD and the nation's allies and partners.

In rigorous detail, and on behalf of sponsors from around the Fleet and Force, NPS students rolled up their sleeves, designed and worked through a range of complex simulations of real-world challenges for the university's biannual Wargaming Week, hosted by the Naval Warfare Studies Institute (NWSI) Wargaming Center, June 2-9.

Wargaming Week is the culmination of an 11-week, hands-on course in wargaming applications held twice a year in June and December. Drawing on extensive research, sponsor interaction, and their own considerable military experience, the students developed and executed a range of different wargames to dive deep into technical and conceptual issues ranging from expeditionary operations, contested logistics, combating weapons of mass destruction and more.

"NPS is one of the very few institutions that has a robust wargaming education program to bring wargaming to the forefront and produce experienced wargaming practitioners that senior leadership can leverage," said Dr. Jeff Appleget, Director of NPS' Wargaming Activity Hub. "The great benefit of the wargaming course is it matches student teams with DOD or defense partner sponsors who have real-world problems. Their problems aren't articulated in terms of 'use this tool to solve this problem,' but rather, 'I have a difficult problem and help me understand how to solve it.'"

This quarter's sponsors included representatives from Defense Advanced Research Projects Agency (DARPA), Defense Threat Reduction Agency (DTRA), Australian Defense Force (ADF), Special Operations Command Europe (SOCEUR), Fleet Readiness and Logistics (OPNAV N4), Marine Corps Warfighting Laboratory (MCWL), and U.S. Army Pacific (USARPAC).

Some of the representatives actively participated in the role-playing as red or blue team members or provided subject matter expertise which further challenged students on how their gaming strategies addressed scenarios based on the sponsor's requirements.

Throughout the course, student teams are formed and matched with the sponsors who pose a question or issue they need answered. The students then get hands-on experience designing the foundations of their sponsor's wargame where they test and refine the wargame to ensure it addresses the sponsor's problem. This emphasizes the NWSI's applied "learn by doing" approach that best leverages NPS students' unique skills and attributes.

NPS students developed nine separate games and played them over the course of Wargaming Week, seven of which were conducted in-person on campus.



NPS Students enrolled in the Wargaming Applications course execute strategies designed and developed in their 11-week class, presenting their capstone designs to wargaming sponsors who also participated in the games held across campus, June 2-9, 2021. (U.S. Navy photo by Javier Chagoya)

The games were a resounding success, Appleget noted, with sponsors able to see immediate impact and value in the results of the challenges they postulated to NPS students.

NPS Computer Science student Marine Corps Capt. Max Schlessel commented on the benefits of wargaming contested environments.

"It was a great opportunity to sharpen operational planning skills, and I was honored to take part in strategizing how to enable future [Amphibious Ready Group – Marine Expeditionary Unit] operations," he said. "The wargame opened opportunities for the sponsors to better understand capabilities, and I was surprised to see how impactful a day of gameplay was to crafting future mission requirements."

In another wargame, DTRA representatives provided subject matter expertise (SME) in combating weapons of mass destruction (WMD) and improvised threats. Early on in the design process, five panelists fielded questions by a team of NPS wargaming students on how escalation affects chemical, biological, radiological, nuclear and high explosives threat response and how decision-making is calculated.

Operations Research student Marine Corps Capt. Nikolas Anthony said talking with DTRA's SMEs provided the foundation for developing a realistic and relevant wargame.

"With DTRA guidance, our team created a realistic scenario and a detailed data collection plan and we're lucky enough to have experienced players to support our wargame," he said. "There is a need to reenergize the integration of WMD threats within wargaming and operational planning."

"Understanding the effects of current WMDs is the first step in increasing the lethality and survivability of a unit. DTRA can provide eye-opening awareness, wargaming support, and modeling and simulation for academic and operational forces."

Evaluating Artificial Intelligence: NPS Researchers Seek to Improve Acquisition of AI Systems

By MC3 James Norket

A challenge in defense acquisition can be the ability to keep up with the speed of innovation in emerging technology, but specifically, the acquisition of Artificial Intelligence (AI) systems can pose a unique challenge, especially if the technology comes from relatively new start-up companies.

Often these companies can be at the leading edge of technology. So a team of researchers at the Naval Postgraduate School (NPS) have focused their efforts to develop a set of tools to support the acquisition of organically-developed AI systems.

NPS' Information Science Professor of Research, Dr. Johnathan Mun, who teaches quantitative research methodologies and decision analytics, says that acquisition research is a key factor in keeping the United States ahead in the era of Great Power Competition. Mun notes that companies like Lockheed Martin or Northrop Grumman have a proven track record with the Department of Defense (DOD) in making high-quality products, however, the acquisition of AI technology by start-ups makes things a little more complex.

“Major innovations have happened before with two guys in a garage coming up with some really cool, potentially game changing, revolutionary, and disruptive technology,” said Mun. “There is a huge potential for high-risk failures in this field because this is brand new technology. When a couple of really smart people in a garage somewhere invent a new algorithm we have to determine if it’s worth our time and money.”

When the DOD discovers these new start-up companies and products, they have to rely on acquisition research to determine the risks of pursuing the company.

“So, how do you analyze AI?” asks Mun.

Mun’s team, comprised of three other NPS researchers, have provided an answer to that question. By using already-developed equations in concert, they can help determine the potential worth of technology emerging from start-up companies around the world.

“In the analysis, we need to apply 80 percent advanced decision analytics approaches and 20 percent qualitative intangible factors,” said Mun. “80 percent is math because no matter what, one plus one equals two. The other 20 percent depends on things like what timeline we are working on or how confident we are that the technology will make our jobs easier or more capable. We also look at how would this technology hurt us if it got into the wrong hands, or if we could add it to an already existing program.”

Defense acquisition actually requires input from multiple different sources. The warfighter has a need, the decision makers have a budget, and the engineers have to be able to address those needs and then the DOD has to acquire those solutions.

“Acquisitions is a very complicated topic,” said Mun.

“You need to have different experts from multiple fields.” Mun added that it all comes down to a cost benefit analysis and understanding the risk associated with the acquisition of technology, and understanding its long term value.

According to one of the team’s other researchers, NPS Information Science Professor Dr. Tom Housel, another thing that sets these start-up companies apart is the pace at which they are being created and the pace at which they are innovating. He says that this new “industrial revolution” is moving at a very fast pace.

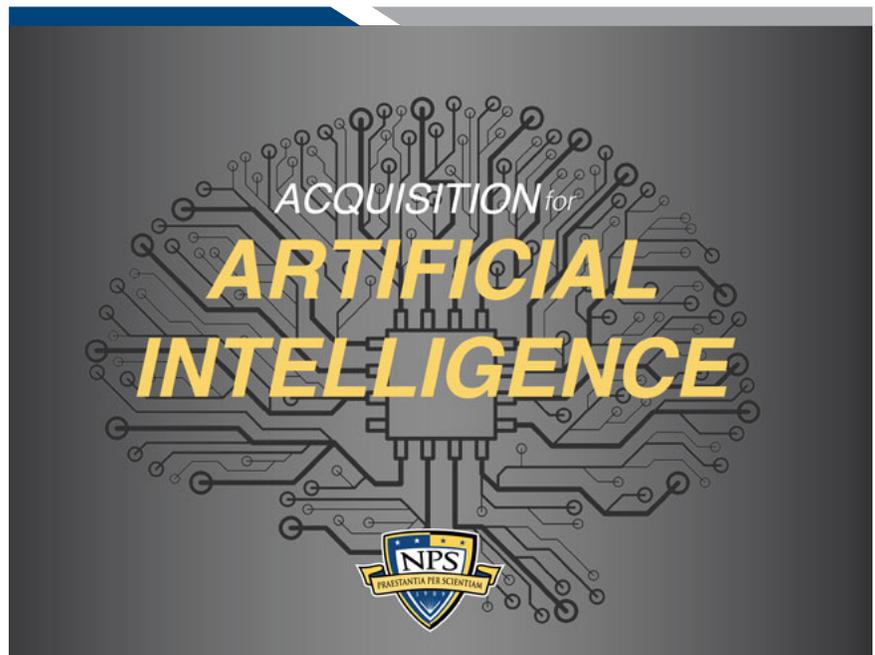
“We have to be able to screen through these new technologies at a fast and accurate pace,” said Housel. “If you show me a model and tell me what it does, then we can tell you how much value it adds.”

Mun noted that the interdisciplinary aspect of acquisition is what makes NPS the perfect place for this research.

“We have these great professors who have experience in AI and information technology and acquisition,” said Mun. “But we also have these great students who are the warfighters and will ultimately be using the product. We are able to collaborate together to determine the best path forward.”

When it comes to acquisition research processes, there is no standard way to assess every situation.

Mun noted, “At the end of the day, our job is to provide actionable intelligence to the senior leadership and decision makers to help make the acquisition process easier.”



A team of Naval Postgraduate School (NPS) researchers have developed a set of tools to support the acquisition of organically-developed AI systems. By using already-developed equations in concert, they can help determine the potential worth of technology emerging from start-up companies around the world. (U.S. Navy graphic by MC3 James Norket)

Celebrating 70 Years in Monterey

By MC2 Nathan K. Serpico

This year marks the 70th anniversary of the Naval Postgraduate School (NPS) relocating from the Naval Academy grounds at Annapolis to the former Hotel Del Monte grounds in Monterey, Calif. The relationship built between NPS and the Monterey Peninsula community has created an environment for military officers, DoD employees and first responders from across the nation to come together to receive top-tier defense-focused graduate education.

The roots of NPS, however, stem back further than Monterey, trace back more than a century. On June 9, 1909, less than four months after the completion of the record-setting world cruise of the Great White Fleet, then Secretary of the Navy (SECNAV) George von L. Meyer signed General Order No. 27, establishing a school of marine engineering at Annapolis. The school operated for eight years before being closed in 1917 when the U.S. entered World War I, but was re-established and expanded in 1919, officially becoming the Naval Postgraduate School.

During World War II, Fleet Admiral Ernest King, Chief of Naval Operations and Commander-In-Chief of both the Atlantic and Pacific fleets, established a commission to review the role of graduate education in the Navy. By the end of the war, it was apparent that the facilities of the Naval Postgraduate School at the Naval Academy at Annapolis, were insufficient for the Navy's future needs.

Fleet Admiral Chester Nimitz noted, "To my horror – I learned that on 'D' Day – it was planned to close down the Naval War College and the Naval Postgraduate School in order to provide officers for an expanding Fleet – as was done on 'D' Day for World War I," said Nimitz reflecting on the war plans he received as his first act as Chief of Bureau of Navigation. "I immediately cancelled those plans and prepared for expanded classes at both..."

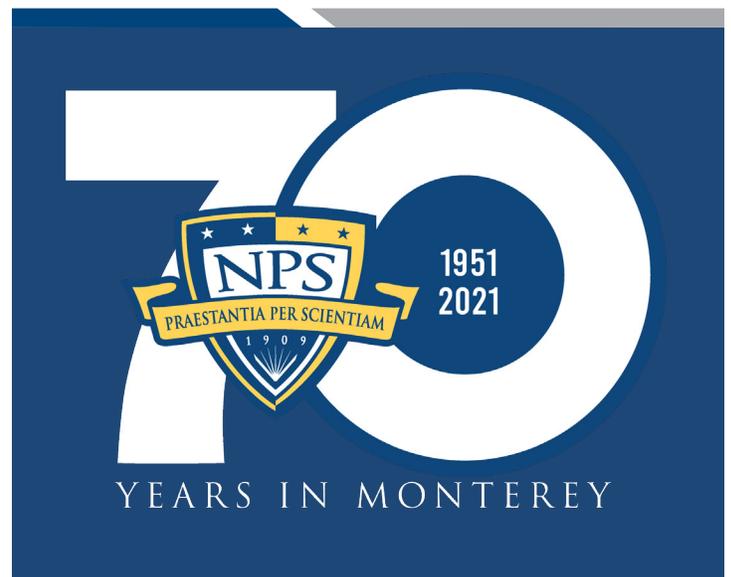
Nimitz, King, along with SECNAV James Forrestal had a vision for the future of NPS and are considered the architects of today's NPS.

In 1945, Congress passed legislation to make the school a fully-accredited, degree-granting graduate institution. Two years later, Congress authorized the purchase of the Hotel Del Monte and 627 acres of surrounding land for use as an independent campus for the school.

In 1951, the coast-to-coast move involved 500 students, about 100 faculty and staff and thousands of pounds of books and research equipment. Rear Adm. Ernest Edward Herrmann supervised the move that pumped new vitality into the Navy's efforts to advance naval science and technology.

Then, in a 1959 commencement address at NPS to mark its 50th anniversary, then-Chief of Naval Operations Adm. Arleigh Burke, a 1930 NPS alumnus, attributed several important naval advances to the Navy's long-term commitment to postgraduate education. "Rapid technological advance...did not come by accident, nor did it come overnight. It has been the result of educating carefully selected officers in each succeeding generation of officers," he said.

"The Naval leaders of 50 years ago showed great perspective and foresight in seeing the need for advanced technical and scientific knowledge among naval officers. They recognized that ships and naval weapons were becoming more complex, that their proper employment at sea would require officers who were familiar not only with the



age-old profession of the sea, but who could understand and could use effectively the complex weapons of the years to come."

Since then, NPS has been a hub of academic and operational research that has left a lasting impact on the Navy, Marine Corps, and DoD writ large that will continue to advance operational effectiveness, technological leadership and warfighting advantages.

If You Didn't Have NPS...

If you didn't have NPS, you might not have a nuclear Navy.

The two most important leaders who oversaw the development of the nuclear Navy were NPS alumni, both from the class of 1928: William S. "Deak" Parsons (ordnance engineering) and Hyman Rickover (electrical engineering).

Parsons was instrumental in the highly successful development of the proximity fuze during early stages of WWII and the subsequent establishment of Johns Hopkins Applied Physics Lab.

Because of this major success, Parsons was selected deputy director of the Manhattan Project.

Naval historian Al Christman chronicled the important relationship between NPS mathematician C.C. Bramble and dubbed Parsons "a new kind of warrior." Parsons himself gave credit to Bramble and NPS for influencing his Navy career.

Admiral Rickover has been widely recognized for his leadership in the development of nuclear propulsion, the nuclear fleet and nuclear safety.

Rickover did not extend credit to NPS for preparing him for an unexpected career path. Of course, Rickover rarely, if ever, extended laurels to others.

The Navy christened ships in honor of both men: USS PARSONS (DD-949/DDG-33) and USS RICKOVER (SSN-709).

[Story continued on next page]

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men: USS PARSONS (DD-949 /DDG-33) and USS RICKOVER (SSN-709).

If you didn't have NPS, you might not have the end of Osama bin Laden.

May 2011, one of the most consequential and well known missions in modern U.S. history was executed on an unremarkable compound in an unknown city in northern Pakistan. Operation "Neptune Spear" was implemented to neutralize Osama bin Laden, and many have reminisced and written since on its extraordinary impact.

What is less known is that one of the central figures in the planning, execution and leadership of that mission, retired Adm. William H. McRaven, used what he learned at the Naval Postgraduate School, in the planning and execution of that mission (and quite a few others).

When 'The Theory of Special Operations' was written in 1993 by then Commander William H. McRaven, USN, Al Qaeda was barely on the strategic horizon. Nevertheless, this thesis helped shape the denouement of the horrible tragedy that befell the world on 11 September 2001. Admiral McRaven would go on to publish his NPS thesis as a book, "Spec Ops: Case Studies in Special Operations Warfare" that further shaped his thinking and leadership as the ninth Commander of U.S. Special Operations Command.

Visit our [website](#) to read more..

10 Years Later ... McRaven, Operation Neptune Spear, and the Role of NPS

By Office of University Communications

Just over a decade ago, one of the most consequential and well known missions in modern U.S. history was executed on an unremarkable compound in an unknown city in northern Pakistan. The national leaders at the center of the mission to neutralize Osama bin Laden have reminisced on the extraordinary impact of this event, with the 10-year anniversary of Operation Neptune Spear just a few weeks ago.

What is less known is that one of the central figures in the planning, execution and leadership of that mission, retired Adm. William H. McRaven, pictured here during a 2012 guest lecture on campus, used what he learned at the Naval Postgraduate School, in the planning and execution of that mission (and quite a few others).

In the latest issue of the Journal of Strategic Studies, Dr. James Wirtz, Professor of National Security Affairs at NPS, offers a detailed report on how McRaven's own historical analysis of SOF theories and tactics throughout history were on display in the 2011 raid, and how these might be adapted to the current strategic utilization of special operations, <https://doi.org/10.1080/01402390.2021.1933953>.

And you can hear from McRaven himself discuss the impact of his time at NPS in this In Review piece authored just a year after the raid, <https://nps.edu/documents/10180/108355275/In+Review+April+2012.pdf/9f509f0c-82dc-4305-90d2-7f51eb466759?t=1482353297000>, and during his Virtual SECNAV Guest Lecture held in late 2020, <https://youtu.be/a2YewzW7d4g>.



CAMPUS news & notes

Each year, a command is required to conduct a clean out of classified material to ensure destruction of any classified material that is no longer necessary. This year's annual Classified Material Clean Out Day will be 09 July.

As part of Classified Material Clean Out Day, we need to execute a review of classified materials that are retained in spaces that are outside of NPS' secure vaults.

So...between now and 09 July 2021, all users of classified material who store those materials in a safe in a private office on base but outside of the secure vaults shall inspect those materials, whether documents or physical items (media such as DVDs, CD, etc., books, journals, photographs, maps, charts, posters, etc) and review them for retention or destruction. Items no longer needed must be returned to the Security Manager for removal from classified inventory and for destruction. Material shall be double-wrapped (i.e. sealed in two envelopes) in accordance with security rules before transporting to the Security Manager. Bulky items may be transported in a special pouch available from the Security Manager.

Additionally, working papers identified for retention but lacking classification markings and/or classified material control numbers must be submitted to the Security Manager for documentation, then will be sub-custodied and then returned to one's safe for storage.

Controlled Unclassified Information (CUI) may also be submitted for destruction.

Any questions concerning Clean Out Day may be directed to the Security Manager's Office securitymgr@nps.edu or by phone at 656-2450.

Send your campus news and notes to update@nps.edu.

NPS Safety, Health and Environmental – COVID Updates

By Tony Colon, Safety and Occupational Health Manager

Administrative Leave Usage: (new)

According to DOD and DON guidance, Administrative Leave is authorized in relation to COVID-19 vaccinations administered by DOD, federal, state, and local government organizations, or private health care organizations and pharmacies as follows:

- Up to four (4) hours to receive COVID-19 vaccination (per dose); to include time spent traveling to and from the vaccination location, time at the vaccination location, and, if needed, for a reasonable amount of recovery time.
- On a case-by-case basis, supervisors may grant additional time for extenuating circumstances. (e.g., an employee shows up for a confirmed appointment time but is unable to receive the vaccine and has to reschedule.)
- No more than two (2) workdays, for recovery, per vaccination dose, for employees who experience an adverse reaction to a COVID-19 vaccination. If you have any questions, please contact Ken Stewart via Teams or email at kastewar@nps.edu.

Classroom/Lab Scheduling & Availability: (updated)

Current classroom capacity is 25%-50% of the normal capacity due to CDC 6ft social-distancing guideline.

Alternative spaces, such as larger conference rooms were added to the pool of available classroom spaces to provide additional capacity for in-residence learning.

The Scheduling Office reminds that changes to the posted schedule will need to follow this scheduling workflow.

The Scheduling Office will be available once the schedule is posted to help facilitate room adjustments.

All ad-hoc room requests for events occurring on or after July 5th will be on pending status until the AY21Q4 is finalized. Contact scheduling@nps.edu with any questions.

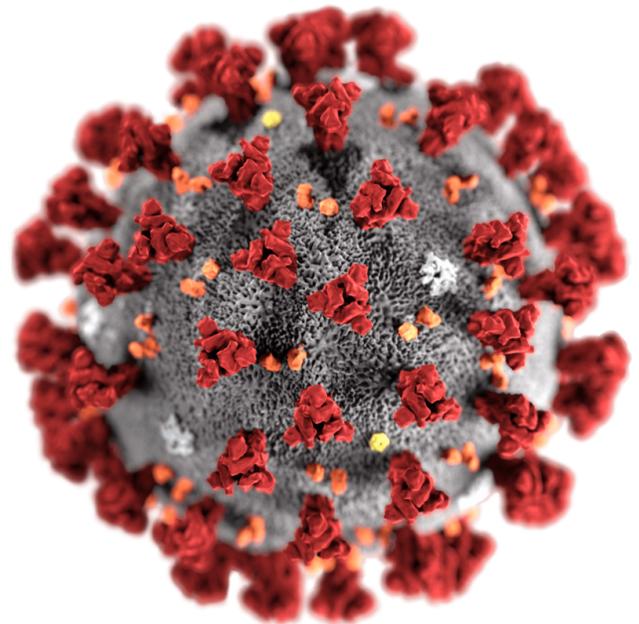
For scheduling questions: scheduling@nps.edu

Other Academic Spaces: (new)

There are currently two methods to make requests for study spaces:

1. Library Spaces: The Library re-opened on 14 June. Open space study areas with socially distanced seating are available. Study rooms will be available on a reservation basis with limited seating capacity. To access the reservation system, you can use the Reserve a Room icon on the Library homepage <https://library.nps.edu/> or directly at <https://libmeeting.nps.edu/>. Once in the reservation system, hovering over the room numbers with your cursor will enable you to see the current seating capacity, following current COVID-19 safety protocols.
2. Campus Spaces*: The Event Scheduler requires VPN access and your nps.edu email account. You can request conference rooms, cubicles, classroom and auditoriums and your requests will be sent directly to the room owner for approval. Learn more about how to make a request at <https://nps.edu/web/scheduling/faqs>.

*Please note that campus spaces are limited so requests will be granted on a first come, first served basis. Additionally, we recommend only making requests for the dates and times you will need the room, as blocking off rooms for an entire day/week is discouraged and may result in a denied request



Any Day at NPS

STUDENT voice

*Maj. Domonique Hittner,
USAF*

Hello new and current students,

The President's Board for Student Affairs (PBSA) is the communication bridge between the staff and students at the Naval Postgraduate School. Getting involved with the PBSA is a way to support fellow students and connect with our community on and off campus. We hold a general student body meeting the second Thursday of every month from 1200-1300 via MS Teams. This meeting will also occur on campus outside of the Dudley Library. This month's meeting is on Thursday, 8 July 2021 from 1200-1300. Please join us or if you are unable to attend, please email for a recap of this meeting.

New this month: We have begun offering campus tours. Our next tours are 7, 9, and 10 July 2021. Please email us to sign up for a tour and we will provide you a specific time for each tour and a map. Over the summer, we will be looking for student volunteer ambassadors to assist with Discover NPS Day on Friday, 5 November 2021. If you are interested in learning more, or participating in any capacity, please email me at domonique.hittner@nps.edu or pbsa@nps.edu.

Please feel free to share any comments or questions you may have. We are always looking for feedback on campus life and our team is here to support you regardless of rank or background. If you would feel more comfortable, you may also reach out to me directly. We are here to serve you and are happy to discuss, address, and try to mediate tough issues students face. You may contact us at pbsa@nps.edu. It is our pleasure to welcome you and we look forward to seeing you soon.

Here to serve,

Domonique Hittner, Chair, PBSA

<https://nps.edu/group/pbsa>



Electronic Technician 2nd Class Garen Mahmoudi, left, receives a Navy and Marine Corps Achievement Medal from NPS Chief of Staff Capt. Phillip Old for his accomplishments during his time stationed at NPS. (U.S. Navy photo by MC3 James Norket)



Naval Postgraduate School department of Physics Associate Professor Fabio Alves, right, shows Deputy Chief of Naval Operations for Warfighting Development (N7) Vice Adm. Jeff Hughes the latest products fabricated in the school's acoustics laboratory, June 17. (U.S. Navy photo by Javier Chagoya)



First place winners, Team Geneseas, from St. Francis Catholic High School in Sacramento, Calif., proudly hold their Remotely Operated Vehicle (ROV) at the 20th Annual Marine Advanced Technology Education (MATE) Regional Competition, hosted by the Naval Postgraduate School's Sea Land Air Military Research Initiative facility, June 19. (U.S. Navy photo by Javier Chagoya)



Information Systems Technician 3rd Class Jacob Onedera, left, receives a Navy and Marine Corps Achievement Medal from NPS Chief of Staff Capt. Phillip Old for his accomplishments during his time stationed at NPS. (U.S. Navy photo by MC3 James Norket)



Sonar Technician 1st Class Ryan Hillis, left, receives a Navy and Marine Corps Achievement Medal from NPS Chief of Staff Capt. Phillip Old for his accomplishments during his time stationed at NPS. (U.S. Navy photo by MC3 James Norket)



Spring Quarter Graduates take a selfie before their commencement ceremony, June 18. (U.S. Navy photo by MC2 Tom Tonthat)

On campus this month

July 4

Independence Day

(Observed July 5)



July 6

Summer Quarter Begins



July 13

V-SGL with Chairman of the House Armed Services Committee
Congressman Adam Smith

2:00 p.m. | Hybrid In-Person / Online



EFFECTIVE IMMEDIATELY:

ALL SAILORS MUST RETURN TO NORMAL HAIR GROOMING STANDARDS.

This announcement rescinds the authority that was granted to commanding officers to optionally relax hair grooming standards during the pandemic.

Feedback and recommendations regarding all things uniform can be provided via email to the **Uniform Matters Office** at UMO_CMC@navy.mil or via the **MyNavy UNIFORMS App**.



Questions specifically regarding NAVADMIN 134/21 should be addressed to Navy Uniform Matters and Emerging Issues Branch OPNAV N13X.

Happy 4th of July

HAVE A SAFE AND HAPPY FOURTH OF JULY!



NEVER ALLOW YOUNG CHILDREN TO PLAY WITH OR IGNITE FIREWORKS!

ALWAYS WATCH FIREWORKS DISPLAYS FROM A SAFE DISTANCE!

NEVER DRINK ALCOHOL AROUND OPEN FLAMES OR WHILE IGNITING FIREWORKS!



MHS Military Health System
health.mil