



NAVAL POSTGRADUATE SCHOOL

UPDATE

NPS

DECEMBER 2010



U.S. Navy Photo by Javier Chagoya

NPS Inducts Three New Members into Hall of Fame

By Amanda D. Stein

On Dec. 3, three new distinguished alumni were inducted into the NPS Hall of Fame. With fond memories of each inductee, President Dan Oliver took to the podium to present the awards to Nancy Hughes, wife of posthumous inductee retired Vice Admiral Thomas Hughes; retired Vice Admiral Patricia Tracey; and retired Admiral T. Joseph Lopez, shown from left to right above with Hall of Fame inductee Dan Albert, center. Oliver offered personal anecdotes of his history with each of the inductees, garnering laughs from throughout the audience.

"He was never concerned about being politically correct, but he loved the Navy and what it stood for ... He was truly my hero."

- Nancy Hughes

Oliver recalled Admiral Hughes' reputation for being a man of character – he becomes the 13th and first inductee to ever receive the Hall of Fame honor posthumously. A 1962 Operations Analysis graduate, he also served as Acting Dean of the Graduate School of Business and Public Policy before his retirement in 2007.

"He was never concerned about being politically correct," said Hughes' widow Nancy, whose heartfelt tribute to her husband misted eyes throughout the gathering. "But he loved the Navy and what it stood for. He was always motivated by what was best for the sailors and the Navy. He was truly my hero."

Admiral T. Joseph Lopez graduated from NPS in 1973 with his Master of Science degree in Management. He is the 14th member of the Hall of Fame to date, and has been an active member on the NPS Board of Advisors for the past ten years. He recalled his time in the Navy with pride.

"There is something extraordinary about the United States of America," said Lopez. "One right that is not exactly spelled out in the Constitution is the right to succeed. And without that right, I could not be here today."

The third and 15th inductee, Tracey also happened to be the first female inductee. Tracey, a 1980 Operations Research grad, noted education had always been an integral part of her career, serving her well in her position as the Chief of Naval Education and Training.

"I don't want to dwell on the fact that she is the first female inductee," said Oliver. "The fact is, regardless of gender, she always had the chops to do whatever she wanted to do."

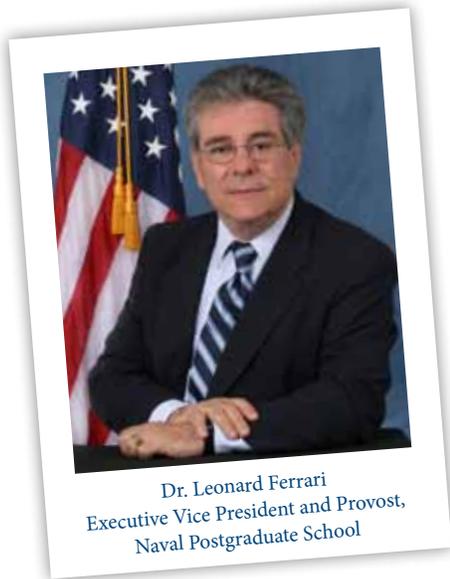
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A Message From ...

Dr. Leonard Ferrari, Executive Vice President and Provost, Naval Postgraduate School



Dr. Leonard Ferrari
Executive Vice President and Provost,
Naval Postgraduate School

As the end of the year rapidly approaches, and the many celebrations that come with it unfold, what could be better than to celebrate the many achievements of those whose work makes NPS the top-tier institution it is? The products of these efforts, our students, are successful because they learn from faculty who are masters of their disciplines – equally astute in the classroom, as office advisors, and in the laboratory and field.

What makes NPS an incredibly exciting and stimulating place to work is not just that we recognize the faculty we are honored to work with, but that our peers do as well. Across all disciplines, our faculty are honored at the highest levels of academia – professional societies, peer universities, academic journals, etc. Though we may honor a handful each year, the Faculty Recognition Award ceremony will be attended by many who have been saluted in the past or who will be in the future.

Several of the awards recognize the extraordinary work done by NPS faculty in various research areas. The names below represent just a small fraction of the education and research done here, critically important to our nation in areas of space, cybersecurity, alternative energy, information sciences, acquisitions, policy and much, much more.

One of our junior faculty, Dr. Johannes Royset, Assistant Professor of Operations Research, is the Menneken winner for Excellence in Scientific Research. Dr. Royset has a substantial record of publication with 21 of 31 articles appearing in peer-reviewed

journals, an impressive list of advisees and a proven track record in acquiring external funding.

Dr. Clay Moltz, Associate Professor of National Security Affairs, received the Hamming Award for Interdisciplinary Achievement. Professor Moltz holds a dual appointment with both the School of International Graduate Studies and the Space Systems Academic Group. In promoting cooperation between NPS and several external space agencies such as the NASA-Ames Research Center and the National Security Space Office, Dr. Moltz increases NPS' impact on this important research arena.

Each year, NPS bestows on a small number of faculty the title of Distinguished Professor in recognition of sustained scholarly accomplishments. Joining the ranks this year are: Professor Jon T. Butler (ECE), Professor Ching-Sang Chiu (OC), Professor Kenneth J. Euske (GSB-PP), Professor Patricia A. Jacobs (OR), Professor Young W. Kwon (MAE), and Professor Herschel H. Loomis, Jr. (ECE). All these individuals have made substantial contributions to their fields.

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While NPS strives to consistently be on the cutting edge of research, the importance of teaching and mentoring future leaders is equally critical. During the just-completed process of reaccreditation, our visiting team particularly noted the high regard with which the students hold the faculty. The intensely close working relationship between mentors and students was noted as being one of NPS' greatest strengths. In surveys of graduating students, faculty are repeatedly mentioned as critical factors to success.

Two awards honor faculty for their roles as mentors. This year's winner of the Schieffelin Award for Teaching is Dr. Timor Radko of Oceanography. The Schieffelin Award is based on nominations and voting of the students and alumni and selection for this honor depends on years of consistent recognition. Associate Professor Rene Rendon of the Graduate School of Business and Public Policy is the winner of a second teaching honor, the Hamming Award. Dr. Rendon is known for his commitment to students and has advised 100 students on their theses thus far.

In many cultures, the end of the year is a traditional time for reflection, thanks and celebration. And thus it is appropriate for all of us at NPS to celebrate these and all of our faculty – the very foundation of this institution and those most responsible for the successful achievement of the NPS mission.

Covert Ravens Featured in Latest SGL

By MC1 Leonardo Carrillo

The Honorable Craig Duehring, former Undersecretary of the Air Force for Manpower and Reserve Affairs, spoke to Naval Postgraduate School students during a Secretary of the Navy Guest Lecture (SGL) at King Auditorium, Tuesday, Nov. 30. Duehring spoke of his time in Vietnam where he



The Honorable Craig Duehring spoke during a Secretary of the Navy Guest Lecture at King Auditorium, Tuesday, Nov. 30. (U.S. Navy photo by MC1 Leonardo Carrillo.)

became a highly decorated pilot and member of the Raven Forward Air Controllers, a covert fighter pilot unit that worked closely with the CIA during the Vietnam War.

The Ravens conducted dangerous military operations and, because of the secretive nature of their missions, the pilots were required to wear civilian clothes and carry no military identification. Many of the pilots would go on missions and disappear without warning never to return, said Duehring.

Duehring gave a detailed summary of his time with the Ravens, about the dangers he faced, and about the near misses he had in which he could have lost his life. He paused for questions and finished his lecture by reminiscing about his time with the unit and by giving a touching remembrance to his fallen comrades.

Exploring Robotics and Autonomous Capabilities with Dr. George Bekey

By Amanda D. Stein

A captivated audience of students, faculty and staff attended a lecture on Autonomous Systems, presented by George Bekey, Emeritus Professor of Computer Science at the University of Southern California, and the Distinguished Adjunct Professor of Engineering at California Polytechnic University, San Luis Obispo.

Bekey has an extensive background in robotics, and spoke about the kinds of technologies emerging in the field of autonomous systems. "I've been in robotics since the 1980s," said Bekey. "I've seen the field change over time from when a robot was only an arm that lifted an automobile engine and dropped it onto a chassis on an assembly line. Now, robots are everywhere."

While autonomous systems are gaining popularity in the civilian world, they have already proven their worth tenfold in the military sector. The U.S. has taken the lead in military robotics capabilities, and has invested in funding unmanned systems that can perform dangerous tasks that threaten the lives of the warfighters.

"From a military point of view, we use robotics because they provide us with the ability to expand the range of an individual soldier,"

said Bekey. "The warfighters' effectiveness is multiplied because you can control more than one robot, penetrate enemy territory further, and have fewer casualties on our side."

As these capabilities gain momentum, the question of ethics has become a hot topic of conversation, exploring issues like proportional response, legal responsibility for a robot's actions, and the pros and cons of using machines to perform tasks without the influence of human emotion. The ethical issue is a key factor, Bekey noted, but one that may change over time as adversaries begin to take advantage of the technology and use it against us.

"All U.S. robotic weapons are fired by human controllers. But every roboticist that I know, in and out of the military, is of the same view ... It's not a question of whether robots will have the ability to select their targets and fire their weapons. It's a question of when."



Dr. George Bekey (U.S. Navy photo by MC1 Leonardo Carrillo.)

from the
MEZZ

In November, President Dan Oliver traveled to San Diego where he met with various flag officers. President Oliver also attended the Board of Visitors meeting for Air University.

Executive Vice President and Provost Leonard Ferrari attended the Global Challenges Forum in Geneva, Switzerland. NPS and the University of Geneva co-hosted the First Annual Meeting of the forum at the U.S. Mission from Nov 15-17, with Ferrari serving as Co-Chair. Participants represented government and non-governmental partners from across the world, discussing modern societal challenges faced by all nations.

The December graduation speaker will be Vice Adm. Richard W. Hunt, Commander of the U.S. Third Fleet and a 1988 graduate of NPS in Telecommunications Systems Management.

The annual Faculty Recognition Evening will be held December 7 at 4:30 p.m. on the NPS Quarterdeck.

The first meeting of the Distance Learning Advisory Council will take place on December 14.

From the Mezz provides a brief report on the activities of NPS' senior administration. For more details on any of these reports, please contact the Office of Institutional Advancement at pao@nps.edu.



Have a story to share?
Institutional Advancement is constantly seeking interesting news and stories for Update NPS.
Send your tips to update@nps.edu.



Iconic Operations Research (OR) faculty Distinguished Professor Al Washburn, left, and Professor Wayne Hughes, right, were recently honored for their significant contributions to the OR community with the Institute for Operations Research and the Management Sciences J. Steinhardt Prize. (U.S. Navy photo by Javier Chagoya.)

NPS Professors Awarded J. Steinhardt Prize by INFORMS

By MC1 Rob Rubio

Two Naval Postgraduate School faculty were selected as this year's recipients of the J. Steinhardt prize by the Military Applications Society (MAS) of the Institute for Operations Research and the Management Sciences (INFORMS). The award was presented to Operations Research Professor Wayne Hughes and Distinguished Professor Emeritus Al Washburn at the INFORMS annual meeting.

The J. Steinhardt Prize is sponsored by the CNA Center for Naval Analyses Corporation to honor individual career accomplishments in practicing or managing military operations research. The award's namesake, Jacinto (Jay) Steinhardt, was a founding member of the Operations Research Society of America, and his lifelong contributions to the operations research community, have been memorialized with the prize. It is awarded for a person's life work and not for any specific contribution.

"The MAS Award is a special honor because J. Steinhardt is one of our greatest pioneers in military operations research, helping to establish our abiding influence in improving Navy operational effectiveness," said Hughes. "I regard my greatest accomplishments as having been in command of two Navy ships and a training establishment ashore. I am proud to have contributed to the best military operations research department in the world and one of the top half dozen departments who teach operations research, systems analysis, systems engineering, or management science."

Hughes also noted that it was an honor to join other distinguished professors from NPS who have received the award, including Washburn, Dave Schradly and Jack Borsting. His research interests over the years have included tactical and campaign analysis, joint littoral warfare, theory of combat and naval history. With over 40 years experience as a teacher at NPS, Hughes continues advising students and conducting research work for the DoD leadership.

Also bringing decades of experience to the OR community, Washburn was inducted into the National Academy of Engineers in 2009. He has provided his expertise in mine warfare, antisubmarine warfare, munitions planning, and information warfare to the NPS community since 1970.

"My main lifetime achievement as far as MAS is concerned is probably the theoretical work I have done on search theory, particularly when the target is mobile and doesn't want to be found," said Washburn. "I have written tutorial notes on various topics, and have recently published a book, "Combat Models," with Moshe Kress."

Washburn also commented that he was especially delighted to receive an award that is sponsored by CNA, an organization whose roots go all the way back to WWII. His research interests include applied probability, search and detection, optimization, combat models, game theory and undersea warfare.

Professor Sophal Ear Awarded Fulbright Grant



Sophal Ear (U.S. Navy photo by Javier Chagoya.)

Sophal Ear, an Assistant Professor of National Security Affairs in the School of International Graduate Studies, was recently awarded a Fulbright grant in conjunction with the Fulbright Senior Specialist designation he received earlier this year.

Ear was invited by the Director of the Institute of Security and International Studies (ISIS) Thailand for a two-to-six week assignment as a visiting professor under the Fulbright program. Professors participating in the Fulbright program traditionally conduct seminars, facilitate workshops and lecture on their areas of expertise - for Ear that means Southeast Asian affairs, focusing on health security and post-conflict reconstruction.

"I'm looking forward to exchanging ideas with my colleagues at ISIS through talks I'll deliver as well as listening to them and learning from them during my assignment," said Ear. "I am grateful for this wonderful opportunity."

OR Professor Named Recipient of the 2010 Menneken Award

By MC1 Rob Rubio

Dr. Johannes O. Royset, Assistant Professor of Operations Research, was named the 2010 winner of the Carl E. and Jessie W. Menneken Faculty Award for Excellence in Scientific Research, announced November 22. Dr. Royset was recognized for both the quality and quantity of his research, the impact his results have had on the Departments of the Navy and Defense, and his exemplary collaboration with NPS students in all aspects of his research.

“This award came as a surprise,” he remarked, “I’m glad to join the list of previous winners.”

Although Dr. Royset is being recognized for significant accomplishments in multiple research areas, his specific area of expertise is solving optimization problems under uncertainty. “Often, plans look good on paper,” he noted, “but in reality may not be as good as originally thought due to unexpected events.” You must plan in an intelligent way, he added, and mathematical models that use

this reasoning offer decision makers better courses of action in the presence of uncertainty.

Royset teaches some 70 to 80 students a year, and has authored or co-authored 31 publications since joining NPS, with 21 publications appearing in peer-reviewed journals. He has received external funding of over \$2 million in support of his research.



Dr. Johannes O. Royset (U.S. Navy photo by Javier Chagoya.)

Created from an endowment by Mrs. Jessie W. Menneken to the NPS Foundation in 1988, the Menneken Award honors a faculty member who has displayed outstanding effort and achievement in research. The award is named in memory of Carl Menneken, the first Dean of Research at NPS.

Committee Works to Develop NPS' Classified Computing Capabilities

By MC1 Rob Rubio

The ability to conduct education and research at a classified level is both a unique benefit, and a mission requirement, at an institution such as NPS. But in order to execute this critical task, not only are secure facilities required, secure computing capabilities are equally vital.

Last year, recognizing this need, campus leaders convened the Classified Computing Committee to examine the university's current infrastructure, and provide recommen-

dations on how best to move forward. “We must maintain this core competency,” noted President Dan Oliver at the committee's latest meeting Tuesday, November 31.

Executive Vice President and Provost Leonard Ferrari added that “the uniqueness of NPS will be working directly with the Department of Defense, while other outside entities working in this field will direct their efforts toward other concerns.”

According to Dr. Christine Haska, Vice President for Information Resources and Chief Information Officer, the “committee has a good battle plan to move forward,” closing by thanking the members for their valued service to the campus community.

The Classified Computing Committee consists of Chair Herschel Loomis; faculty members Chris Eagle, Bret Michael, and Chris Olsen; Information Technology and Communications Services representatives Joe LoPiccolo and Terri Brutzman; and Dudley Knox Librarian George Goncalves.



NPS President Dan Oliver and Executive Vice President and Provost Leonard Ferrari attend the latest gathering of the Classified Computing Committee, November 30. (U.S. Navy photo by MC1 Leonardo Carrillo.)

FACULTY news & notes



GSBPP Prof. **David R. Henderson** spoke on globalization to all the newly selected flag officers and senior executives as part of the week-long New Flag Officer and Senior Executive Symposium (NFLEX) in Potomac, Maryland. The focus of the talk for the 100 flag officers and SES personnel was the security of oil supplies, how free trade makes countries more peaceful, the problem with economic sanctions, and to what extent a more powerful China would be a threat.

The **Center for Homeland Defense and Security** is participating in the University and Agency Partnership Initiative Continental Security Conference December 7-8 in Colorado Springs, Colo., where 30 scholars, policymakers and subject matter experts from Mexico, Canada and the United States will discuss topics related to North American cross-border security such as Homeland Security and Resilience, Emergency Management, Civil Security, and Immigration and Border Issues.

NPS has been selected to host one half of the next Defense Advanced Research Project Agency (DARPA) Challenge. Mechanical and Aeronautical Engineering Distinguished Prof. **Young Kwon** will lead an effort to perform destructive structural tests on polymer CUBESAT spacecraft digitally manufactured by the Space Systems Group led by Prof. **Rudy Panholzer**, then provide data to Challenge participants. The Challenge participants will use the manufacturing and testing data to predict the force required to crush the final CUBESAT in a finale event at NPS. This effort constitutes one-half of DARPA Digital Manufacturing Analysis, Correlation and Estimation or DMACE Challenge. The second half of the Challenge comprises a similar effort to digitally manufacture and test titanium spheres executed for DARPA.

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

Electrical Engineering Grad Honored by ASNE for Excellence in Naval Engineering

By MC1 Grant P. Ammon

Cmdr. Bradford Bittle, an NPS electrical engineering graduate, was named the 2009 Claud A. Jones Award winner for his significant contributions to naval engineering by the American Society of Naval Engineers (ASNE). The award, named for Medal of Honor recipient, and NPS electrical engineering alumnus Admiral Claud A. Jones, is given annually by ASNE to a fleet or field engineer who has made significant contributions to improving operational engineering or material readiness of the maritime forces.

Bittle, awarded for his exceptional performance and achievement while serving as Force Modernization Officer for Commander Naval Air Force and as Chief Engineer of USS *Abraham Lincoln* (CVN 72), attributes much of his engineering success to the values and lessons learned while at NPS.

“As an Engineering Duty Officer, graduate level education in technical fields such as electrical engineering, mechanical engineering, space systems engineering, or computer science is mandatory for

continued service,” said Bittle. “A master’s in an engineering field has provided me a wide and deep tool kit from which to draw from to help solve the difficult issues facing the Navy today.”

Bittle’s course of study at NPS strengthened his engineering proficiency, and allowed him to hone broader skills and earn qualifications that ultimately led to winning the Jones Award.

“Most of my jobs have been more systems engineering oriented, but having the master’s degree from NPS provided me with the credentials to be an active participant in aircraft carrier maintenance and surface ship and aircraft carrier modernization process improvements,” he said.

Current NPS faculty recall Bittle as an astute student, with the capability and aptitude to excel in naval engineering. Dr. Bob Ashton, an associate professor in NPS’ Electrical and Computer Engineering department remarked, “He was an excellent student and I encouraged him to continue on a career path in the power electronics/systems area. His thesis concentrated on a hybrid inverter for possible application to electric propulsion motor drives for the Navy. It would have been nice to have him as a Ph.D. student.

“We had more than one incident of trouble while attempting to prove the hybrid concept on the available hardware in the Power Lab,” added Ashton, noting a specific memory of working with Bittle. “In the end after many hours of work, Brad was able to obtain some very good results from the hardware that matched the modeling performed.”

Bittle is currently serving as deputy operations officer at Puget Sound Naval Shipyard and Intermediate Maintenance Facility in Bremerton, Wash.



Cmdr. Bradford Bittle, right, addresses an American Society of Naval Engineers (ASNE) symposium audience after being presented the 2009 Claud A. Jones Award for significant contributions to naval engineering by Chief of Naval Operations Admiral Gary Roughead, left, and ASNE National Council President Kathleen Hinton, center. (U.S. Navy photo provided by Puget Sound Naval Shipyard.)

Focus On ... Staff Development Council

A Monthly Look at Names and Faces on Campus

The Staff Development Council (SDC) works to provide a framework for career and professional development opportunities for NPS staff.

In FY 2010 the SDC provided staff development projects such as online learning opportunities through golearn.gov, Skill Path courses, and five on-site training opportunities reaching approximately 200 employees. Subjects covered at the on-site training ranged from managing multiple projects to handling

conflict. The SDC also provided pre-retirement planning services, specialized employee development courses and brown bag lunch sessions via the Employee Assistance Program.

Learn more about the SDC by visiting their Web site located in the staff section of the intranet.

Officers of the SDC, from left to right, Sue Ann Falkenberg (Vice Chair), Jennifer Watson (Secretary), and Paul Buczynski (Chair).



Any Day at NPS ...



Marine Corps Gen. James Cartwright, Vice Chairman of the Joint Chiefs of Staff, poses with select students from the Graduate School of Business and Public Policy (GSBPP) following a presentation to GSBPP students, faculty and staff October 28. Cartwright challenged the group to remain relevant through continuous formal education and to look for efficiencies to apply to national strategic concerns. (Photo provided by Cmdr. Tom Roulston.)

NPS Assistant Professor and C4I Chair Rachel Goshorn highlights some of the sensors on board one of many autonomous vehicles in the university's UAV/AUV Robotics Lab in Halligan Hall. About 25 children and parent chaperones from the First LEGO League of Monterey toured the lab Wednesday, November 17. (U.S. Navy photo by Javier Chagoya.)



Capt. Gerral David, NSAM commanding officer, fires the starting pistol for this year's Turkey Trot fun run. More than 175 students, faculty, staff and family members took to the university's streets as part of the 7th annual event. The 5K fun run/walk, hosted by MWR, NPS and NSAM, aimed to boost physical fitness and promote healthy family lifestyles. (U.S. Navy photo by MCI Grant P. Ammon.)

Rear Adm. Nevin P. Carr, Jr., Chief of Naval Research and an Operations Research graduate of NPS, personalizes a poster spotlighting his prestigious career during the Office of Naval Research's 2010 Naval Science and Technology Partnership Conference. NPS Alumni Relations staff attended the conference. (U.S. Navy photo provided by Kari Miglaw.)



Dual-degree student Marine Corps Capt. Joshua Dixon holds up a smartphone, a tool he studied as both a technologist and an acquisition professional during his time at NPS researching how to optimize global and regional mobile communications and applications in the battlefield. Dixon discussed the results of his efforts and outlined next steps during the latest Cebrowski Institute Brown Bag series. (U.S. Navy photo by Javier Chagoya.)



STUDENT voice

By Maj. Randy Staab

It is December and final exams, awards ceremonies, enrichment week, graduation, and Christmas break are upon us. For those in the student body who are not graduating this quarter, what are your plans for Academic Enrichment Week or "e-week"?

Academic Enrichment Week is a great time to take advantage of opportunities that you may not normally have time for during the busy quarter. Based on your feedback, and input from the student council, this nascent program continues to evolve and provide more of what you are asking for. The next time you login to the Student Check-In page to conduct your daily muster, take a moment to read the Winter Quarter 2010 Enrichment Week announcement. There, you'll find a link to some of the many available offerings.

E-week offers more than just a chance to take some additional leave for those who have just completed several consecutive operational tours. The offerings are as diverse as an Introduction to the Transcendental Meditation Technique, to a seminar on Getting Ideas Adopted. There are also several film presentations and a book seminar for those wanting to engage the non-engineering side of their mind. Additionally, the library seminars and First Aid and CPR courses provide practical skills for your academics and life respectively.

The President's Student Council needs your input; please consider joining Vice-Chairman Capt. Jim Gerber, Recorder Lt. j.g. Kerri Ackman, and me on the student council by contacting rjstaab@nps.edu. The PSC is the venue for your actionable ideas and suggestions to become a reality.

Maj. Staab is the Chairman of the President's Student Council. Visit the PSC on the intranet at <http://intranet/psc/index.html>.

On Campus this Month

December 4

Foundation Grand Winter Ball
POC NPS Foundation Ext. 2339



U.S. Navy photo by Javier Chagoya



December 13-16

Enrichment Week

U.S. Navy photo by Javier Chagoya



December 7

Faculty Recognition Evening
Quarterdeck, Herrmann Hall
POC Sharee Kelso Ext. 2371

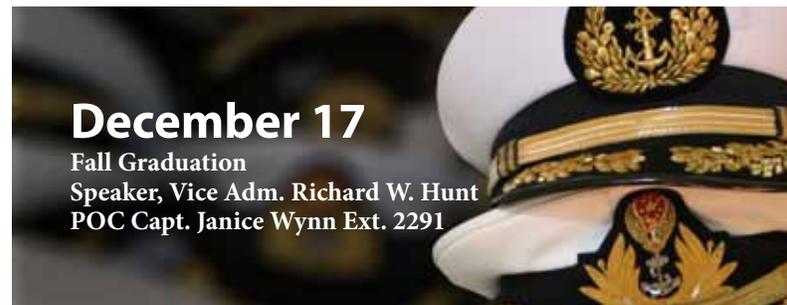
U.S. Navy photo by MCI Leonardo Carrillo

December 14

Dr. George Lucas
Speaker, GSBPP Cyber Warfare Seminar
POC Frank Barrett Ext. 2328

December 17

Fall Graduation
Speaker, Vice Adm. Richard W. Hunt
POC Capt. Janice Wynn Ext. 2291



U.S. Navy photo by Javier Chagoya

December 7

Graduation Awards Ceremony
POC Capt. Janice Wynn Ext. 2291

NPS News Center

www.NPS.edu/news



Historical Highlights

The December 7, 1941 surprise attack at Pearl Harbor took the lives of 1,177 men aboard the USS *Arizona*. Among the fatalities were the commanding officer, a Naval Postgraduate School alumnus, Captain Franklin Van Valkenburgh and three young sailors — Tom Travato, Jack Hazdovac and Michael Criscuola — from Monterey's Oak Grove Neighborhood, the community next door to today's NPS campus.

Salvage operations recovered some of the gun turrets and other items from the ship, including silverware from the wardroom. The ship was never raised and the Navy declared the crew as missing at sea.

A knife, spoon and two forks from the USS *Arizona* salvage operations are currently on display near the circulation desk in the Dudley Knox Library.

Historical Highlights are provided by the Dudley Knox Library.

