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Department of Systems Engineering

Systems Engineering Department Newsletters

2011

Systems Engineering Department Newsletter / September 2011

Naval Postgraduate School (U.S.)

Naval Postgraduate School, Monterey, California

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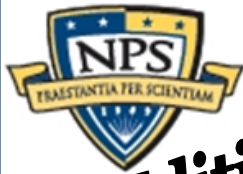
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SYSTEMS ENGINEERING
ESTABLISHED 2002

Special Edition

SE DEPARTMENT NEWSLETTER
SEPTEMBER 2011



From the Chair

It's official - NPS Resident (580) and Distance Learning (311) MSSE Programs are now ABET accredited with backwards accreditation to 2008! This is the culmination of a combined effort from the entire systems engineering department faculty and staff, and indeed campus-wide support. As in all of these sorts of major transitions, this one only marks the beginning for us in providing the opportunity to maintain a world-class systems engineering education program, and have a structure within which to maintain continuous improvement. With the next ABET visit scheduled for all NPS Engineering programs due in 2013, we've got our work cut out for us in 2012 to collect materials for our next self-study. No time to rest on our laurels!

The department continues to grow. We have almost 80 resident students among our SE and SEA programs, and about 400 DL students in any given quarter. We've added seven new faculty in the past year, including five tenure track faculty in Monterey and two full time faculty, in Pax River and the National Capitol Region in Northern Virginia. We'll be introducing the newest faculty members in this and upcoming quarterly newsletters.

We have revitalized our newsletter, and expect to publish one each quarter, bringing you updates on our education programs, research, faculty, awards, intern projects, general news items, and more from our departmental family.

Did You Know. . .

- ABET stands for *Accreditation Board for Engineering and Technology*
- ABET accredits over 3100 programs at more than 600 colleges and universities worldwide
- ABET accredits degree programs, not coursework, degrees, curricula, departments, colleges, or universities

**MSSE Resident Program & MSSE Distance Learning (DL) Program
Both programs now accredited!!**



Student News

Spring Graduations and Awards



Clifford Whitcomb
Department Chair

Robert Harney

Associate Chair for Research

Matthew Boensel

Associate Chair for Operations

Wally Owen

Associate Chair for Distributed Learning & Outreach

Gene Paulo

Associate Chair for Instruction

Curriculum 308 Systems Engineering Analysis

Mark Stevens

Academic Associate

Douglas Burton

Program Officer

Sandra Stephens

Ed Tech

Curriculum 311 Systems Engineering (DL)

Eugene Paulo

Academic Associate

Joseph Sweeney

Program Officer

Heather Hahn

Ed Tech

Curriculum 580 Systems Engineering

Mark Stevens

Academic Associate

CAPT Brian McGinnis

Program Officer

Sandra Stephens

Ed Tech

Curriculum 721 Systems Engineering Management

Tom Huynh

Academic Associate

Joseph Sweeney

Program Officer

Heather Hahn

Ed Tech

This newsletter is a quarterly publication of the Department of Systems Engineering, NPS. Its contents do not necessarily reflect the official views of the U.S. government, the Department of Defense or the U.S. Navy, nor does it imply endorsement thereof. Information may be subject to change without notice.

Curriculum 308 –Systems Engineering Analysis

- ♦ LT Shavonne Alexander, USN
- ♦ LT Walter Brinkley, USN
- ♦ LT Joseph Bubulka, USN {Wayne E. Meyer Award for Excellence in Systems Engineering (Integrated Project)}
- ♦ LT Phillip Castaneda, USN
- ♦ LT Jordan Cohen, USN
- ♦ LT James Drennan, USN, *The Northrop Grumman Student Award for Excellence in Systems Engineering and Distinguished Graduate*
- ♦ LCDR Tracy Lyn Emmersen, USN, *Naval Postgraduate School Superior Service Award, Wayne E. Meyer Award Outstanding Student in Systems Engineering (Integrated Project) and Distinguished Graduate*
- ♦ LT Matthew Kenfield, USN
- ♦ LT Johnny Quilenderino, USN, *Wayne E. Meyer Award for Excellence in Systems Engineering (Integrated Project)*
- ♦ LT Thomas Roberts, USN
- ♦ LT Jonathan Saburn, USN
- ♦ LT Anthony Silvestrini, USN
- ♦ LT William M. Walker, USN, *Wayne E. Meyer Award Outstanding Student in Systems Engineering (Integrated Project) and Distinguished Graduate*
- ♦ LCDR Wes Wessner, USN

Curriculum 311 –Systems Engineering (DL)

- | | |
|---------------------|----------|
| ♦ Becker, John | 311-094S |
| ♦ Calvert, Willard | 311-094S |
| ♦ Cohn, Rachel | 311-094S |
| ♦ Cookingham, Shaun | 311-094S |
| ♦ Cox, Patrick | 311-094S |
| ♦ Goode, Shawn | 311-094S |
| ♦ Goodman, Gail | 311-094S |
| ♦ Heidt, Brian | 311-094S |
| ♦ Jordan, Christie | 311-094S |
| ♦ Kumar, Deepak | 311-0912 |
| ♦ Lojek, Joseph | 311-094S |
| ♦ Malecki, Sarah | 311-094S |
| ♦ Mangum, Katherine | 311-094S |
| ♦ Meyer, Paul | 311-101A |
| ♦ Mitchell, John | 311-094S |
| ♦ Mitchell, Paul | 311-101A |
| ♦ O’Neill, Kevin | 311-094S |
| ♦ Powell, Brian | 311-094S |
| ♦ Rhodes, David | 311-094S |
| ♦ Seraile, Kevin | 311-094S |
| ♦ Sweetman, Denman | 311-094S |
| ♦ Wasilewski, Mark | 311-094S |
| ♦ Winograd, Samuel | 311-094S |



Senior Lecturer Doyle Daughtry receiving the Northrop-Grumman Faculty award for his impact/influence on the SEA 17 cohort's educational experience here at NPS (student selected).



Pictures by
NPS PAO
photographer,
Javier Chagoya

Student News

Spring Graduations and Awards

Curriculum 311 –Systems Engineering (DL) (continued)

Awards:

Student Recipients for the Wayne E. Meyer Award for Excellence In Systems Engineering for Outstanding Academic Achievement:

- ◆ Willard Calvert
- ◆ Mark Wasilewski

Faculty Recipients for the Wayne E. Meyer Award for Excellence in Systems Engineering for Teaching Excellence:

- ◆ Kristin Giammarco
- ◆ Brigitte Kwinn

Recommended for Graduation with Distinction:

- ◆ Willard Calvert with a 4.0
- ◆ Paul Mitchell with a 4.0



Heng Jiin Shyang, Singapore graduate,
with Provost Ferrari

Curriculum 580 –Systems Engineering

- ◆ LT James Brawley, USN
- ◆ Mr. Heng Jiin Shyang, Defence Science and Technology Agency, Singapore
- ◆ LT Christopher K. Matassa, USN
- ◆ LT Nathan C. Matson, USN

2nd Degree: Master of Science in Electrical Engineering

Space and Naval Warfare Systems Command Award in Electronic Systems Engineering from ECE; Outstanding Thesis Award in SE and Distinguished Graduate

- ◆ LCDR Jackson Ng, Republic of Singapore Navy
The Northrop Grumman Student Award for Excellence in Systems Engineering and Distinguished Graduate
- ◆ LCDR Joseph A. Saegert, USN
Naval Sea Systems Command Award for Excellence in Systems Engineering
- ◆ LT Kristopher Walker, USN
- ◆ LT Evan Brongwyn Williams, USN

Curriculum 721 –Systems Engineering Management

- ◆ Chin, Carrey 721-071
- ◆ Martin, Nicholas 721-061



*****CALLING ALL ALUMNI*****

If you would like to continue receiving the SE Newsletter and also contribute to the “ALUMNI NEWS” section in our next issue, please send your email address to

SEDepartment@nps.edu



ABET



The Systems Engineering program underwent initial accreditation review by ABET in the Fall of 2010. ABET accreditation is a tremendous milestone for the department, and a ringing external endorsement of the quality of our students, faculty, and programs.

The preparation for the accreditation visit spanned two years, and the entire faculty was heavily involved. Special recognition goes to CDR Tom Cawley and Ms. Lori Wilson, who provided full-time staff support to the effort. Our flag sponsors and SEOC members were particularly helpful, as they verified the guidance that they had set for the program and endorsed its effectiveness. Prof. Whitcomb organized the effort and provided resources, CAPT Dan Burns represented the GSEAS Dean, and Prof. Olwell led the team. Professors Whitcomb and Olwell were recognized with the Navy Meritorious Civilian Service

Award for their efforts, CDR Cawley received the Meritorious Service Medal, and CAPT Burns received the Legion of Merit in part for his contribution to ABET. Ms. Wilson was publicly acknowledged and thanked by the NPS President for her contribution.



An academic department creates, archives, and transmits knowledge. The Department of Systems Engineering has been supporting an ambitious, world-wide effort to create the Systems Engineering Body of Knowledge and a Graduate Reference Curriculum for Systems Engineering. These are the two primary products of the BKCASE project.

BKCASE is the acronym for the **Body of Knowledge and Curriculum to Advance Systems Engineering**. The BKCASE project is led by a university partnership between the Stevens Institute of Technology and the Naval Postgraduate School with sponsorship from the U.S. Department of Defense and support from INCOSE, the IEEE Computer Society, IEEE Systems Council, ACM, and NDIA Systems Engineering Division. The project scope is to define a Systems Engineering Body of Knowledge (SEBoK) and use the SEBoK in the development of a Graduate Reference Curriculum for Systems Engineering (GRCSE).

The project began in 2009, with Prof. Art Pyster of Stevens Institute and Prof. Dave Olwell of NPS as co-leads and co-editors. Assoc. Prof. Ray Madachy has been one of the project authors, joining over 60 other authors from every continent except Antarctica. Ms. Stephanie Enck, research associate, has been providing primary staff support to the project. OSD has provided significant funding, with the balance coming in donated labor and travel from the other author's organizations.

The SEBoK has seven parts: an introduction, an overview of systems and systems science, an overview of systems engineering and management, applications of systems engineering, enabling systems engineering, systems engineering and other disciplines, and implementation examples. The SEBoK has been placed on a Wiki, and comprises about 130 articles and almost twenty case studies and supporting vignettes. It also includes almost 1000 references.

GRCSE includes entrance expectations, objectives, outcomes, curricular architecture, a definitive list of the common core body of knowledge, and assessment.

First drafts of the products were released for limited review in 2010. Public drafts will be released in the fall of 2011, with final products delivered in the fall of 2012.

Together, the products will define what is included in the field of systems engineering, and what should be taught about systems engineering at the graduate level.

See www.bkcase.org for more information.



WASC

NPS underwent a campus-wide accreditation visit by the **Western Association of Schools and Colleges (WASC)** last fall, and received a full ten year reaccreditation. Several SE faculty members played important roles in the multi-year process leading up to reaccreditation.

Ms. Kathie Cain provided staff support to the Vice-Provost's office, and led the effort to develop and collect metrics on academic success. In particular, she was instrumental in collecting and analyzing the capstone assessments, which have become the most important direct measure on campus of student success.

Professor Dave Olwell served on the WASC Steering group, the educational effectiveness steering group, and led the learning assessment task force that completed an initial report in 2007. He co-wrote the distance learning portion of the self-study.

Many practices that originated in the SE department were chosen as best practices as part of the WASC effort, and disseminated across campus.

WASC accredits the institution, and ABET accredits the systems engineering program. Both external reviews in 2010 reflected very well on the Department of Systems Engineering.

SEOC

Strengthening the skills and knowledge of the Department of the Navy engineering and technical workforce is vital to ensuring current and future readiness of our war fighting capabilities. This requires educational opportunities that are current and relevant to the complexities of a dynamic war fighting environment. The Naval Postgraduate School is a key contributor to providing these opportunities.

The **Systems Engineering Oversight Council (SEOC)** provides a means to accomplish the NPS goal of enhancing the technical and engineering skills and knowledge of our uniformed and civilian workforce. The SEOC is a means to provide feedback and advice to the leadership of NPS concerning the effectiveness of the systems engineering curriculum in achieving the strategic goals of the department.

The SEOC Membership is made up of the following Navy Sponsors:

ASN (RD&A) - Office of the Assistant Secretary of the Navy (Research, Development and Acquisition)

MARCORSYSCOM – Marine Corps Systems Command

NAVAIR –US Naval Air Systems Command

NAVSEA –Naval Sea Systems Command

SPAWAR –Space and Naval Warfare Systems Command

SSP –Strategic Systems Programs

Our next SEOC meeting on the Monterey Campus is on the morning of 22 September following the SE Lessons Learned Conference. Agenda will be published separately.

PD21

The Joint Executive Systems Engineering Management Distance Learning Students visit the “Mile High” City to attend the 21st Annual INCOSE International Symposium (June 20-24, 2011)

Written by: Mike DiFranco

Students in the Joint Executive Systems Engineering Management - Product Development Leadership Education for the 21st Century (SEM-PD21) Degree Program, an interdisciplinary leadership program designed for senior engineering and technical professionals, recently attended the INCOSE International Symposium in Denver, Colorado.

“Attending industry visits and related technical conferences are designed to expose the students to the latest state of the art concepts, tools and best practices, both private and public, in systems engineering, product development and business management related fields, says SEM-PD21 Program Manager, Dr. Wally Owen. “The industry trips play a key role in the student overall development to become future leaders and senior managers responsible for driving business growth through innovation and to become effective change agents at their companies and organizations.”



Conferences, Councils, Organizations

& Projects

One of the key value propositions of the program is collaboration not only jointly within defense and across the services, but also with defense industry partners.

“The INCOSE International Symposium in Denver provided an excellent venue for students, educators, and professionals to come together and learn the latest techniques applied in system engineering,” says Terence Ontawco, SEM-PD21 student and Electrical Engineer for NAVAIR. “It is an opportunity for students to learn from other cohorts, to gain insights on possible thesis topics, and build working relationships and networks.”

“I expected a litany of standards and governance administration; what I got was a vital community ‘exploring the edge of the envelope’ in this discipline, improving, validating and evolving the state of systems engineering knowledge,” says Dan Mulligan, SEM-PD21 student and NASA Project Orion Risk Manager “It really helped me ‘size the scope’ for my thesis topic, and put several of my ideas in a larger supporting context that will vastly improve the utility of my publication.

As part of the INCOSE International Symposium, the SEM-PD21 students attended the Laboratory for Atmospheric and Space Physics (LASP), one of America’s leading university facilities for space science research, spacecraft instrument development, and space mission operations.

A research facility operated by the University of Colorado, LASP is a full-cycle space institute, combining all aspects of space exploration through its expertise in science, engineering, mission operations, and scientific data analysis. LASP’s science research focuses on the study of Earth’s atmosphere, the sun, and the solar system. The tour provided a fascinating glimpse into the fields of space science, aerospace engineering, and space mission operations.

“The visit to the Laboratory for Atmospheric and Space Physics was very beneficial in seeing SE in practice,” says Phuong N. Lam, SEM-PD21 student and ESSM System Integration Manager/NATO.

This trip provided a venue for the students to interact with each other both professionally and socially.

“Attending the conference helps students strengthen their communication skills, which can help strengthen their social and networking skills especially when dealing with potential customers,” says Ontawco. “Developing soft skills allow the student to form strategic alliances with industry professionals to help them solve problems using various system engineering approaches within their organization.”

Planning and execution of the trip was coordinated by The Naval Postgraduate School’s Center for Educational Design, Development, and Distribution (CED3).

“The Administrative Team’s coordinated funding and travel arrangements, planned social events and executed contracts with numerous agencies involved in trip,” says Heather Rougeot, CED3 Assistant Student Coordinator. “The Student Services Team compiled a list of suggested industries to visit and worked directly with selected sites to make the necessary arrangements for access and presentations.”

CED3 team also provided participants with exceptional support through travel documentation processes, detailed communications about logistics, requirements and frequently asked questions, as well as in person and 24-hour on call support throughout the duration of the trip.

“Thanks to (CED3’s) tireless synchronizing, coordinating and communicating, I never ended up lost or missed an important message, and was free to fully focus on and absorb the content of the symposium,” says Mulligan.

SEM-PD21’s one-of-a-kind industry visits continue to exceed expectations. These annual trips will continue to play a key role in the development of future student cohorts.

“The support staff encouraged the students to use the (INCOSE) venue as an opportunity to conjure up ideas for their thesis, select an NPS advisor that could guide them, and start formulating their thesis on paper early,” says Ontawco. “Since the next industry trip is scheduled for Rome next year, it would probably be ideal for students to finish beforehand so they can enjoy what the beautiful city has to offer. I personally am looking forward to the challenge and plan to finish my thesis on time.

“I believe experiences gained and the relationships established among these students pays great dividends to the students themselves, their organizations and DoD not only during the program but well into the future as each graduate climbs their respective corporate ladders,” says Dr. Wally Owen. “The long-lasting relationships established and knowledge gained by the students will help improve the way defense does business.”





T-Craft Project

The Office of Naval Research (ONR) is embarking on an effort to develop “Game Changing” Innovative Naval Prototypes (INPs) for Sea Basing. An ongoing Sea Basing INP is the Sea Base Connector Transformable Craft (T-Craft) Program. The T-Craft is intended to deploy in an unloaded condition from an intermediate support base to a Sea Base and then be used as a Sea Base connector, transporting wheeled and tracked vehicles, and other cargo, through the surf zone and onto the beach. This would be a significant technological advancement, as current Navy surface connectors have to be carried into theater within the well decks of amphibious ships. These current amphibious connectors carry small payloads over small distances and can only operate in low sea states. The T-Craft is intended to improve the cargo limitations of the Landing Craft Air Cushion (LCAC) and the speed limitations of the Landing Craft Unit (LCU).

From 2009-2010, research focused on the definition of a fleet architecture that effectively utilized T-Craft, development of a life cycle cost analysis, and analysis of simulations to examine T-Craft operational and performance requirements.

2011 research focused on an expansion of the cost analysis previously performed, as well as analysis of scenario specific implementation of T-Craft, based on the T-Craft parameters defined by previous thesis work and ONR guidance. The cost estimate focused on expansion of previous work to a complete rough order of magnitude life cycle cost to support a fleet of T-Craft over a 25 year operational life. A comprehensive examination of T-Craft fleet integration was conducted in a Foreign Humanitarian Assistance/Disaster Relief (FHA/DR) scenario from both an Army and Navy perspective. The analysis served as a proof of concept for the T-Craft in an operational environment. That analysis was expanded to determine the desired capabilities that had the largest impact on T-Craft performance in the same operational environment. Four operations research theses, two systems engineering theses, one MOVES thesis, and one SEA Capstone project have been completed in support of the T-Craft research.

A related effort in support of ONR research is focused on using Model Based Systems Engineering (MBSE) in support of ship design. The research is focused on leveraging the benefits of using state of the art experimental design techniques to investigate the linking of combat system capabilities and ship design and selection through modeling and simulation. It includes, through modeling and simulation analysis, assessment of the achievement of mission success, system performance, and life cycle cost analysis into the design linkage to combat system and ship architecture. The project intent is to leverage students theses to develop an MBSE framework that demonstrates linkage between traditional First Principles of Naval Architecture and mission effectiveness. SE faculty are also coordinating with the MOVES Institute and the SEED Center to design and conduct simulation experiments with a focus on missions and linked to the combat systems capabilities and the design trade space. The OR Department is beginning an exploration of the methodology to integrate life cycle costs into the trade space through simulation. An effort is also being made to integrate the MBSE methodology into the Capabilities Engineering course.

Professor Whitcomb Presents on SE Education at German Systems Symposium

Professor Cliff Whitcomb was invited to speak at a German Defense Association (DWT) Symposium on Systems and Interconnections in Wilhelmshaven in June. His topic was Systems Engineering Education in the US Navy. Two German schools also presented summaries of their systems programs to the audience who consisted mostly of German government and defense contractors for the combatant shipbuilding industry. In addition to the two day symposium, attendees were given a tour of their latest F124 class Frigate, the Hessen F209. This is an impressive surface combatant with a THALES multi-function radar, MK-41 VLS system, RAM, ESSM, and an advanced CODAG propulsion system. The Hessen had recently returned from a deployment with the USS Harry S. Truman battle group, where she conducted air surveillance operations. A tour was also given of their NavCCSyscom, where they design and test all of the combat system suites. This tour included a review of the design of their next class of surface combatants, the F125 class. The Commander of NavCCSyscom, KzS Gunter Steinberg, is a graduate of the NPS Computer Science Program, having had Professor Luqi as his thesis advisor. KzS Gunter Steinberg stated that his education from NPS has served him immensely well for design and implementation of the German Navy's systems. As a grand finale, several attendees were hosted at a dinner at the local Officers Club in Wilhelmshaven. Pictured at the Officer's Club are KzS Michael Droste (ret), former Commander of NavCCSyscom, Professor Cliff Whitcomb, Dr. Nicole Matzner-Vogel from UniBw Munchen, Sven-Olaf Schulze, the INCOSE Board of Directors Region III representative, Professor Roger Forstner from UniBw Munchen, and FKPT Andreas Czerwinski from NavCCSyscom.





NPS to Co-Host the Next CDIO Regional Meeting

The NPS Systems Engineering and Mechanical and Aerospace Engineering departments are combining forces to host a regional conference for the international CDIO Initiative from October 19-21, 2011. Stanford University is also co-hosting this year's conference in conjunction with NPS. Participants will attend at NPS for the first two days, then travel to Stanford for the third day. From the CDIO web site (<http://CDIO.org>): The CDIO™ INITIATIVE is an innovative educational framework for producing the next generation of engineers. The framework provides students with an education stressing engineering fundamentals set in the context of Conceiving — Designing — Implementing — Operating real-world systems and products. Throughout the world, CDIO Initiative collaborators have adopted CDIO as the framework of their curricular planning and outcome-based assessment. CDIO collaborators recognize that an engineering education is acquired over a long period and in a variety of institutions, and that educators in all parts of this spectrum can learn from practice elsewhere. The CDIO network therefore welcomes members in a diverse range of institutions ranging from research-led internationally acclaimed universities to local colleges dedicated to providing students with their initial grounding in engineering. NPS became a member of CDIO in 2011, joining many other schools such as MIT and Stanford in the US.

Meeting details for registration, lodging, and other information can be found on page 13 in this issue and on the web at [2011 Worldwide CDIO Meeting](#).

Professor Millar Conference Notes

Dr. Richard C. Millar, Associate Professor—In March, I attended the Propulsion Safety and Affordable Readiness Conference at Ponte Vedra Beach, Florida, presenting my recent research into requirements for turbo-machinery monitoring, and AIAA Info-tech@Aerospace Conference in St. Louis, presenting paper AIAA-2011-1598, “Integrated Sensor Node as an Approach to Integrated Instrumentation Sensor Systems for Aerospace Systems Control” (R.C. Millar & B. Tulpule).

I participated in two conferences in June: ASME Turbo Expo, Vancouver, Canada; presented paper GT2011-45741, “Turbo-Machinery Monitoring Measures for Propulsion Safety and Affordable Readiness” (R.C. Millar), and ISA International Instrumentation Symposium, St. Louis MO: presenting recent research at the PIWG session on Intelligent Engine Control and the PIWG Tip Timing workshop.

Also in June, I participated in the review of five (5) proposals for DOE’s DE-FOA-0000518 Funding Opportunity “Advanced Fossil Energy Research: Novel Developments In Sensors And Controls For Fossil Energy Power Generation And Fuel Production Technologies”.

SE Newsletter Editor

Lori A. Wilson

*Please direct any comments or questions to
lawilson@nps.edu*



Meet the Faculty

This section features newer faculty members, highlighting their unique expertise and commitment to excellence.



Timothy H. Chung, Assistant Professor

Dr. Timothy H. Chung is an Assistant Professor of Systems Engineering at the Naval Postgraduate School in Monterey, California. His research interests include probabilistic search, multi-agent coordination for information gathering applications, and operations and decision support for robotic systems. He received

his doctorate (2007) and M.S. (2002) at the California Institute of Technology in mechanical engineering and his B.S. (2001) in mechanical and aerospace engineering at Cornell University. He is a Gates Millenium Scholar alumnus and recipient of numerous professional service awards. He joined the NPS Systems Engineering department as tenure-track faculty in 2011.



Rama Gehris, Professor of Practice

I am relatively new to teaching at NPS (started in Feb 2011). So far I have taught SE4003 (Systems Software Engineering) and Capstone advising. Even though I did my BS and MS in applied mathematics, I have spent my whole non-NPS career working as a Navy Civilian (at China Lake and Paxtuxent River) in various capacities within the software realm, earning a doctorate in Systems Engineering from The George Washington University in 2008 along the way. I have particular interest in the area of software process improvement

and expert judgment theory (especially as applied to software cost estimation).

While I am not busy teaching, I enjoy a diverse range of hobbies including cello playing, martial arts, jewelry making, knitting, crocheting and cooking. Add in two large dogs, a husband who works for NAVSEA and three teenagers (8th grade, high school senior, and sophomore at Rochester Institute of Technology) and you pretty much have all free time covered. The picture is me and my family just after the “Snowmageddon” which struck the Washington DC area during winter 2010. Yes, we are crazy! And it was my husband’s idea.



Alejandro (Andy) Hernandez, Associate Professor

Andy Hernandez is a recent arrival to the Systems Engineering Department, beginning his duties as an Associate Professor on 5 July 2011. He brings additional military experience to the department after completing a tour in the Pentagon with the Army Deputy Chief of Staff for Programs (G-8) and deployment in Iraq as the Director of Analysis and Assessments for United States Forces – Iraq. Andy’s dual-tracked career between the Field Artillery and the Operations Research community motivate his instruction and research efforts. He has served as the senior independent analyst for the Predator during its Advance Concept Technology Demonstration and lead for an assessment of the 4th Infantry Division’s Fires capabilities. Most recently, he managed NPS’ comprehensive, multi-disciplinary support to the Joint IED

Defeat Organization. His other previous duties with NPS include Director of Wargaming, Associate Dean for the Graduate School of Operational and Information Sciences, and Senior Army Representative. Andy has lectured and taught Wargaming Analysis, Quantitative Analysis, as well as Probability and Statistics. He possesses a bachelors degree in Civil Engineering from the United States Military Academy and masters and doctorates degrees in Operations Research from Naval Postgraduate School. His dissertation produced new experimental designs that have been applied in numerous studies that range from addressing a Marine Corps fire support problem to the examination of UAV distribution in network-centric warfare. Andy will continue his work in simulation experimentation and application of simulations in the acquisition process. He is married to the former Miss Mary Geraldine O’Keeffe and enjoys his five children.



Meet the Faculty

This section features newer faculty members, highlighting their unique expertise and commitment to excellence.



Douglas H. Nelson, Associate Professor

Doug Nelson received his Bachelor's degree from the United States Military Academy and was commissioned as an armor officer. Between various operational assignments, several in Korea, he earned an MS in physics from NPS and was an Instructor/Assistant Professor of physics at West Point. While conducting performance modeling and validation of CO₂ DIAL as a Military Research Associate/Research Assistant at Los Alamos National Laboratory, Doug earned his PhD in Optical Science from the University of New Mexico.

Post military retirement, Doug evaluated AIM-9X Sidewinder tracker performance at Raytheon Missile Systems. Later, at The Boeing Company, he contributed to programs that include Airborne Laser Adjunct Missions, SBInet,

Ground Combat Vehicle, Exo-atmospheric Kill Vehicle as a part of Ground-based Midcourse Defense, AFRL's Active Track of satellite targets, High Energy Laser Technology Demonstrator, Tactical Relay Mirror System, Advanced Tactical Laser, Aerospace Relay Mirror System along with various other contracts and Boeing Internal Research & Development efforts.

His areas of expertise include acquisition, tracking & pointing systems, laser propagation, combat systems engineering, systems engineering process improvement as well as field test & evaluation.

Doug is married, has two children and one grandchild.



Oleg Yakimenko, Professor

Oleg Yakimenko received his MS degree from the Moscow Institute of Physics and Technology (USSR's analogous of MIT), and after joining the Russian Air Force received another degree from the Air Force Engineering Academy n.a. Prof Zhoukovsky. Working on the development and integration of the next-generation fighter aircraft he defended two PhD dissertations and progressed through all professorial ranks at the aforementioned academy.

Before joining the SE department in January of 2011 Dr. Yakimenko worked at the AA and later at MAE departments as a research professor. His areas of expertise include guidance, navigation and control of unmanned air, surface and underwater vehicles, satellites, guided weapons and parachutes; as well as combat systems modeling and simulation. He has taught a dozen different courses on these subjects and published over 200 technical papers.

Oleg is married, has four children and two grandchildren.



Bonnie Young, Lecturer

Bonnie Young is a former senior systems engineer for Northrop Grumman, SAIC, and several other defense contractors in the DC area. She has worked on large-scale advanced technology programs for the Department of Defense including: Naval and Joint battle management and combat systems, missile defense systems, major software development systems, nuclear test verification systems, imagery/geographical information systems, satellite communications systems, and sensor technology.

Her areas of research interest include: automated battle man-

agement aids, data fusion, integrated fire control, distributed battle resource management, situational awareness, common operational picture, air and missile defense, and command and control and communication for operational warfare.

Bonnie earned a MS in systems engineering from Johns Hopkins in 2002 and a BS in physics from Virginia Tech in 1992.

She resides in Great Falls, VA with her husband and three daughters (ages 3, 6, & 8). When she's not teaching systems engineering she might be swimming, jogging, hiking, sewing, or leading her daughters' Girl Scout troops.

Faculty and Staff News



Phil Durkee, the dean of GSEAS, announced the 2011 GSEAS Awards for Extraordinary Merit. The Teaching Award was given to **Professor of Practice, Donald S. Muehlbach**. During 2010, Don expertly taught six courses and two capstone project sections. Don dedicates himself to continuous improvement of course content and delivery techniques. His teaching performance in 2010 put him in the top 5% of balloting for the Schieffelin Award for Teaching Excellence, and was voted by students to receive the Wayne E. Meyer Award for Excellence in Systems Engineering.

Associate Professor, Paul Montgomery, ESEP, received the International Council on Systems Engineering (INCOSE) Expert Systems Engineering Professional (ESEP) certification. This is the highest level of certification for systems engineers offered by INCOSE.

Professor of Practice Don Muehlbach enjoyed his USN retirement ceremony on July 24th, 2011. Symbolically, July 24th was special for CAPT Muehlbach because he enlisted in the Navy on that day in 1969, and subsequently retired on that day 42 years later in 2011. CAPT Muehlbach served 13 active enlisted years and 29 commissioned reserve years as an Engineering Duty Officer (EDO). Retired USAF Colonel Gene Rohr was the guest speaker. Colonel Rohr went to High School with CAPT Muehlbach's Dad, and subsequently served with him in the Korean War. The special guest



speaker was Rear Admiral Michael Browne, OPNAV 35. Notably, CAPT Muehlbach received the Legion of Merit as an End of Tour award from Vice Admiral Kevin McCoy, COMNAVSEA "For exceptionally meritorious conduct in the performance of outstanding service as Commanding Officer of Naval Reserve Supervisor of Shipbuilding, Conversion and Repair 919, and Senior Technical Advisor and Project Officer of Naval Sea Systems Command Region South West from 1 October 2003 to 30 November 2010. During this period CAPT Muehlbach was directly responsible for over \$12M of cost avoidance for the Navy." The ceremony took place on the deck of the USS Midway museum under a gorgeous blue sky in the San Diego Harbor. Nearly 100 shipmates, family and friends enjoyed a delicious lunch reception onboard at the completion of the ceremony.

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2011 Babies **Stephanie Enck, Research Assistant**, husband Jeff, and daughter Taylor welcomed Samantha on New Year's Day. SE wishes "Sam" good health and happiness throughout her life!



Jean Johnson, Lecturer, will soon be adding a second child due in October. We hope your pregnancy is going well, and look forward to the birth announcement. Details to come in the fall issue. . .

For their contribution to the WASC accreditation effort last fall, **Kathie Cain, Research Associate**, and **Professor Dave Olwell**, were recognized by President Oliver, along with a number of other people here on campus. NPS received a full ten year reaccreditation (see WASC article on page 5 for more detail).

Dr. David H. Olwell, Professor, has been named a Fellow of the American Council on Education. A faculty member at NPS since 1998, he was nominated by NPS Provost Leonard Ferrari, with support from NPS President Daniel Oliver. The ACE Fellows Program combines retreats, interactive learning opportunities, campus visits and placement at another higher education institution to condense years of on-the-job experience and skills development into a single semester or year. The Fellows are included in the highest level of decision-making while participating in administrative activities and learning about an issue to benefit their institution. Fellows attend three week-long retreats on higher education issues organized by ACE, read extensively in the field and engage in other activities to enhance their knowledge about the challenges and opportunities confronting higher education today.

Faculty Awards for Spring Quarter, 2011:

- ♦ **John Osmundson, Research Associate Professor (JT)**, **Gene Paulo, Associate Professor** – Wayne E Meyer Faculty Award
- ♦ **Kristin Giammarco, Lecturer** and **Brigitte Kwinn, Lecturer** – Meyer Award for Teaching Excellence (DL)
- ♦ **Doyle Daughtry, Lecturer for SE from the Department of Applied Mathematics** – Northrop Grumman Faculty Award

Accreditation (ABET) Recognition

A BIG THANK YOU

goes out to the entire systems engineering department faculty and staff, and also to all NPS campus-wide supporters of this effort.

In addition we would like to thank and recognize the following:

CAPT Dan Burns representing the GSEAS Dean, received the Legion of Merit in part for his contribution for ABET. **Professor Dave Olwell** who led the team, along with our Chair, **Professor Cliff Whitcomb**, were recognized with the Navy Meritorious Civilian Service Award for their efforts. **CDR Tom Cawley** received the Meritorious Service Medal, and **Ms. Lori Wilson, ABET Administrative Support**, was publicly acknowledged and thanked by the NPS President for her contribution.

Program Officer Mark Rhoades, Academic Associate Gene Paulo, Education Technician Heather Hahn—MSSE Distance Learning (DL) Program, and **Program Officer Jon Vanslyke, Academic Associate Dave Olwell, Education Technician Sandra Stephens**—Resident Program—for their unending time and effort in pulling together and reviewing copious amounts of student data, equivalency forms, etc. for the review.

Kathie Cain, Research Associate, for her time and assistance with the data and systems. **Sara Murawski, Office Automation Assistant**, for her assistance with the data. We thank the both of you, as we couldn't have completed those self study faculty and expenditure tables without you!

Faculty and Staff News

Chuck Calvano, Professor of Practice, for his time and assistance with thesis and capstone data for the self studies, and his impeccable eye for detail in reviewing the “tomes”.

Jim Kays, Naval Chair of Systems Engineering—his expertise and experience with the ABET accreditation process as Dean of GSEAS from 2002-2008, rendered him invaluable for our accreditation process and review.

Bob Harney, Associate Professor, for writing the Lab Vision for the self studies and for his ongoing lab support and advice.

Thanks goes to **Juan Gonzalez, Lab Coordinator**, for ensuring our labs continue to receive “excellent” ratings in all areas of health and safety; for the many poster, roster and chart updates to the walls of our department, and for data assistance to the lab portion of the self studies.

Susan Wood, ASA; Sara Murawski, Juli Alexander, office automation assistants—for your support and patience with all of our never-ending “ABET Admin requests” for binders, paper, supplies, hogging the printer and shredder, and the list goes on. . .

Course Coordinators **Greg Miller, Ron Carlson, Gary Langford, Ed Kujawski, Ray Madachy, David Hart, Doyle Daughtry, Diana Angelis, Mark Stevens, Tom Huynh, Bob Harney, Mike Green, Dave Olwell, Bill Solitario, Matt Boensel**—for their ever exhausting hours spent constructing course and course coordinator notebooks, ABET formatted syllabi and having patience with Lori for “friendly reminding” you to get your input submitted to her.

To the following DL Faculty: **Paul Montgomery, Associate Professor; Don Muehlbach, Professor of Practice; Kristin Giammarco, Lecturer; and Ray Madachy, Associate Professor**—thank you for your “on campus” support for the ABET review.

A round of applause goes out to **Diana Angelis, Associate Professor for DRMI** for her significant involvement and contribution last fall with ABET accreditation as Course Coordinator for SE3011, Engineering Economics and Cost Estimation. Diana instructs and coordinates for one of our core courses, so we are very appreciative of her support to our department.

The SE department would also like to specifically thank the **ECE, MAE, and OR department chairs and all those department faculty** who gave their time, text book loans, and support during our accreditation review and evaluation.

WELCOME

- ♦ **Mellissa Goldman, Office Assistant**
- ♦ **Tim Chung, Assistant Professor**
- ♦ **Andy Hernandez, Associate Professor,**
- ♦ **Rama Gehris, Professor of Practice**
- ♦ **Doug Nelson, Associate Professor**
- ♦ **Oleg Yakimenko, Professor**
- ♦ **Bonnie Young, Lecturer**
- ♦ **Ron Giachetti, Professor**

- ♦ **CAPT Dan Burns, Deputy NAVSEA-SSP Chair**—officially joined the SE Faculty on 1 August.



FAREWELL

Juli Alexander, Office Assistant, recently left SE to join the NPS research department as a Research Financial Analyst. Juli, we wish you well in your new position (and promotion!) and thank you for service to SE and “always-happy-to-help” disposition.

Rachel Goshorn, Assistant Professor & C4I Chair recently transitioned to ECE for her primary appointment, but is still with SE as a Joint Appointee. SE wishes you well in your new appointment and looks forward to your continued relationship with us.

As of 1 July, **Mark Stevens, Senior Lecturer**, assumed the position of Academic Associate for the MSSE resident program (580 curriculum). Thank you for accepting this “additional duty” with an already full schedule.

Upcoming Conferences & Call for Papers

Call for Papers:

**Systems Engineering Lessons Learned
A Focus on Integration and Interoperability
September 20 – 21, 2011**

Hosted by the Naval Postgraduate School, Monterey, CA
Presented by the Naval Systems Commands’
Systems Engineering Stakeholders Group (SESG)

Overview

This is the second annual SE Lessons Learned Conference. The overall purpose is to share lessons learned in the education and development of systems engineers. This two-day technical conference is presented by the Systems Engineering Stakeholders Group (SESG). The conference is being held from September 20-21, 2011 in Monterey, CA. This event is open to government and academia, however, there may be some presentations with limited access.

Theme

This year’s theme is focused on aspects related to Integration and Interoperability (I&I). The conference is also a workshop to allow for a dialogue among systems engineering leadership, practitioners, and educators about past and recent lessons learned in naval, defense, and government systems I&I, and how they might affect future systems’ development in the form of case studies and other appropriate learning materials.

Technical Program

A series of parallel tracks of presentations is planned for both days. The second day will also include current graduate student thesis and capstone project presentations.

Invited Speakers & Panels

VADM David Architzel, USN, COMNAVAIRSYSCOM and Dr. William Lucas, Director of Research at MIT’s Gordon Engineering Leadership Program will be keynote presenters. The conference features multi-

Upcoming Conferences & Call for Papers continued



ple speakers and panels on I&I Lessons Learned in a wide variety of programs to provide a forum for discussing the way forward using case studies and other developments to improve systems engineering competency and proficiency for national defense.

Conference Registration & Venue

The conference registration web site will be available online soon. There is a \$100 conference registration fee. Lunch will be provided for both days of the conference and workshop, with guest speakers making presentations during each lunch session.



www.incose.org

22nd Annual INCOSE International Symposium July 9-12, Roma, Italy

[Call for Papers](#)

Second International Conference on Complex Systems Design and Management (CSDM 2011)

December 7-9, 2011, Paris

[Call for Papers](#)

The ambition of the CSDM conference is to be the meeting point reference for industrial and academic environments working on all dimensions of design and management of complex industrial systems.



14th Annual NDIA Systems Engineering Conference

Sponsored by the National Defense Industrial Association (NDIA), Systems Engineering Division
October 24-27, 2011,
Hyatt Regency Mission Bay,
San Diego, CA

This conference focuses on improving acquisition and performance of Defense programs and systems, including network centric operations and data/information interoperability, systems engineering and all aspects of system sustainment. This conference is sponsored by the National Defense Industrial Association, Systems Engineering Division and is supported by the Director, Systems Engineering, Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, and the Office of the DoD Chief Information Officer.



2011 Worldwide CDIO Meeting

October 17-18
Naval Postgraduate School;
October 19 at
Stanford University,
Palo Alto, CA

Schedule

- Sun. Oct. 16 (or earlier for local touring) Arrive in Monterey, CA
- Mon. Oct. 17 CDIO meeting at NPS with leaders meeting and an evening dinner
- Tue. Oct. 18 CDIO meeting at NPS with evening travel to Stanford University
- Wed. Oct. 19 CDIO meeting at Stanford University with an evening dinner to conclude the International meeting

Registration

Ms. Mellissa Goldman at the Naval Postgraduate School is handling registration for the 2011 Worldwide CDIO Meeting. Contact Mellissa by [email](mailto:) or call 831-656-7722.

To register: Please register by sending Mellissa an email that contains the information listed below. NPS is a US military installation and additional time is needed to check credentials and issue visitors badges. Therefore, **non-US nationals please register by September 17.**

- Full name:
- Affiliation:
- Email:
- Telephone:

Non-US citizens: Please provide the following information.

- Address:
- Date and Place of birth:
- Passport Number:
- Country of residence:
- Citizenship:
- Employer:
- Position/rank in employment:

The registration fee for the meeting is \$220 USD, which covers lunches and dinners at NPS and Stanford as well as printing of CDIO conference materials. Please pay in cash or check at NPS upon arrival at the conference (no credit card payment is possible at NPS).

Accommodations

Attendees are responsible for making their own hotel reservations. Reserve early; good rates are limited.

Detailed reservation information may be found at www.cdio.org

Parking on the NPS campus: Very limited. If you choose to park you will consume much time Monday morning to get a parking pass into the military installation (this cannot be done in advance). We therefore urge you to park at the Hilton, the Fireside Lodge, or the Hyatt, and walk to NPS. The walk is 10 minutes from the Hilton and five minutes from the Fireside Lodge or Hyatt. Pre-printed name and access badges will be at the gate for each registrant.

Parking on the Stanford campus: Parking passes with maps will be pre-issued for the visitors lot. It's a five-minute walk from this lot to the meeting rooms. Walking from the Sheraton and Westin hotels to the meeting rooms takes about 15 minutes.