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## Letter from the Chairman

Welcome to the Systems Engineering Newsletter for the Spring quarter of the 2023 Academic Year!

This quarter, the SE Department graduated 32 students: 23 with Master of Science in Systems Engineering, 1 - Master of Science in Engineering Systems, 2 - Master of Science in Engineering Analysis, and 9 - Master of Science in Systems Engineering Management.

Six of these students graduated with individual theses. Four of them were recognized as outstanding theses (ENS Jacob Michael Barberio, USN, CPT Stergios Barmpas, Hellenic Army, LT Devon L. Florendo, USN, and LT Justin P. Goff, USCG). The remaining students graduated upon successful completion of team capstone projects (seven in total). One capstone team was recognized as outstanding capstone team as well (LT Charles Eilertsen, USN, Mr. Allen Greene, Naval Surface Warfare Center, Dahlgren Division, Mr. Luke Loukas, Naval Surface Warfare Center, Dahlgren Division, and Mr. Jacob Van Why, Office of the Secretary of Defense, Cost Assessment and Program Evaluation).

Three students (CPT Stergios Barmpas, Hellenic Army, MAJ Matthew Brooks, USA, and Mr. Jake Van Why, Office of the Secretary of Defense, Cost Assessment and Program Evaluation) graduated with distinction, one student (Mr. Luke John Loukas, Naval Surface Warfare Center, Dahlgren Division) was recognized with Meyer Award for Outstanding DL Student in Systems Engineering.

Our own Don Muehlbach was recognized with the Meyer Award in Systems Engineering for DL teaching.

On June 16th, the quarter's 349 graduates, their families, faculty, staff, and guests attended the Spring Quarter Graduation Ceremony in King Hall. The commencement address was given by Mr. Gary Wipfler, who served as vice president and treasurer for Apple Inc. from 1997 to 2021. As usual, two days before graduation, the SE department held a Spring Quarter SE Virtual Student Reception.

In the Spring quarter, SE faculty taught 32 resident and DL sections and kept advising 17 capstone project teams. They also continued guiding research of SE's Ph.D. students, serving on a variety of departmental and schoolwide committee; and working on the reimbursable research projects.

At the end of May, three SE Professors (Paul Beery, Joe Klamo and myself) delivered a two-week long short Course titled "Model-Based Systems Engineering Design and Analysis with Practical Applications" for Israeli Air Force students in Tel Aviv. Students learned the basics of Innoslate, MSOSA and ExtendSim and were introduced to some recent applications of these model-based systems engineering tools for architecting and analysis of combat systems, system of systems, processes and mission engineering.

I would like to thank all members of the SE department for their contributions and congratulate our spring graduates and their families yet again! Let me conclude with citing one of our graduates: "From now on, I will proudly call myself an NPS Systems Engineering Department alumni and I will try to use everything I learned." Well said! Spread the word about NPS and SE Department, and stay connected with your alma mater!



Systems Engineering Chairman  
Dr. Oleg Yakimenko

## Mobile Training Team Delivers a MBSE Short Course in Israel

Systems Engineering (SE) Professors Dr. Paul Beery, Dr. Joseph Klamo, and Dr. Oleg Yakimenko delivered a short course titled “Model-Based Systems Engineering Design and Analysis with Practical Applications” to 24 Israeli Air Force (IAF) students in Tel Aviv over a two-week period at the end of May. They also visited the faculty of Aerospace Engineering at the Technion - Israel Institute of Technology, which provides undergraduate and graduate education to IAF students, including an interdisciplinary SE program leading to the degree of Master of Engineering.

This short course reviewed and built on the fundamentals of SE, with an emphasis on model-based systems engineering (MBSE), by providing the tools necessary to create, analyze, and compare alternative systems using MBSE compliant models and simulations. Completion of this short course enabled the students to utilize MBSE to support complex system design in the context of engineering life-cycle balanced solutions. MBSE was reviewed as an approach to formalize the application of SE to identify system elements, design operationally relevant relationships between those elements, and to assess system behavior through those relationships. This course covered the language, terminology, concepts, methods, and tools of MBSE through the development of multiple classes of system models, with particular emphasis on the Systems Modeling Language (SysML). Students practiced these skills through practical exercises and activities in which models and simulations were created and analyzed in the different modeling environments (Innoslate, Cameo, ExtendSim, Minitab, and MATLAB). Statistical analysis approaches, to include optimization and robustness analysis were used to conduct design trades, compare alternative systems, and justify recommendations.

This education opportunity was possible because of the interest and support from Col. Dr. Ariel Dvorjetski, Head of Aircraft Programs and Engineering Center of IAF Materiel Directorate and was organized by NPS’ International Graduate Programs Office. The intent is to continue collaborating with IAF and Technion on both educational and research fronts.



## Hands-On MBSE Tool Training



Mobile Training Team at Technion



Graduation Ceremony



Class Graduation Photo

## INCOSE San Diego Chapter tutorial “Open Source Systems Modeling”

The INCOSE San Diego Chapter tutorial *Open Source Systems Modeling* was presented by Professor Ray Madachy and SE PhD student Ryan Longshore on June 10. Attendees received professional development units (PDUs) to support their ASEP or CSEP certifications. The day long hands-on tutorial introduced the Systems Engineering Library (*se-lib*). The Python library provides integrated capabilities for descriptive and analytical systems modeling with automated documentation.

Goals for *se-lib* are to lower barriers to systems modeling in terms of no cost, ease-of-use, integrability, platform independence, and tool compatibility offline or online. The open source *se-lib* library is free for others to use, modify and distribute.

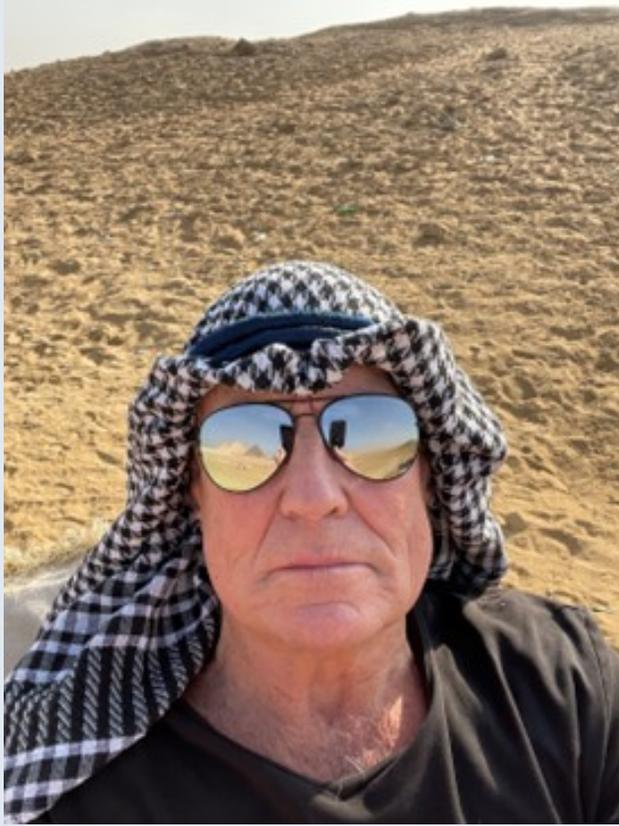
Current library features include discrete event and continuous system dynamics simulation, system analysis and diagrams covering a subset of SysML, reliability analysis including quantitative fault trees, causal analysis, project management, and more using simple Python code as the glue. Participants were shown round-trip case studies with group iterative modeling, and how the collaborative tool environment is digital engineering compliant with a single source of truth across versioned model sets.

Twenty-four attendees from government and industry included NPS students Capt. Vanessa Cannon and Ariel Lu. They are using *se-lib* on their team capstone project for Marine Corps Air Station (MCAS) Miramar advised by SE faculty Dr. Bonnie Johnson and Dr. Mike Green.

The research and development of *se-lib* has been supported as a Naval Postgraduate School Foundation Seed project, the MCAS Miramar research project “Optimize the Military and Civilian Workforce with Respect to both Cost and Readiness”, and the Boehm Center for Systems and Software Engineering.



## Faculty receives the Wayne E. Meyer Award



System Engineering faculty member Don Muehlbach PhD received his 25th Wayne E. Meyer Award for excellence in Systems Engineering instruction. He joined the NPS SE Department in February 2009. Other notable teaching awards he has garnered include, but are not limited to: 2015 - Allen Griffin Award for Excellence in Post-Secondary Teaching; 2013 - Rear Admiral John Jay Schieffelin Award for Teaching Excellence; 2011 - GSEAS Faculty Award for Extraordinary Merit in Teaching; and 1978 Commander Training Pacific (COMTRAPAC) Instructor of the Year.

## Student Stories

### Student Receive the Wayne E. Meyer Award



Luke Loukas is the Test, Evaluation and Integration Lead for the Directed Energy Software System branch at Naval Surface Warfare Center in Dahlgren, VA. He received his BS in Mathematical Sciences from McNeese State University in 2015 and is graduating this term with an MS in Systems Engineering with a concentration in Test and Evaluation. With this strong foundation, Luke plays a critical role in ensuring that systems are sufficiently and efficiently verified and validated.

Prior to this master's program all of my experience was on-the-job training. NPS has provided me with a solid foundation of how to design, test, and integrate new systems. This knowledge will help me, my team, and my organization revise our processes to be more efficient and increase the quality of the products that we deliver to the warfighter.

# Awards and Graduations

## Awards

### Meyer Award for Outstanding DL Student in Systems Engineering

311-2140: Mr. Luke John Loukas, Naval Surface Warfare Center, Dahlgren Division

### Meyer Award in Systems Engineering for DL Teaching

CAPT Don Muehlbach PhD

### Outstanding Thesis

ENS Jacob Michael Barberio, USN

CPT Stergios Barmpas, Hellenic Army

LT Devon L. Florendo, USN

LT Justin P. Goff, USCG

### Outstanding Capstone

#### Cohort 31-2140 Team JACL

**Capstone Title:** RESEARCH ON POTENTIAL UAS CONOPS FOR USN AND USCG SHIPS

**Members:** Charles Eilertsen, Allen Greene, Luke Loukas, Jacob Van Why

**Advisors:** Douglas Van Bossuyt, Britta Hale, and Jonathan Lussier

### Recommendation for Graduation with Distinction

CPT Stergios Barmpas, Hellenic Army

MAJ Matthew Brooks, USA

Mr. Jake Van Why, Office of the Secretary of Defense, Cost Assessment and Program Evaluation

## Graduations

### Master of Science in Systems Engineering

LT Grace Albertson, USN

ENS Jacob Michael Barberio, USN

LT P. Sebastian Dowling, USN

LT Devon L. Florendo, USN

LT Alexander Charles Stanislav, USN

LT John Walter, USN

LT Matthew P. Witte, USN

LT Justin P. Goff, USCG

CPT Stergios Barmpas, Hellenic Army

LT Charles R Eilertsen, USN

LCDR Joseph Allen Grim, USN

Mr. Paul Michael Bally, Naval Undersea Warfare Center, Division Newport

Ms. Brianna Nicole Bransfield, Naval Undersea Warfare Center Division Newport

Mr. Ryan Bauer Cervino Naval Surface Warfare Center, Dahlgren Division

Mr. Heron G. da-silva, Naval Undersea Warfare Center Division Newport

Mr. Sergio T DeSimone, Naval Undersea Warfare Center, Division Newport

Mr. Nelson A Fernandes, Naval Undersea Warfare Center, Division Newport  
Mr. Adam Francoeur, Naval Undersea Warfare Center, Division Newport  
Mr. Allen J. Greene, Naval Surface Warfare Center, Dahlgren Division  
Mr. Luke John Loukas, Naval Surface Warfare Center, Dahlgren Division  
Mr. Alain Francois Mbateng Tshuisseu, Naval Surface Warfare Center, Dahlgren Division  
Mrs. Christy Spaulding, Naval Surface Warfare Center, Dahlgren Division  
Mr. Allen Gbatu Zahneigh, Sr., Naval Surface Warfare Center, Dahlgren Division

### Master of Science in Engineering System

Mr. Jake Van Why, Office of the Secretary of Defense, Cost Assessment and Program Evaluation

### Master of Science in Systems Engineering Analysis

MAJ Daniel Simoes Ferry, Brazilian Air Force  
LT Zachary Aaron Wasson, USN

### Master of Science in Systems Engineering Management

MAJ Matthew Brooks, USA  
MAJ Wilson Chiu, USA  
MAJ Austin A. Forsythe, USA  
MAJ Dustin K. Freeman, USA  
MAJ Christopher L. Jones, USA  
CPT Lindsay Keel, USA  
CPT Thomas B. LaPread, USA  
CPT Matthew T. Ravert, USA  
MR. Gabriel B Iya, Strategiv Systems Programs

## Theses

### LT Devon L. Florendo, USA

**Thesis Title:** USING DESIGN-TEST-BUILD CYCLES TO DEMONSTRATE FREE UUV PROPULSION IN A KARMAN VORTEX STREET USING A FLEXIBLE BODY  
**Advisor:** Joe Klamo and **Second Reader:** Fotis Papoulias

### LT Justin P. Goff, USN

**Thesis Title:** ASSESSMENT OF NIGHTTIME AIRBORNE VISUAL ASW CAPABILITY  
**Advisor:** Oleg Yakimenko and **Co-Advisor:** Fotis Papoulias

### LT John Walter, USN

**Thesis Title:** MULTI-MISSION RECONNAISSANCE CRAFT DESIGN ANALYSIS  
**Advisor:** Fotis Papoulias and **Co-Advisor:** Jarema Didoszak

### LT Grace Albertson, USN

**Thesis Title:** FEASIBILITY ANALYSIS OF APPLYING DUCK-WEED BIOREACTORS IN AN EXPEDITIONARY ADVANCED BASE OPERATIONS (EABO) ENVIRONMENT  
**Advisor:** Andy Hernandez and **Co-Advisor:** Joe Klamo

### CPT Stergios Barmpas, Hellenic Army

**Thesis Title:** INTEGRATION OF COTSUAS WITH MULTISPECTRAL IMAGING SENSOR TO DETECT CAMOUFLAGED TARGETS AND BATTLEFIELD ANOMALIES  
**Advisor:** Oleg Yakimenko and **Second Reader:** Fotis Papoulias

### ENS Jacob Michael Barberio, USN

**Thesis Title:** EXPERIMENTAL MEASUREMENT OF THE PHASE-SENSITIVITY FUNCTION FOR A CIRCULAR CYLINDER FOR USE IN PREDICTING WAKE LOCK-IN  
**Advisor:** Joe Klamo and **Co-Advisor:** Kunihiko Taira

## Capstone Team

### Cohort 308-214

**Capstone Title:** SEA 32 MULTI-DOMAIN, MANNED-UNMANNED LITTORAL DENIAL SYSTEM

**Members:** Justin Kwan, Daniel Simoes Ferry, Alexander Stanislav, Zachary Wasson, and Matthew Witte

**Advisors:** Jefferson Huang and Fotis Papoulias

### Cohort 311-214O Team Newport

**Capstone Title:** THE ROLE OF MODEL-BASED SYSTEMS ENGINEERING IN THE DEVELOPMENT OF THE UNDERSEA WARFARE COMMON ARRAY

**Members:** Paul Bally, Brianna Bransfield, and Sergio De Simone

**Advisors:** Bonnie Johnson, Mike Green, and Richard Williams

### Cohort 311-202S Team Digital Twin Alpha Dogs (DTAD)

**Capstone Title:** EXPANDING THE DIGITAL THREAD FOR ADDITIVE MANUFACTURING (AM): ARCHITECTING A DIGITAL TWIN (DT) META-MODEL (MM) FRAMEWORK

**Members:** Heron Da-Silva, Nelson Fernandes, Adam Francoeur, and Alain Francois Mbateng Tchuisseu

**Advisors:** Bryan O'Halloran and Douglas Van Bossuyt

### Cohort 311-214O Team JAACL

**Capstone Title:** RESEARCH ON POTENTIAL UAS CONOPS FOR USN AND USCG SHIPS

**Members:** Charles Eilertsen, Allen Greene, Luke Loukas, Jacob Van Why

**Advisors:** Douglas Van Bossuyt, Britta Hale, and Jonathan Lussier

### Cohort 311-214O Team Wolfpack

**Capstone Title:** PROJECT CANARY (OPERATIONALIZING NAVAL SPECIAL WARFARE FOR COUNTERING WEAPONS OF MASS DESTRUCTION)

**Members:** Ryan Cervino, Joseph Grim, Christy Spaulding, and Allen Zahneigh

**Advisors:** Gene Paulo, Paul Beery, and Wayne Porter

### Cohort 522-222 Team Seeing Sounds

**Capstone Title:** AN INVESTIGATION OF MEDEVAC AIR CREW COGNITIVE WORKLOAD: USING IMPRINT TO ASSESS THE IMPACT OF MODEL GRANULARITY AND AUTOMATION

**Members:** Matthew Brooks, Wilson Chiu, Austin Forsythe Jr, Lindsay Keel

**Advisors:** Larry Shattuck and Matthew Nicholson

### Cohorts 711-214P and 522-222 Team Denied Comms

**Capstone Title:** A RISK FRAMEWORK FOR FLEET AND EXPEDITIONARY OPERATIONS IN DENIED COMMUNICATION ENVIRONMENTS

**Members:** Dustin Freeman, Gabriel Iya, Christopher Jones Jr, Thomas LaPread, and Matthew Ravert

**Advisors:** Bonnie Johnson, CDR Katy Giles, and Mike Green

# Systems Engineering Distance Learning Graduation Photos



## Request for Alumni News!

The SE Department is interesting in hearing how our alumni are doing.  
Please feel free to send the [editor](#) news items for inclusion in future newsletters.

If you would like to subscribe to the Systems Engineering Newsletter, please click [here](#).

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