



USC SHIELD Executive Program in Global Space and Deterrence

Developing Leaders in Policy, Space, and Technology for National Security

SHIELD

- **Space** - The domains that demand new engineering and policy innovations, physical and cyber, and their integration with Land, Sea, and Air.
- **History** - Past, present, and future, the lens through which we evaluate and formulate new Policies.
- **Industry** - The engine that translates academic work into reality.
- **Engineering** - The research, technology, and planning that organizes our vision.
- **Leadership** - The prime mover across all disciplines.
- **Deterrence** - Our goal in all our endeavors.

The USC SHIELD Executive Program in Global Space and Deterrence*

sets out to educate aspiring senior leaders from the military, government, and innovation communities about the intersection of public policy and engineering, which are too often separate within the complex and growing field of defense security.

This executive education program is designed for upwardly mobile professionals and leaders of their field. Program participants will take advantage of the flexibility and interactivity offered by engaging in a hybrid program model, with in-person and online engagement throughout the program. Upon successful completion of the program, participants receive a University of Southern California Continuing Education Certificate.

Duration: September 2022- April 2023; 18 Program Days

Schedule of Presentations (TENTATIVE)

Fall 2022-Spring 2023

Week One-USC Residency

Thursday, September 15, 2022

8:00AM -8:45AM

Check-In & Breakfast

8:45AM- 9:00AM

Program Welcome

Riki M. Ellison

Chairman & Founder

Missile Defense Advocacy Alliance

Candace House Teixeira

Associate Dean, Corporate Engagement and Programs

Viterbi Admission and Student Engagement

Frank V. Zerunyan, J.D.

Professor of the Practice of Governance

Director of Executive Education and ROTC Programs

9:00AM-12:00PM

Introduction to the Policy Curricula and Setting up for Collaboration

Frank V. Zerunyan, J.D.

Professor of the Practice of Governance

Director of Executive Education and ROTC Programs

Dr. Michael D. Falkow, PMP

Doctor of Policy, Planning and Development

Course Description:

A defining focus of the Price School of Public Policy is its recognition that solving society's most difficult and important problems requires the combined strengths of the public, private, and nonprofit sectors. Building partnerships across sectors and borders requires an understanding of institutional complexity, and an ability to resolve conflict and seek collaborative solutions. This module provides a foundation in understanding institutional arrangements and developing the skills necessary for effective intersectoral and international policy development, planning, and management.

11:45AM-12:00PM

Group Photo

12:00PM-1:30PM

Lunch Forum

TIMOTHY A. SEIJA, Brigadier General, USSF
Program Executive Officer, SDACP and BMC3
Space Systems Command

1:30PM-2:00PM

Self- Guided USC Campus Tour (optional)

/Break

2:00PM-5:00PM

The Engineering Life-Cycle, and Which Life-Cycle Stages Are Most Influential On the Success of Missile Defense Projects

Neil Siegel, Ph.D.

IBM Professor of Engineering Management and Professor of Industrial and Systems Engineering and Computer Science Practice

Course Description:

An experienced and successful practitioner's view of the engineering life-cycle, the systems approach, an improved version of the "V" diagram, and lessons-learned about which stages have the most important influence on project success.

Learning Outcomes:

Understanding of the systems approach, the key characteristics and how they contribute to success, and insight into where engineering projects often "go wrong"

- Understanding of the systems approach
- Understanding of the key characteristics of the systems approach
- Learning how the systems approach contributes to project success
- Discuss where engineering projects often 'go wrong'
- How to ensure project success

5:00PM-7:00PM

Networking Welcome Reception USC Campus: Vineyard Patio

Friday, September 16, 2022

8:15AM -9:00AM

Check-In & Breakfast

9:00AM-12:00PM

Leading Complex Systems through collaboration and ecological organization

Peter J. Robertson, Ph.D.

Associate Professor

USC Price School of Public Policy

Course Description:

This course focuses on the requirements for effective collaboration in organizations, especially in the context of interorganizational systems in which members of multiple organizations work together to address common concerns and/or achieve shared objectives. Challenges or barriers to effective collaboration are identified, along with a conceptual framework for analyzing the factors contributing to successful collaboration. Practical approaches for enhancing organizational collaborative capacity are also discussed.

12:00PM-1:30PM

Lunch Forum

John Rood

Former Under Secretary of Defense for Policy

Board of Directors, MDAA

1:30PM-2:00PM

Break

2:00PM-5:00PM

Leading Complex Systems through collaboration and ecological organization

Peter J. Robertson, Ph.D.

Associate Professor

USC Price School of Public Policy

Course Description:

The purpose of this course is to introduce the notion of organizational ecosystems and their features as complex adaptive systems. Understanding organizations as complex ecosystems yields useful insights about what is needed to lead them effectively. This course will identify

relevant approaches and give participants an opportunity to discuss practical implications for enhancing leadership in and of their own organizational ecosystems.

Saturday, September 17, 2022

9:00am-2:00pm

-Capstone Development

- Mr. Riki M. Ellison
- The Honorable John C. Rood
- Lt Gen (Ret) Jon “Ty” Thomas
- RADM (Ret) Mark Montgomery
- CAPT (Ret) Zoah Scheneman
- COL James B. Kavanaugh, USC SHIELD '22 Alumni
- Lt Col Joshua Wehrle, USC SHIELD '22 Alumni

Courtyard Los Angeles, LA LIVE (MDAA Coordinated Event)

7:30pm

-Fresno State at USC; Optional

Week Two-Online Interactive

Friday, October 21, 2022

9:00AM-12:00PM

Organizational Behavior and Survey Design

Howard Greenwald, Ph.D.

Professor

USC Sol Price School of Public Policy

Course Description:

This module will focus on management and leadership in organizations with distinct command-and-control structure. Key examples of such organizations include military, law enforcement, and some areas of health care, such as house officers in advanced medical training. Special attention will be paid to the interface between organization and technology in the context of national defense and innovation. The module will emphasize two perspectives: (1) understanding the challenges of hierarchical organization and solutions available to leaders; (2) evaluating organizations to determine readiness for adoption of new technology, innovation, and change.

Part (1) of the module addresses challenges associated with leadership and management in hierarchical organizations. Challenges of this kind include potential pathologies of hierarchy such as loss or distortion of information up and down a chain of command, positive versus negative dimensions of organizational culture, and faulty decision-making

(such as “group think”). This module aims at providing options for capturing and channeling the best efforts of personnel for achieving complex objectives in areas such as global defense.

Part (2) concentrates on evaluation of organizations to guide leadership decisions. Units are known to differ in areas such as acceptance of new technology, readiness for change, willingness to learn, and “climate,” prevailing beliefs in collaboration versus competition among personnel. This module will provide options for assessing these dimensions through systematic observation, personnel surveys, content analysis of communication, and social media.

Both modules will encourage back-and-forth among participants, exchanges of ideas, and critical analysis of opinions and recommendations of “experts.” Discussions will encourage participants to share the lessons they have learned in their command experience. Source material in this module will draw on organizational behavior, military sociology, and the instructor’s textbook, *Organizations: Management Without Control*.

12:00PM-1:30PM

Lunch Forum

1:30PM-2:00PM

Break

2:00PM-5:00PM

Overview of Data Science and Big Data

Seon Ho Kim, Ph.D.

Associate Director of the Integrated Media Systems Center at the USC Viterbi School of Engineering

Course Description:

Data science is an essential part of many industries today, given the massive amounts of data that are produced, and is one of the most essential topics in IT. Its popularity has grown over the years, and companies have started implementing data science techniques to grow their business. This course provides an overview of broad data science concepts and big data.

Saturday, October 22, 2022

9:00AM-12:00PM

Workshop

Howard Greenwald, Ph.D.

Professor

USC Sol Price School of Public Policy

12:00PM-1:30PM

Lunch Forum

1:30PM-2:00PM

Break

2:00PM-5:00PM

Common Errors in Engineering Assessment, and How to Avoid Them

Neil Siegel, Ph.D.

IBM Professor of Engineering Management and Professor of Industrial and Systems Engineering and Computer Science Practice

Course Description:

In engineering, we make measurements and perform quantitative assessments; qualitative assessments are seldom adequate for our purposes. Unfortunately, there are many ways to introduce significant errors into the measurement and analysis processes. This lecture identifies the most-common of these errors, and how to avoid them.

Learning Outcomes:

An understanding that just because a number is presented, does not mean that it is correct! An understanding of the principal sources of error in quantitative engineering analysis (e.g., measurement errors, analysis errors, logical fallacies, etc.), and how to do it better (e.g., avoiding weak statistics, avoiding mis-handling conditional probabilities,

Week Three- USC Residency

Thursday, November 17, 2022

8:00AM-8:45AM

Check In and Breakfast

8:45AM-9:00AM

Program Welcome

Riki M. Ellison

Chairman & Founder

Missile Defense Advocacy Alliance

Candace House Teixeira

Associate Dean, Corporate Engagement and Programs

Viterbi Admission and Student Engagement

Frank V. Zerunyan, J.D.

Professor of the Practice of Governance

Director of Executive Education and ROTC Programs

9:00AM-12:00PM

Decision analysis, risk analysis, multi-attribute utility theory, information theory, Bayesian analysis, and data-based decision making

Ali E. Abbas, Ph.D.

Professor of Industrial and Systems Engineering and Public Policy

Course Description:

Decision analysis is an essential life skill, but most people only acquire it through trial and error. This module will present the foundations of decision-making in government organizations as well as large enterprises. The module has two main objectives: the first is to give an overview of decision-making and the need for a sound decision-making process. The second is to demonstrate the use of decision analysis in military technology and homeland security decisions.

12:00PM-1:30PM

Lunch Forum

Major Gen. Duke A. Pirak

Deputy Director, Air National Guard, the Pentagon, Arlington, Virginia

1:30PM-2:00PM

Break

2:00PM-5:00PM

Essentials of Inventive Thinking

Berok Khoshnevis, Ph.D.

Louise L. Dunn Distinguished Professor of Engineering

Director of the Center for Rapid Automated Fabrication Technologies (CRAFT)

Course Description:

This seminar intends to inspire the participants with a strong motivation to take the path of inventive thinking, while providing them with some essential insights about effective knowledge acquisition and active and purpose-full imagination to help them initiate and pursue novel ideas that lead to successful creation of new products, processes, and systems. Some basic aspects of protection of intellectual property as well as entrepreneurship and technology commercialization will be presented.

Friday, November 18, 2022

8:15AM-9:00AM

Check In and Breakfast

9:00AM-12:00PM

Intercept 1961- The First Intercept of A Long-Range Ballistic Missile and Birth of Soviet Missile Defense

Mike Gruntman, Ph.D.

Professor of Astronautics and Aerospace and Mechanical Engineering

Course Description:

The story focuses on the origins of Soviet air defense and then strategic missile defense, with the first long-range ballistic missile intercept in 1961. The deployment of operational missile defense followed, a major factor in the Cold War, shaping the defense policies and programs of the two superpowers.

Leveraging Interactive Storytelling in Model Based Systems Engineering: A Transdisciplinary Systems Engineering Approach

Azad Madni, Ph.D.

Professor of Astronautics, Aerospace and Mechanical Engineering, and Education

Course Description:

Distributed collaborative engineering and system validation are two significant activities performed during complex system development that affect both system affordability and predictability. The former suffers from lack of full participation of all stakeholders especially in upfront engineering leading to extraneous design iterations and rework which invariably translate into schedule- and cost-overruns. The latter is an activity that routinely runs into schedule and budget crunch and subsequent ad hoc cost-cutting measures that invariably escalate risk of unintended and undesirable outcomes. This lecture will describe innovations that are intended to ameliorate both these effects.

12:00PM-1:30PM

Lunch Forum

Victorino Mercado

Director & Security Director at Momentus Space LLC

Former Assistant Secretary of Defense for Strategy, Plans, and Capabilities

1:30PM-2:00PM

Break

2:00PM-5:00PM

Capstone Project Session

MDAA Expert Panel

- Mr. Riki M. Ellison
- The Honorable John C. Rood
- Lt Gen (Ret) Jon "Ty" Thomas
- RADM (Ret) Mark Montgomery
- CAPT (Ret) Zoah Scheneman
- COL James B. Kavanaugh, USC SHIELD '22 Alumni
- Lt Col Joshua Wehrle, USC SHIELD '22 Alumni

- Candace House Teixeira, USC Viterbi
- Frank V. Zerunyan J.D., USC Price
- Dr. Michael D. Falkow, PMP

Saturday, November 19, 2022

Site visit coordinated by MDAA: AM-PM; Vandenberg Space Force Base

Week Four-Washington D.C. Residency

Thursday, January 26, 2023

Site visit coordinated by MDAA

Friday, January 27, 2023

8:00AM-9:00AM

Check In and Breakfast

9:00AM-12:00PM

Digital Technologies Enabling JADC2 (Joint All-Domain Command and Control)

Randall W. Hill Jr., Ph.D.

Research Professor, Executive director of the USC Institute for Creative Technologies

Ryan McAlinden

Adjunct Assistant Professor of the Practice

Director of Defense and Intelligence Programs for the USC Institute for Creative Technologies

Course Description:

Joint All-Domain Command & Control (JADC2) is a familiar concept to many within DoD, though its implementation remains elusive. This lecture will present the components of JADC2, and potential strategies for the integration of enabling research & technologies into a connected framework. Use cases and examples from across the Services will be highlighted.

12:00PM-1:30PM

Lunch Forum

1:30PM-2:00PM

Break

2:00PM-5:00PM

Big Data Management with Distributing Computing

Seon Ho Kim, Ph.D.

Associate Director of the Integrated Media Systems Center at the USC Viterbi School of Engineering

Course Description:

Big Data is a collection of large datasets that cannot be processed using traditional computing techniques. Big data is not merely a data, rather it has become a complete subject, which involves various tools, techniques and frameworks. This course introduces issues and techniques of Big Data management including data storage, databases, cloud, and distributed computing framework.

Saturday, January 28, 2023

8:00AM-9:00AM

Check In and Breakfast

9:00AM-12:00PM

Collaborative, Participatory, and Intergovernmental Management

Dora Kingsley, Ph.D.

Professor (Teaching)

Faculty Director, Master of Public Administration Online

USC Price School of Public Policy

Course Description:

"[A] system of government organized on principles of separation of powers with checks and balances implies a sharing of power among independent decision structures...In a society that works under such contingencies, it is more appropriate to presume that policies emerge from the interaction of multiple centers of authority than to presume that they are made by some single center of ultimate authority...Government in a democratic society, then, is not simply a matter of command and control but of providing multiple structures that have reference to diverse methods of problem solving."

-- Vincent Ostrom (1991, 16-17),

The Meaning of American Federalism: Constituting a Self-Governing Society

This course evaluates effective, collaborative, and co-produced solutions to the problems facing our military forces, allies, and society. Today's intergovernmental management expertise focuses on four practices that synthesize emerging trends within the economic, technological, and social spaces applicable to the U.S. defense and security community. These four practices are (1) strategic innovation, (2) high-performance global teams, (3) evidence-based decision-making, and (4) dynamic stakeholder engagement.

Strategic innovation leverages technology as the core of organizational insights to enhance knowledge management within the government sector. High-performance global teams build an agile organization to facilitate today's networked government by focusing talent within these teams. Evidence-based decision-making results from the prioritization of information and

analysis empowering leaders. Enduring stakeholder participation and value is a result of persistent engagement with constituents, citizens, and the workforce.

Course sessions are based upon defense topics selected by the participants focusing on multi-sector contexts including government jurisdictions, private sector expertise, and supporting non-governmental organizations or other nonprofits. Issues of shared governance, institutional complexity, organizational theory, systems theory, conflict management, and collaborative solutions will be considered. References will be developed into a shared resource for ongoing use by the class participants.

12:00PM-1:30PM

Lunch Forum

1:30PM-2:00PM

Break

2:00PM-5:00PM

Workshop

Dora Kingsley, Ph.D.

Professor (Teaching)

Faculty Director, Master of Public Administration Online

USC Price School of Public Policy

Week Five-Online Interactive

Friday, February 24, 2023

9:00AM-12:00PM

Workshop: Decision analysis, risk analysis, multi-attribute utility theory, information theory, Bayesian analysis, and data-based decision making:

Ali E. Abbas, Ph.D.

Professor of Industrial and Systems Engineering and Public Policy

12:00PM-1:30PM

Lunch Forum

1:30PM-2:00PM

Break

2:00PM-5:00PM

Team-Building, Motivation, and Conflict Management on Complex Engineering Projects

Neil Siegel, Ph.D.

IBM Professor of Engineering Management and Professor of Industrial and

Systems Engineering and Computer Science Practice

Course Description:

Everything worth doing in engineering involves lots of people, so “social considerations” are very important to project success. This lecture provides one practitioner’s view of motivation, team-building, conflict identification / resolution, and many other aspects of these “social considerations”.

Learning Outcomes:

- Understanding why social considerations are important to project success
- Methods for achieving team alignment, motivation
- Retention of employees
- Conflict identification and resolution
- Other “social” aspects of engineering project management.

Saturday, February 25, 2023

9:00AM-12:00PM

Institutional Design and Policy Evaluation- Policy Design Concepts & Analytics

Rym Kaki, Ph.D.

Associate Professor (Teaching)

Vice Chair of the Department of Governance and Management

USC Sol Price School of Public Policy

Course Description:

Professor Khaki will be teaching a seminar with learning goals to include: 1) gaining an overview of key concepts, theories, analytics and practical research on organizations and organizing; 2) examining the complex relationship between individual behavior and organizations; 3) understanding how public, private and nonprofit organizations are shaped by their gravitating political, social and economic environments and 4) evaluating policy and policy alternatives.

12:00PM-1:30PM

Lunch Forum

1:30PM-2:00PM

Break

2:00PM-5:00PM

Workshop

Rym Kaki, Ph.D.

Associate Professor (Teaching)

Vice Chair of the Department of Governance and Management

Week Six-Online Interactive

Friday, March 24, 2023

9:00AM-12:00PM

Machine Learning and Its Applications

Seon Ho Kim, Ph.D.

Associate Director of the Integrated Media Systems Center at the USC Viterbi School of Engineering

Course Description:

Machine Learning is a key technology in modern data science which enables many intelligent data-driven solutions for real world problems. This course provides an introduction to machine learning with theoretical foundations as well as essential algorithms for supervised and unsupervised learning. Some typical machine learning applications are also introduced as examples.

12:00PM-1:30PM

Lunch Forum

1:30PM-2:00PM

Break

2:00PM-5:00PM

Case-studies in Space, Air Defense and Missile Defense

Neil Siegel, Ph.D.

IBM Professor of Engineering Management and Professor of Industrial and Systems Engineering and Computer Science Practice

Course Description:

Lessons learned from a life-time of building important, successful, and innovative space, air defense and missile defense systems. Most of the examples will deal with the technical issues encountered and overcome, but other examples (e.g., technical solutions to “red-tape” problems, etc.) will be included, as well.

Learning Outcomes:

Insights into where the problems actually are (in contrast to where many people expect them to be), the role of innovation, and how to innovate.

Saturday, March 25, 2023

9:00AM-12:00PM

TBD

12:00PM-1:30PM

Lunch Forum

1:30PM-2:00PM

Break

2:00PM-5:00PM

Policy Formulation: Creating Credibility In A Set of Recommendations

Neil Siegel, Ph.D.

IBM Professor of Engineering Management and Professor of Industrial and Systems Engineering and Computer Science Practice

Course Description:

It is not enough to have good ideas; one must convey those ideas in a fashion that results in other supporting them; other people – including those who make policy and funding decisions -- must find these news ideas and recommendations credible. There is a tendency to attempt to create support for an engineered system (such as a new weapon) through a set of technological and financial analyses. It is the instructor's experience that this seldom is effective; most of the key decision-makers in U.S. government policy and fiscal positions are not engineers, and they simply often do not believe the technical analyses. In this module, the instructor introduces a more-comprehensive (and in his experience, a more effective) approach, one that balances the technological and financial analyses with what he calls mission analyses.

Learning Outcomes:

Understanding of a candidate approach for creating policy and procurement recommendations that are more credible. Insight gained through examples and case studies.

Week Seven- Spring USC Residency

Thursday, April 27, 2023

Site Visit coordinated by MDAA

Friday, April 28, 2023

8:15AM-9:00AM

Check-In and Breakfast

9:00AM-12:00PM

Case Study of Machine Learning: Object Detection and Classification

Seon Ho Kim, Ph.D.

Associate Director of the Integrated Media Systems Center at the USC Viterbi School of Engineering

Course Description:

Visual data such as images and videos have been essential in many smart city applications and they are getting even more important due to the recent advances in machine learning and artificial intelligence technologies. Smart city can increasingly take on image recognition and analysis capabilities which have the potential to provide efficient solutions to accelerate decision-making processes in traffic monitoring, road damage detection, intelligent safety system, to name a few. This course is to introduce issues and challenges in smart city monitoring at scale based on our experience in collecting, managing, and analyzing urban visual data for the community of Los Angeles.

12:00PM-1:30PM

Lunch Forum

1:30PM-2:00PM

Break

2:00PM-5:00PM

Emerging Digital Technologies (e.g., artificial intelligence, “big-data”,etc.)

Neil Siegel, Ph.D.

IBM Professor of Engineering Management and Professor of Industrial and Systems Engineering and Computer Science Practice

Course Description:

Air and missile defense have long been relatively “big data” systems (e.g., the amount of I&Q data processes by the typical missile-defense radar can be very large), and such systems also have long made use of computer-derived decisions (e.g., target identification and target aimpoint), but multi-mode / multi-weapon systems (especially combinations of space, air, and cyber capabilities) of the present and future will increase the need and opportunity for “big-data” and “artificial intelligence” processing in these missions, and decrease the timeline for human intervention in decision-making, and thereby increase the desirability of depending on the computers for a larger portion of the decisions. Emerging capabilities are described, along with their technological and “social” limitations. One key such limitation is that most emerging AI / big-data / machine-learning algorithms cannot “explain” to a human the basis for their assessment / decision; this creates a significant reluctance to depend on the machine’s outcome.

Learning Outcomes:

Understanding of the terminology and basic techniques emerging (e.g., machine learning, “artificial intelligence”, pattern recognition, etc.), and their limitations that could effect the technological or social suitability of these techniques.

Saturday, April 29, 2023

8:15AM-9:00AM

Breakfast

9:00AM-12:30PM

Capstone Introduction and Presentations

Frank V. Zerunyan, J.D.

Professor of the Practice of Governance

Director of Executive Education and ROTC Programs

12:30PM-2:00PM

Lunch Break

2:00PM-5:00PM

Capstone Presentations

5:00PM-6:00PM

Certificate Ceremony

***Important Note:** This is a non-degree continuing and executive education program. Upon successful completion, individuals receive a continuing education certificate.

The USC SHIELD Executive Program in Global Space and Deterrence is a joint program between the University of Southern California's Price School of Public Policy and the Viterbi School of Engineering. Its creation benefited from an engagement with MDAA.



Presenter Profiles (Proposed)



Ali E. Abbas, Ph.D.

Dr. Ali E. Abbas is Professor of Industrial and Systems Engineering and Public Policy, a joint appointment between the USC Viterbi School of Engineering and the USC Price School of Public Policy. He previously served as the Director of the USC Neely Center for Ethical Leadership and Decision Making (DECIDE) and the USC Center for Risk and Economic Analysis of Terrorism Events (CREATE).

Before joining USC, Dr. Abbas was the Art Davis Faculty Scholar in the Department of Industrial and Enterprise Systems Engineering, College of Engineering, University of Illinois at Urbana-Champaign. Prior to his time at the University of Illinois, Dr. Abbas was a lecturer in the Department of Management Science and Engineering, Stanford University, where he also earned his Ph.D. in Management Science and Engineering, Ph.D. minor in Electrical Engineering, M.S. in Engineering Economic Systems and Operations Research, and M.S. in Electrical Engineering.

The recipient of multiple awards from the National Science Foundation for his work, Dr. Abbas' research focuses on decision analysis, risk analysis, multiattribute utility theory, and data-based decision making. He is widely published in books, journals, and conference publications, and has shared his expertise through television appearances, TEDx and other invited talks.

Dr. Abbas regularly teaches courses on decision analysis, and has taught numerous executive education courses at a variety of institutions, such as Stanford University, BP, Southern California Edison and numerous other institutions.

In addition to his academic career, Dr. Abbas is founder, president, and CEO of Ahoona Corp, a decision making social network that has several thousand users around the world. He has been on the Advisory Boards of Hedgestreet Inc., a binary futures exchange, and is a board member of the Decision Education Foundation, a volunteer nonprofit organization that empowers youth to make better decisions about their lives. Dr. Abbas also has extensive consulting and management experience.



Howard Greenwald, Ph.D.

Howard Greenwald, Ph.D., has research interests in public policy, health services, evaluation research, public opinion, and organizational management. He has served as director of USC's Health Services Administration Program, chairman of the Western Network for Education in Health Administration, and commissioner on the Commission on Accreditation of Healthcare Management Education. . He has made major contributions to research on health care delivery and socioeconomic disparities in health status and treatment outcomes. Recent books include *The United States Health Care System: Organization, Management, and Policy* (Jossey-Bass, 2010), *Organizations: Management Without Control* (Sage, 2008), and *Health For All: Making Community Collaboration Work* (Health Administration Press, 2003). His book, *Who Survives Cancer?* (University of California Press, 1992), reports the results of a ten-year survival study. Earlier work includes articles in *Journal of Public Administration Research and Theory* (J-PART), *Public Administration Review*, *Journal of the American Public Health Association*, *Milbank Memorial Fund Quarterly*, and a variety of medical journals. He has an extensive consulting practice in program evaluation, policing, and medical/legal issues.



Mike Gruntman, Ph.D.

Mike Gruntman, Ph.D. is a Professor of Astronautics and Aerospace and Mechanical Engineering.

His research focuses are: Astronautics, spacecraft and space mission design, space physics, space instrumentation and sensors, space plasmas, spacecraft technologies, rocketry, propulsion, orbital debris, missile defense. Dr. Gruntman has authored and co-authored more than 300 scholarly publications, including 4 books.

His education videos have over 1.2 million views on YouTube. Dr. Gruntman is a member (Academician) of the International Academy of Astronautics.

Awards:

2011 NASA Group Achievement Award

2006 International Academy of Astronautics Luigi Napolitano Award

2001 NASA NASA Group Achievement Award

2000 NASA NASA Group Achievement Award

1999 USC Viterbi School of Engineering Exceptional Service Award

1998 Los Angeles Section of the American Institute of Aeronautics and Astronautics Certificate

1997 Los Angeles Section of the American Institute of Aeronautics and Astronautics Certificate of Appreciation



Randall W. Hill Jr., Ph.D.

Randall W. Hill, Jr. became the executive director of the USC Institute for Creative Technologies in 2006. A leader in understanding how classic storytelling and high-tech tools can create meaningful learning experiences, Hill steers the institute's exploration of how virtual humans, mixed reality worlds, advanced computer graphics, dramatic films, social simulations and educational video games can augment more traditional methods for imparting lessons.

He oversees a diverse team of scientists, storytellers, artists and educators as they pioneer and evaluate new ways to deliver effective teaching and training in areas including leadership, cultural awareness, negotiation and mental health treatment and assessment. Hill is also a research professor of computer science at the USC Viterbi School of Engineering. His research focus is on using intelligent tutoring systems and virtual humans to create immersive learning environments.

Hill's career at USC began in 1995 at the USC Information Sciences Institute where he worked on the development of models of human behavior and decision-making for real-time simulation environments. He joined the USC Institute for Creative Technologies in 2000 as a senior scientist. Prior to his work at USC, Hill served as a group supervisor and the work area manager for network automation in the Deep Space Network Advanced Technology Program at NASA's Jet Propulsion Laboratory.

Hill graduated with a bachelor of science degree from the United States Military Academy at West Point and subsequently served as a commissioned officer in the U.S. Army for six years with assignments in field artillery and military intelligence. He earned his M.S. and Ph.D. degrees in computer science from the University of Southern California. He is a member of the American Association for Artificial Intelligence and has written over 50 technical publications, including a co-authored article, "Toward Virtual Humans" featured in AI Magazine in the summer of 2006.



Rym Kaki, Ph.D.

Vice-Chair of the Department of Governance and Management
Dr. Kaki's teaching and research foci pertain to human behavior in public and non-profit organizations, development NGOs' project design and evaluation, comparative public policy analysis, international development administration and social finance innovations as applied to urban poverty reduction policy. She hails from the global social finance and micro-enterprise development professions where she worked

in strategic management, research and development, program evaluation and social impact assessment. She brings extensive practical experience in designing and evaluating financial and non-financial solutions to support community-oriented economic empowerment and financial inclusion, with global consultancy assignments taking her to the North Africa,

Middle East and South Asia regions.

She is currently a board member of the Section on International and Comparative Public Administration (SICA) at the American Society of Public Administration (ASPA). In 2018, she has co-founded the new Section on African Public Administration (SAPA) at ASPA, bringing together American, diaspora and global scholars and practitioners with a commitment to advance the science, processes and art of public administration on the African continent.

Dr. Kaki was a Fulbright scholar, a Visiting Assistant Professor and Director of International Education at the South Mediterranean University. She is currently the Vice Chair of the

Department of Governance and Management at the Price School. She holds an M.A. in International Policy Studies, Monterey Institute of International Studies.



Seon Ho Kim, Ph.D.

Seon Ho Kim, Ph.D. is the Associate Director of the Integrated Media Systems Center at the USC Viterbi School of Engineering. He also teaches Data Informatics in the Data Program at the USC Viterbi School of Engineering.

He received his BS degree in Electronic Engineering from the Yonsei University, Seoul, Korea in 1986. He received his M.S. in Electrical Engineering and Ph.D. in Computer Science from the University of Southern California in 1994 and 1999 respectively.

Between 1999 and 2010, he worked as a faculty member at University of Denver, Colorado, and University of the District of Columbia, Washington DC.

Dr. Kim's current research interest is on spatial database, Big Data, IoT and Smart City, multimedia systems, and image machine learning. He has been leading MediaQ project which is a social media data collection and management platform, and recently TVDP project which focuses on a translational visual data platform for urban geo-tagged visual data collection, processing, and analysis. Dr. Kim's projects have been funded by US federal and local government, industries such as Google, Northrop Grumman Corp., Microsoft, Oracle, and Intel. He is a senior member of IEEE and a member of ACM. He worked as the president of KSEA-SC (Korean American Scientists and Engineers Association Southern California Chapter) and the president of KOCSEA (Korean Computer Scientists and Engineers in America).



Berok Khoshnevis, Ph.D.

Behrokh “Berok” Khoshnevis is the Louise L. Dunn Distinguished Professor of Engineering and is the Director of the Center for Rapid Automated Fabrication Technologies (CRAFT) at the University of Southern California. He is active in robotics, and mechatronics related research and development projects that include the development of several novel Additive Manufacturing (3D Printing) processes such as Contour Crafting mega-scale fabrication, SIS, which is licensed to HP, for fabrication of polymeric

and metallic parts and SSS for fabrication of high temperature alloys, ceramics and composites, as well as development of mechatronics systems for biomedical applications (e.g., digital dental prostheses fabrication, robotics for orthodontics, rehabilitation engineering, and tactile sensing devices), autonomous mobile and modular robots for fabrication and assembly on Earth, in space and on other planets, and specialized innovative equipment for oil and gas as well as renewable energy industries. He has numerous inventions and over 100 US and international patents as well as nearly 200 refereed technical publications.

He is a member of the National Academy of Engineering, a Fellow of the National Academy of Inventors, a Fellow of the American Association for the Advancement of Science, a NASA Innovative Advanced Concept Fellow, and is a Fellow member of the Society of Manufacturing Engineers, the Institute of Industrial & Systems Engineering, and the Society for Computer Simulation. He has won numerous awards including, USC School of Engineering Senior Research award, Pete Lohman Best Engineering

Alumni award, the Khwarizmi International Award (KIA Laureate) and Sharif University of Technology One of Top 50 among over 50,000 Alumni Award.

Because of his Contour Crafting invention, he received the 2014 Grand Prize among 1000+ globally competing technologies in the *Create the Future* design contest which was organized by NASA. Contour Crafting was selected earlier as one of the top 25 out of more than 4000 candidate inventions by the History Channel Modern Marvels program and the National Inventor’s Hall of Fame; and has been identified as one of the major disruptive technologies of our time by the renowned Harvard Professor, Clayton Christensen, who coined the term “disruptive technology”. The technology has been exhibited in numerous science & technology and art museums around the world.

Dr. Khoshnevis’ another 3D printing invention, Selective Separation Shaping (SSS) won another international competition Grand Prize by NASA in 2016 as the most capable and versatile metallic and ceramic Additive Manufacturing technology for micro-gravity and planetary applications.

He was recognized in 2017 by the *Connected World* magazine as one of top 10 pioneers in the Internet of Things (IoT). *Connected World* has celebrated luminaries such as Elon Musk as other IoT pioneers.

His inventions routinely receive extensive worldwide publicity in acclaimed media such as

New York Times, Los Angeles Times, Business Week, Der Spiegel, New Scientist, and major national and international television and radio networks. His TEDx talk on the subject of automated construction has been viewed more than one million times and was selected by the TED organization as one of five *TEDx Moments* among over 30,000 presentations.

Dr. Khoshnevis' educational activities at USC include the teaching of a popular graduate course on Invention and Technology Development. He routinely conducts lectures and seminars and gives keynote speeches on the subject of invention.



Dora Kingsley Vertenten, Ph.D.

Dr. Dora Kingsley Vertenten is a practitioner of public policy through the American political system. Since joining USC's faculty in 1996, she focuses on the Master of Public Administration program teaching Fundamentals of Public Policy analysis (554), the Capstone course (546) and leads both the Residency in Public Administration (506) and the Capstone Residency (507) at graduation. She has taught an International Laboratory in Dublin, Ireland (613ab), Public Administration and Society (540),

Intersectoral Leadership (500) and Political Management (656) including USC's Semester in Washington Politics program and for many years in the Sacramento Capital Center program. In the MPA's Capstone course, Vertenten has served as coordinator of the program in Sacramento, Los Angeles and online as well as recruiting international and domestic, public and non-profit agencies to work closely with more than 75 graduate student teams.

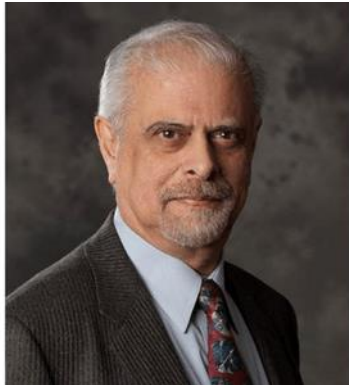
Dr. Vertenten currently serves as Faculty Coordinator of the USC Price Master in Public Administration online (MPAOL) program and as Chair of the Price School's Governance Department MPA Assessment Committee with responsibilities for accreditation processes. Vertenten was awarded the Price School's [Biller Award for Outstanding Faculty Performance](#) in 2020.

Active in national professional organizations, Dr. Vertenten was elected in 2006 as a lifetime Fellow of the [National Academy of Public Administration](#), an independent organization chartered by Congress to help public organizations' strategic planning and managing for results. She is a member of the [Association for Public Policy Analysis and Management \(APPAM\)](#) having delivered their plenary panel presentation during the 2019 Institutional Representative conference in Washington, D.C. A frequent speaker at the [Network of Schools of Public Policy, Affairs and Administration \(NASPAA\)](#) annual meetings, Vertenten also served as a member of their Commission on Program Review and Accreditation (COPRA) as a 2020 Site Visit Team member.

Dr. Vertenten is an avid participant in social media useful for public policy debates and studies new information technologies and digital literacy. As the CEO of Trenton West, a research consulting firm, she advised Governors, Attorney Generals and other statewide Constitutional officeholders, U.S. House of Representatives' leadership, Ambassadors, senior Party officials and major donors. Vertenten has directed statewide political operations beneficial to the White House Administration and its federal surrogates as Senior Advisor to the Chairman of the University of California's Board of Trustees, Gerald L.

Parsky for six years and was director of the California Republican National Convention Delegation 2004 in New York, NY. In 2008, Vertenten participated in her seventh national Presidential nominating convention, five times as a voting Delegate representing the State of California. A commentator on current political activities with implications for the future of American Democracy, Dr. Vertenten has written columns for Campaigns and Elections Magazine's Campaign Insider on tactics and strategies and appeared in interviews on NBC, PBS, BBC and New York One.

Dr. Vertenten has served in numerous non-profit organizations and is particularly interested in K-12 education reform. Her leadership responsibilities have included service as President of a charter school Board of Trustees and as senior manager of a national education foundation. Additionally, Vertenten has held positions working with the California State Treasurer's office for Jesse Unruh, the Reagan Administration's U.S. Department of Energy Office of the Assistant Secretary for Administration, U.S. House Appropriations Committee member Steny Hoyer (MD), and the City of Concord, CA Redevelopment Agency. Dr. Vertenten worked on Wall Street for Bear, Stearns and in San Francisco for an institutional investment advisory firm, Dynamic Funds Management.



Azad Madni, Ph.D.

Azad M. Madni is a Professor of Astronautical Engineering and Executive Director of USC's Systems Architecting and Engineering Program in the Viterbi School of Engineering. He is also the Director of the Distributed Autonomy and Intelligent Systems Laboratory. He is the chair and co-founder of the IEEE SMC's award-winning Technical Committee for Model-Based Systems Engineering. He has served as General Chair of the Conference on Systems Engineering Research since 2008. He is an AAAS Fellow, AIAA Fellow, IEEE Life Fellow, IETE Life Fellow, INCOSE Fellow, and SDPS Fellow and has received prestigious awards and honors from nine different societies. His research

has been sponsored by several government agencies including DARPA, DHS S&T, DoD-SERC, NASA, DTRA, OSD, MDA, ONR, AFOSR, AFRL, ARI, ARL, RDECOM, CECOM, ERDC, NAVAIR, NAVSEA, SPAWAR, MARCOR, DOE, and NIST. His research has also been sponsored by major aerospace and automotive companies including Boeing, General Motors, Raytheon, Northrop Grumman Corporation, SAIC, and Lockheed Martin. Before joining USC, he was on the faculty of Northwestern University's McCormick School of Engineering and Applied Science.



Ryan McAlinden

Ryan McAlinden is Director of Defense and Intelligence Programs for the USC Institute for Creative Technologies (ICT). Previously he served as senior advisor, Synthetic Training Environment (STE) Cross Functional Team (CFT) for the Army Futures Command and as ICT's Director of Modeling, Simulation & Training at the USC Institute for Creative Technologies (ICT), leading projects primarily for the US Department of Defense centered around geospatial visualization and analysis. He is an adjunct assistant professor of the practice of spatial sciences

with the USC Spatial Sciences Institute.

His primary research interest is identifying, developing and employing novel ways for human users to exploit and better understand the 3D virtual world around them. Immersive mediums like virtual and augmented reality continue to proliferate and are now mainstays in our society. Map-based big data are used in many of the most popular applications on our devices, from review apps, to ride sharing, to self-driving cars. However, the ability to produce and visualize 3D geospatial content for these devices remains elusive, mostly because the process for creating such content is existentially an anthropomorphic process, and as a result time-consuming, inefficient and often inconsistent.

McAlinden's goal, through automation, is to ease the burden of generating 3D terrain content for our electronic devices and systems, as quickly and cost-effectively as possible. Ultimately, he seeks to improve the agency that human users have with their maps, and reduce the human load for creating them.

McAlinden rejoined ICT in 2013 after a three-year post as a senior scientist at the North Atlantic Treaty Organization (NATO) in The Hague, Netherlands. There he led the provision of operational and geospatial analysis support to the International Security Assistance Force (ISAF) Headquarters in Kabul, Afghanistan. Prior to joining NATO, McAlinden worked as a computer scientist at ICT from 2002 through 2009 where he led several projects related to geospatial modeling and simulation.



Peter J. Robertson, Ph.D.

Peter Robertson is an Associate Professor at the USC Price School of Public Policy. His research and teaching interests focus on the development and implementation of collaborative organizational systems that enhance the quality of life for human beings, their communities, and the natural environment. The foci of his latest publications include conceptual papers proposing a set of organizing principles for collaborative organizational and governance systems, investigations into real-world efforts to create collaborative inter-organizational systems, and the results of agent-based computer simulations exploring the dynamics of

collaborative decision-making mechanisms. Earlier research has addressed issues pertaining to interorganizational networks, employee attitudes and behavior, the process and outcomes of

organizational change, and school-based management as a mechanism for public school reform. Professor Robertson's research has been published in a number of journals and books, including the Journal of Public Administration Research and Theory, Public Management Review, Public Administration Review, Academy of Management Journal, Educational Administration Quarterly, and Research in Organizational Change and Development. He has provided consulting and training for a variety of organizations, and is a member of the Academy of Management, the Public Management Research Association, and the Institute of Noetic Sciences.



Neil Siegel, Ph.D.

Neil Siegel is the IBM Professor of Engineering Management in the Epstein Department of Industrial and Systems Engineering within the Viterbi School of Engineering at the University of Southern California. He is a recognized expert in the design and development of large, complex systems that serve important societal needs, both as a practitioner at the largest scales, and as a researcher.

Until the end of 2015, he held the position of sector vice-president and chief technology officer at Northrop Grumman. He led the sector's technology activities, provided oversight of the sector's research portfolio (\$600M / year), and oversaw the design and development of solutions for their customers' most complex and most-important problems. Prior to that role, Dr. Siegel was the sector's vice-president and chief engineer, where he oversaw the sector's 12,000plus scientists and engineers, directed engineering process improvements, and led activities intended to further the development of the company's top technical talent.

Previously, Dr. Siegel served as vice-president and chief technology officer of Northrop Grumman's Mission Systems sector, and before that, vice-president and general manager of the company's Tactical Systems division. He has been responsible for engineering projects outside of the United States, including work in the U.K., NATO, Saudi Arabia, etc. In all, he served as a vice-president of the company for nearly 18 years.

Dr. Siegel led the engineering on a large number of successful fielded military, intelligence, and commercial systems, including the U.S. Blue-Force Tracker; the Army's first unmanned aerial vehicle; the Forward-Area Air Defense system; the fire-control segment of the world's first complete laser weapon system; and played important roles for many other systems for ground, sea, space, and cyber-space. He has made a particular specialty of air-defense and missile-defense systems. These systems have repeatedly been cited as model programs and important national capabilities. He also led work for the steel industry, the movie industry, the healthcare industry, and the electric power industry. The concepts he helped to invent to reduce unintended interactions between drugs prescribed by different doctors are used almost universally in the U.S, saving many lives each year. He invented concepts that are used in a very large number of consumer devices around the world (including GPS receivers, smart

phones, and tablet computers). He is a recognized expert in information networking, especially network management, wireless networks, and networks of mobile devices. He holds nearly 50 issued and pending patents worldwide. His expertise is recognized by the U.S. Government, as indicated by past membership on the Defense Science Board, the Army Science Board, and other senior government advisory panels.

He is certified by the International Congress on Systems Engineering (INCOSE) as an expert systems engineering practitioner (ESEP; their highest level of certification), and also a certified “black-belt” practitioner in the well-known 6-sigma process-optimization methodology.

Dr. Siegel has a doctorate in systems engineering from the University of Southern California. His advisor there was the noted computer scientist and systems engineer Dr. Barry Boehm. Among his many honors are the following:

Election to the U.S. National Academy of Engineering

Selection as a fellow of the U.S. National Academy of Inventors

Selection as a fellow of the Institute of Electrical and Electronics Engineers (IEEE)

Selection as a Fellow of the International Congress on Systems Engineering (INCOSE)

The IEEE Simon Ramo Medal for systems engineering and systems science

His former company’s Chairman’s Award for Innovation (three times)

The Army’s Order of Saint Barbara

The iCMG award for system architecture

The Northern Virginia Technology Council CTO-of-the-year award

Recent publications include a textbook on engineering project management (Wiley), and a chapter in a book on ethics in engineering (Cambridge University Press). Public service includes board positions for two charitable organizations (including the largest non-profit hospice in California), 10 years as an elected public official (California Hazard Abatement District board), membership on the board of directors for the Electric Infrastructure Security Council, and former membership on the research foundation of the State University of New York, as well as many other items.



Frank Vram Zerunyan, J.D.

Frank Vram Zerunyan, JD is a Professor of the Practice of Governance at the Sol Price School of Public Policy and Director of Executive Education at USC Price Bedrosian Center on Governance and The Neely Center for Ethical Leadership and Decision Making, an Interdisciplinary Center USC Marshall USC Viterbi and USC Price (DECIDE), as well as Director of ROTC Programs. His key areas of expertise include Local Governments, Public Private Partnerships, Civic and Ethical Leadership, Land Use, Regulation, Negotiation and Executive Education. He teaches graduate courses on Intersectoral

Leadership (Collaborative Governance), Business and Public Policy, International Issues in Public Policy, Negotiation, Place Institutions and Governance as well as International Laboratory. Frank also lectures locally and globally to build capacity and foster leadership

among public executives worldwide. In his capacity as an honorary instructor colonel in the Armenian Army and Air Force, he lectures, coaches and advises on academic affairs at the Vazgen Sargsyan Military University in Armenia. For his influential work over the past five years in Armenia, he was awarded LL.D. Doctor of Laws – Honoris Causa by the Public Administration Academy of the Republic of Armenia.

Frank is a three term Mayor and still serving Council member in the City of Rolling Hills Estates, California. In his role as a public official, after serving as Chair of the Planning Commission in Rolling Hills Estates, Frank was elected to the City Council in 2003 and re-elected in 2007, 2011 and 2015. He previously served and continues to serve on various regional public boards, including law enforcement, sanitation, technology and transit. He has chaired and continues to chair select city government committees in Rolling Hills Estates. Frank's public service on various local government policy committees extends statewide with the California League of Cities, California Contract Cities Association and Southern California Association of Governments. In 2008, Frank was elected and assumed a leadership role as the 52nd President of California Contracts Cities Association, the second largest municipal organization in the state of California with approximately 70-member cities and 7 million residents.

As a gubernatorial appointee under Governor Schwarzenegger, Frank was a state regulator serving on the Medical Board of California in the Department of Consumer Affairs. He was elected by the Board to serve as its Vice President. After five years of service on the Medical Board, Frank's term expired in June of 2011. His responsibilities on the Medical Board included the promulgation of regulation, professional discipline and the sixty million plus budget of the Medical Board.

In January of 2013, Frank was appointed to an ad hoc experts committee on capacity building in public administration at the United Nations Division for Public Administration and Development Management in the Department of Economic and Social Affairs. In that capacity, he lectures and conducts capacity building seminars at UN headquarters in New York as well as at UN Forums around the world. As part of his global academic service focused on governance, Frank was appointed to the Editorial Council of the Public Administration Scientific Journal for the Republic Armenia.

Frank has more than 30 years of comprehensive and multi-sectorial experience as a lawyer, judge pro tem, author, consultant, director, board member, professor and public servant. Frank has been honored as one of Southern California Magazine's Super Lawyers since 2004, The Legal Network's Top Lawyers in California, Marquis' Who's Who in America and American Law and Government institutions like the California Assembly, the California Senate, the County of Los Angeles and various city governments for his leadership in the public sector. In the not for profit sector, Frank chaired the Daniel Freeman Hospitals Foundation in 2001-02 and oversaw the successful distribution of \$8 million in gifts. He has acted as a policy advisor and counsel to the Armenian National Committee of America in Washington DC. Frank also served as chairman of the Board of Governors of the worldwide Armenian Bar Association. As a lawyer, he is licensed to practice law in California, District of Columbia (inactive), Courts of International Trade, Federal Courts in the 9th Circuit, and the Supreme Court of the United States of America.

Frank earned his Doctor of Jurisprudence (Doctor of Laws) degree from Western State University College of Law and his Bachelor of Arts degree from California State University Long Beach. He also completed his advanced legal studies in Corporate Taxation at the University of Southern California Law Center (USC Gould). He is a graduate of California League of Cities' Civic Leadership Institute, an educational forum for the state's rising leaders.