Purdue astronaut alumni returned to Purdue for reunion
See page 3 for story
Letter from the AAE Head - Tom I-P. Shih

The 2013-2014 academic year has been an exciting one for Purdue University, our College of Engineering, and the School of Aeronautics and Astronautics (AAE). It is a pleasure and a privilege to share with you some of those events and accomplishments in this AeroGram.

In January 2014, President Mitch Daniels launched Purdue’s four Big Moves: affordability and accessibility, transformative education, STEM leadership, and world-changing research. These Big Moves are shaping how Purdue is moving forward with engineering at the forefront. In engineering, Dean Leah Jamieson has lead an initiative to hire 107 “net” new faculty members in engineering by 2018 to ensure unparalleled excellence and impact on discovery, learning, and engagement. AAE is delighted to announce the addition of four new faculty members. Dr. Carolin Frueh (pronounced Free) from Texas A&M will join as an assistant professor, and Dr. Sergey Macheret from Lockheed Martin Aeronautics Company’s Advanced Development Research (ADR) group will join as a full professor. We also welcome Mr. Dan Dumbacher, former Deputy Associate Administrator of NASA’s Human Exploration and Operations Mission Directorate as a Professor of Practice. Purdue alumnus and astronaut, Dr. David Wolf, joined our school as a Visiting Professor in January 2014. We also congratulate Dr. Wolf who received an honorary doctorate from Purdue at the May 2014 commencement. To provide better advising to our students, we welcome our second academic advisor, Taylor Weast.

Some of the major events during this past year include the Zucrow Labs Alumni Reunion in early September, where Zucrow alumni met with faculty and students, and worked with Steve Heister and faculty in Zucrow Labs to further advance the work at Zucrow. At the Outstanding Aerospace Engineer Award banquet on September 13, 2013, we honored five outstanding AAE alumni whose distinguished accomplishments also honor us. The William E. Boeing Distinguished Lecture took place on October 1, 2013 with Lt. General C.D. Moore II, Commander of the Air Force Life Cycle Management Center, as the keynote speaker. On Oct. 18, 2013, a model of the Boeing X-20 Dyna-Soar space vehicle - a gift from Boeing - was unveiled by Dean Leah Jamieson, Phantom Works President Darryl Davis, BRT Chief Engineer Mark Burgess, and BRT Senior Manager Matt Symmonds. Purdue Space Day, held on October 26, 2013 with General Roy D. Bridges as the VIP astronaut, reached over 650 elementary and middle school students. On February 21, 2014, AAE alumni Andrea Chavez and Jim Miller were honored with our college’s Distinguished Engineering Alumni award. In April 2014, President Daniels organized an astronaut reunion to engage our students and faculty. During this past year, we also welcomed a number of high-profile visitors to our school, including Dr. Buzz Aldrin, Mr. Dennis Tito, former AAE head Dr. Bruce A. Reese, Dr. Ron Kerber, and Dr. James Raisbeck as well as members of our distinguished Industrial Advisory Council and Steering Advisory Council.

On awards, Associate Prof. Timothée Pourpoint was granted tenure; Prof. Karen Marais won a National Science Foundation CAREER Award; and Prof. Mike Sangid won a Young Investigator Award from the Office of Naval Research and a Young Professional Development Award from the Minerals, Metals, and Materials Society. Professors Haifeng Wang and Nicole Key also won young investigator awards from professional societies. In teaching, Professors Bill Crossley and Steve Heister were inducted into Purdue’s “Great Book of Teachers”; Prof. Karen Marais won AEE’s Elmer Bruhn Teaching Award; Prof. Mike Grant won AAE’s W.A. Gustafson Award for Outstanding Teaching; and Prof. Kathleen Howell won Purdue’s Charles B. Murphy Outstanding Undergraduate Teaching Award. In research, Prof. Alina Alexeenko won AEE’s C.T. Sun Excellence in Research Award, and Professors Wayne Chen, Bill Crossley, Karen Marais, Barrett Caldwell, and Bob Lucht won Purdue’s Seed for Success Award. Also, Professor Tim Fisher won a Purdue-led multi-university AFRL Center of Excellence for Integrated Thermal Management of Aerospace Vehicles with Steve Heister and Tom Shih as co-PIs. Our students and our alumni also won numerous awards which are highlighted in this AeroGram.

In partings, we bid farewell and expressed our deep-felt thanks to Prof. Marc Williams who retired in June 2014. We are extremely grateful for his many years of dedicated service to Purdue as an outstanding educator, tireless mentor to our students, and as AAE’s Associate Head for our undergraduate program. Prof. Bill Anderson has taken over as Associate Head of our undergraduate program since Spring 2014. We also bid farewell and expressed our deepest thanks to Prof. George Willson who retired in August 2014 after many years of dedicated service to Purdue. He is an invaluable contributor to the communication of our school including the writing/editing of our AeroGram and leading our incredibly successful outreach program, Purdue Space Day.

Mark your calendars for November 7 as we will honor our Outstanding Aerospace Engineers at the 16th annual awards dinner and ceremony. We welcome you back to campus so that we might show you up-close the educational opportunities that your support provides our students. Your visit also gives us the chance to say thank you for your support and, more importantly, connects you with our students so that you too can know why we make educating Purdue Aeronautical and Astronautical Engineers our life’s work. We strive to make the Purdue education live up to the standards that you remember so well and remind you that we cannot do so without your support. Thanks again for your part in making times at Purdue so exciting. Hail Purdue!

Tom I-P. Shih
Professor and Head
Purdue University hosted a group of its NASA astronaut alumni on April 10-12, 2014 for a reunion that culminated with a public forum, "A Conversation with Our Astronauts," in the Elliott Hall of Music. Purdue has 23 graduates who went on to become astronauts, including the late Neil Armstrong, the first man to walk on the moon, and Eugene Cernan, the most recent person to walk on the moon.

While the astronauts were on campus, they met with students and faculty and took part in educational outreach with local schools. They were also introduced at halftime of the spring football scrimmage on April 12 in Ross-Ade Stadium. The astronauts who took part in the public forum included Gene Cernan, Mark Brown, Andrew Feustel, Gary Payton, Loren Shriver, Scott Tingle and Charles Walker. Additionally Gregory Harbaugh and David Wolf (not pictured) also made an appearance on campus.

Eugene Cernan was recognized at a reception at Purdue’s Mackey Arena for donating an Apollo 17 Lunar Roving Vehicle mapbook to Purdue. Cernan donated his personal papers to the Barron Hilton Flight and Space Exploration Archives in January 2009. The maps are mounted in a custom-made book and are accompanied by several contextual documents and photographs. The maps provided the crew with bearings and ranges to each investigation site on the lunar surface during more than 22 hours of exploration. In addition to being home to the largest collection of Amelia Earhart papers in the world, the archives include the papers of engineers, aviators, aviation professionals, scholars and alumni astronauts including Neil A. Armstrong and Cernan, Jerry Ross, the late Janice Voss and Roy Bridges Jr.

For highlights of Purdue’s space-related research and historic NASA milestones, go to http://www.purdue.edu/newsroom/releases/2014/Q2/purdue-has-legacy-of-space-research,-nasa-milestones.html.

More information about the astronauts and Purdue in space is available at http://www.purdue.edu/space/
Lieutenant Commander Daniel J. Radocaj BSAAE’00, MSAE’01
Wins Young Alumni Award

Lieutenant Commander Daniel J. Radocaj, United States Navy, BSAAE ’00, MSAE ’01 has been named as a recipient of the 2013 Purdue Engineering Alumni Young Alum Award by the Purdue Engineering Alumni Association. His extraordinary accomplishments for a young alumnus have been recognized by his commitment to Purdue while advancing his military career.

Professor Steven Collicott was Dan’s advisor for his master’s degree, and he accepted the award at the Post-Game Homecoming Event on Saturday, September 28, 2013 on Dan’s behalf.

In March 2012, the Navy honored LCDR Radocaj as Test Pilot of the Year. “Radocaj led a team of 25 engineers, technicians and aircraft maintainers to plan the first aircraft launch from an electromagnetic catapult. After flying the historic first launch in an F/A-18E, he coordinated with multiple organizations to open the envelope to a wide range of aircraft, identifying several previously unknown compatibility issues.”

In addition to serving as the Project Officer leading the testing program of this revolutionary launch system, he also flew and took on management responsibilities during two tours of duty in the fleet. He was nominated for the Purdue Engineering Alumni Association’s Young Engineering Alumnus Award for both his Navy and Marine commendations and his eagerness to return to Purdue to strengthen both the AAE curriculum and the extra-curricular educational opportunities for AAE students.

Alumna Tamaira E. Ross was recognized for her engineering and aerospace expertise when she was inducted as a Boeing Technical Fellow on January 2, 2014. As Boeing Technical Fellow, Tamaira is recognized as a company and industry expert in vehicle design, rapid prototyping, and test & integration.

Tamaira is an aircraft and spacecraft design engineer at Boeing Defense, Space & Security in Seattle, WA. She is responsible for the complete vehicle design for multiple development programs which, in addition to concept and design, includes prototype build, testing of flight hardware, performance estimates, and integration & test plans. She also works the cost estimates and program schedule. To relate it to students in Aero, Tamaira usually tells them that her job is like their senior design class – on a daily basis. She has also worked on many different projects in Commercial Airplanes, Defense, Space & Security, and Phantom Works.

Tamaira graduated from Purdue with a BSAAE in 1996 and a MSAAE in 1998. She received a Master’s degree in Mechanical Engineering from the University of Washington in 2002 and a Technology Management MBA in 2008 also from the University of Washington.

She has been recognized numerous times in her career, including being named as the 2011 Puget Sound Engineering Council Industry Engineer of the Year and by the Purdue Alumni Association in July/August 2010 as 40 alums under the age of 40. Additionally, to highlight and honor Tamaira, a short video of her accomplishments under the title of “Idea Maker” has been shown at each home football and basketball game.

Tamaira E. Ross BSAAE’96, MSAAE’98
Robert I. Sattler BSAE’48; OAE’12 - Obituary

The School of Aeronautics and Astronautics was saddened to hear of the death of distinguished alumnus Bob Sattler - June 14, 1926 - October 5, 2013.

Bob was honored by the school in 2012 with the Outstanding Aerospace Engineer Award and the following is taken from his biography.

Bob Sattler enlisted in the Navy V-12 program in 1944. The Navy sent Bob to DePauw University then transferred him to Purdue. Bob was discharged from the Navy in 1946 and finished his degrees at Purdue. Bob graduated from Purdue University in 1948 with bachelors’ degrees in Aeronautical Engineering and Naval Science and Tactics. Bob has been a Registered Professional Engineer since 1952.

While at Purdue, Bob lettered in Baseball. One of the most memorable games was Purdue vs. Michigan. Bob pitched a one-hitter. He had no-hit laurels in his grasp with two out in the ninth inning when Jack Weisenburger singled for the Wolverines’ lone hit of the afternoon. Bob struck out the next batter to end the game. Bob sat in the locker room waiting for coach Ray Schalk. When he got there he said, “Bob after this I want you to throw the ball as fast as you can at least three times during the game.” Coach Schalk was one of the finest men I have ever known. He taught me Baseball. Bob also received 5 athletic awards; 2 baseball, 2 basketball and 1 football.

Memorable moments - first day in Professor Bruhn’s class - he gave us all a test in airplane design (we all flunked). “It appears that you all require additional education in aeronautical engineering.”

Bob had spent the past 60+ years in the Machine Tool Industry. During his time as President of LaSalle Machine Tool and ROBOGATE Machine Systems, he was instrumental in the design and production of TMS “Total Manufacturing Systems” and Body Assembly and Welding Systems worldwide. His time in the Navy, education from Purdue and experiences throughout his career have earned him several patents and awards. In 1997 the [National Machine Tool Builders Association] honored him with the “Living Legend” designation award. Thank you to the Navy V-12 program and the education I received at Purdue...Purdue provided the “ Backbone” of education, making a successful life in the Machine Tool Industry a reality.

AAE Alumnus Dr. James D. Raisbeck was back on the Purdue campus to take part in the Symposium, “Leading the Future of Aviation,” held by the College of Technology October 16 and 17, 2013. The Symposium was held as part of the 50th anniversary of the College.

The following week, Leah Jamieson, the John A. Edwardson Dean of Engineering, Dr. Stephen Heister, The Raisbeck Engineering Distinguished Professorship for Engineering and Technology Integration, Head of the School of Aeronautics and Astronautics Dr. Tom Shih, and Director of Development Rita Baines, represented Purdue University at the thirty-second Annual Museum of Flight Pathfinder Awards on October 26, 2013 in Seattle, WA. The awards honor pioneering achievements in flying, education, operations, manufacturing, and an at-large category. During this visit, they were given a tour of the new Raisbeck Aviation High School.

A 1961 graduate of the School of Aeronautics and Astronautics, James D. Raisbeck is CEO of Raisbeck Engineering Inc. and its subsidiary Raisbeck Commercial Air Group Inc. He has distinguished himself in aviation by combining a keen engineering ingenuity with a spirit of entrepreneurship that is unique in the modern-day aerospace industry. The two companies focus on integrating advanced technology into existing aircraft in ways that increase their productivity and profitability.

Raisbeck serves on the boards of the Museum of Flight, the Seattle Opera, Pacific Northwest Ballet, Seattle Symphony Orchestra, and The Seattle Arts Fund as well as on several corporate boards. Seattle’s Hope Heart Institute honored Raisbeck and his wife, Sherry, an artist and former special education teacher, with its “Wings of Hope” 2003 annual award for their leadership in philanthropy. The Raisbeck’s were selected as the 2007 Seattle-King County First Citizens for their generous support of local arts, education and medical research organizations.

Dr. Raisbeck has been honored many times for his professional accomplishments and philanthropy, and Purdue has honored him with a Distinguished Engineer Award in 1979, an Outstanding Engineer Award in 1999, and an Honorary Doctorate Degree in 2005. He was made Fellow of American Institute of Aeronautics and Astronautics (AIAA) in 2013.

The Raisbeck Engineering Distinguished Professorship for Engineering and Technology Integration - Prof. Alten “Skip” Grandt was named as distinguished professor in 2000 and Prof. Stephen Heister named in 2010.

During a visit in May 2014, Raisbeck also met up with Professor Emeritus George Palmer. This visit gave them an opportunity to talk over old times when Raisbeck worked for George as a Research Assistant.
The Distinguished Engineering Alumni/Alumnae Award is presented to men and women who have distinguished themselves in any field in ways that reflect favorably on Purdue University, the engineering profession, or society in general.

For those who have been engaged in engineering work, their record of accomplishments should indicate a high potential for future growth into positions of increasing responsibility. The College of Engineering has over 85,000 living alumni. The distinction of DEA has been bestowed upon 499 of these outstanding individuals.

The School of Aeronautics and Astronautics is proud to honor two AAE alumni who received the College of Engineering Distinguished Alumni Award 2014.

Dr. Carolin Frueh (pronounced Free) obtained her bachelor’s and master’s degrees at the Karlsruhe Institute of Technology in Germany and her Ph.D. in 2011 at the University of Bern, Switzerland. Her thesis was on the identification of space debris objects, including observational as well as theoretical work. Software implementations stemming from her work are currently operationally used at the ESA (European Space Agency) SSA telescope network in the real time, and post data processing and orbit propagation. Following her Ph.D., she continued her research as a Postdoctoral Fellow with the Air Force Research Laboratory and as an Assistant Research Professor at the University of New Mexico, both in Albuquerque, through most of 2013. At the end of 2013, she joined Texas A&M University’s Department of Aerospace Engineering as a TEES Assistant Research Scientist. She is the recipient of the Scholarship Award of the Federal Republic of Germany (2001 and 2003), the Swiss Study Foundation (2009), the US National Research Council (2011).

Dr. Sergey Macheret received his M.S. and Ph.D. degrees from Moscow Institute of Physics and Technology and Kurchatov Institute of Atomic Energy, respectively. Since moving to the US in 1991, he worked at the Ohio State University (1991-1994) and Princeton University (1994-2006). Since 2006, Dr. Macheret has been with Lockheed Martin Aeronautics Company’s Advanced Development Programs (Skunk Works), where he is the leader of a team engaged in a number of both government-sponsored and company-funded research and development projects on aerospace applications of weakly ionized plasmas. Dr. Macheret has made contributions to the theory of nonequilibrium physical and chemical processes in high-enthalpy flows, to highly efficient generation of nonequilibrium plasmas, and to aerospace applications of plasmas and magnetohydrodynamics. Dr. Macheret is an author or co-author of over 160 journal and conference papers, 10 patents, and 2 books. In the last decade, he gave dozens of invited presentations and lectures and chaired AIAA conferences and sessions.

For exemplifying sustained lifelong learning and global impact as a Purdue engineer, for service to Purdue, and for sustained leadership in engineering-intensive industries
Boilermaker and the Purdue flag travel the world

AAE alumnus Blaine Curtis BSAAE’68 began his trek up Kilimanjaro in Tanzania on September 12, 2013. He followed the Shira route which enters from the west and circles the mountain around the northern side (to the left in the picture below) which faces Kenya. In addition to the rest of his luggage, Blaine also managed to pack a Purdue flag which is being proudly displayed in the photo.

He reached the summit, Uhuru Peak- elevation 19,340 feet, from the eastern approach on September 19. Blaine followed up this trek on a safari through the Serengeti, Olduvai Gorge, Ngorongoro Crater and Tarangire National Parks.

The Purdue Flag, now seen on its 3rd continent, being held off the South Atlantic Ocean on the Antarctica Peninsula by Blaine and fellow Boilermaker, Jeff Price (BS Management, 2009) whom Blaine met on board the National Geographic Explorer. The Addelle penguins are nesting along the rocks behind them. (The cone is there to keep people 5 meters from the penguins).

The School of Aeronautics and Astronautics is privileged to welcome Dr. David Wolf to our school as a Visiting Professor. Dr. Wolf joined the school at the start of the Spring Semester 2014 and he is collaborating with Professor Steven Collicott to teach the orbital section of our unique hands-on project class, AAE418 “Zero-gravity Flight Experiment.”

Dr. Wolf’s great experiences not only with on-orbit operations, but also in the planning and management of such activities by other astronauts, makes him a remarkably valuable addition to AAE418. He is leading a student team in defining and documenting on-orbit operations for ‘Fluids Education,’ a student designed space station experiment. He is also guiding the students in producing effective astronaut training materials for the experiment program.

Dr. David Wolf was also awarded an Honorary Doctorate Degree during the Spring Commencement Ceremonies on May 18th.

Our school welcomes Dr. Wolf’s experience and expertise in enhancing the education of our students, and we look forward to this unique collaboration with a Purdue alumnus astronaut.
Class Notes

1940’s
Joseph P. Minton (BSAE’49) and Nancy (Fettig) Minton (S’48), Sterling, VA, for the last three years have organized a food drive that has benefited many families in Loudoun County, VA. The drive has resulted in over three tons of nonperishable foods and nearly $16,000 in donations.

1950’s
Dr. Albert J. Fleig (BSES’58), Bethesda MD, retired from NASA 22 years ago, then worked for NASA for 5 years as a research Professor, and continues to work for NASA as a contractor through his own company. His work involves work on creating geo-physical data sets from remote sensing data and he is currently working on the Ozone Mapping and Profiler Suite (OMPS) flying on the Suomi National Polar Orbiting Partnership (NPP).

Jerry Glancy (BSAE’57), Wichita, KS, Retired from The Boeing Company, July.

1995
Tom Leech (BSAE’59), San Diego, CA, was one of three individuals honored as Garrett High School’s Distinguished Alumni for 2013. The ceremonies were conducted during halftime of a Railroaders football game.

William Sanderman (BSAE’55), Colorado Springs, CO, has retired.

1960’s
Blaine Curtis (BSAE’68), Laguna Beach, CA, has taken the Purdue flag on his travels. (see article on page 7).

Thomas Graham (BS ESci’63), Costa Mesa, CA, Consultant with Graham Consulting LLC.

Ronald Hera (BSAAE’67), Avon, IN, has authored two books Bethlehem’s Brothers and Jerusalem’s Brothers. Both are available at Amazon.com

John Newbold (BSAE’61), Retired in 1997 from Aerospace Corporation. He is a member, Northridge Hospital Foundation (Chair 2009-2010), Member California Hospital Association Board 2009-2010.

Dr. David H. Quick (BSAE’61), Indianapolis, IN, Rolls-Royce Retired and Lt. Col, USAF Retired.

Leonard Srnka (BSAE’68), Bellaire, TX, retired from ExxonMobil as chief research geoscientist after 34 years of service and is now professor of practice at UCSD Scripps Institution of Oceanography IGPP, in La Jolla, CA.

Clifton Trice (BSAE’68), Saint Charles, MO, is Program Manager-Commercial Support for The Boeing Company, St. Louis, MO.

1970’s
Edward Bielski (BSAE’74), accepted the position of Corporate Controller with SOS International, Reston, VA. Sosi provides linguistic and logictic support for CONUS and OCONUS locations for both the US Government and foreign customers.

Michael J. Corso (BSAE’71), Fort Myers, FL, was selected for inclusion in the 2013 Florida Super Lawyers magazine. This is his seventh consecutive year being named to the Florida Super Lawyers magazine. Corso was also named to Florida Trend Magazine’s Tenth Annual Legal Elite, which recognizes and honors the top two percent of all Florida lawyers. Corso is the chair of the firm’s Tort and Insurance Litigation Division. Corso also serves on the AAE Industrial Advisory Committee.

Joseph Jaap (BSAE’74, MS’74), Cincinnati, OH, has worked over 13 years to secure the conning tower and other equipment from the nuclear-powered submarine USS Cincinnati to serve as the focal point of the USS Cincinnati — Cold War Memorial. The sub was decommissioned in 1996 after nearly 20 years of Cold War service in all the oceans of the world. He serves as project coordinator of the private, nonprofit group.

Dr. Robert E. Kielb (BSAE’71), 2012 Affiliate Professor, Royal Institute of Technology, Stockholm, Sweden, Renewed.

Bruce Willis (BSAE’79), Huntsville, AL, is an Engineer with The Boeing Company, he is currently supporting Boeing’s development of the Space Launch System (SLS) core stage in the Loads & Dynamics group.

Robert Wirt (BSAAE’77), Leonardtown, MD, is a Principal at Booze Allen Hamilton - Acquisition/Program Management/Test & Evaluation. He had a 28 Year Navy Career as a Naval Aviator (A-7s and FA-18) and retired March 2005 as Captain. Among other achievements he received the Distinguished Graduate USNTPS Class 86 (1984), 10 Years as a Test Pilot, Head of Integrated Test Team for Developmental Test of the FA-18EF Super Hornet (95-99), Test Pilot of the Year (86), Program Manager - Precision Strike Weapons (99-03), CNO Strategic Studies Group (03-04), Presidential Helicopter Replacement Program 04-09 (AgustaWestlandBell and Lockheed Martin).

1980’s
Jerry A. Brown (BSAAE’88), is Eastern Region Sales Manager, for Seves, USA.

Andrea Chavez (BSAE’88), Broomfield, CO, was promoted to the position of director of operations and planning for National Defense at Ball Aerospace & Technologies Corporation. Andrea also serves on the school’s Industrial Advisory Board.

David J. Forrest (BSAAE’88), Houston, TX is an Aerospace Systems Engineer at NASA, Johnson Space Center, Houston, TX.

Michael Longmeyer (BSAAE’89, MS AAE’91), Maryland Heights, MO, joined Armstrong Teasdale’s Intellectual Property Practice Group in St. Louis. His patent prosecution practice encompasses all aspects of intellectual property law, including patent preparations, validity and infringement options, patentability, and patent landscape analyses.

Brent Marriott (BSAAE’81), Senior Product Support Engineer, Honeywell Aerospace, Aircraft Wheels and Brakes, South Bend, IN.

Christian D. Newton (BSAAE’81), Senior Manager, Southwest Airlines, is a two-time recipient of Southwest Airlines President’s Award, Southwest Airlines Pilots Association Meritorious Service Award. He completed 25 years at Southwest Airlines and has worked as Captain, Check Airman, and Senior Manager NextGen/Airspace.

William R. Noble (BSAAE’80), Beavercreek, OH, retired after 33 years as a civilian aerospace engineer for the USAF. He was the design loads engineer for the C-17 and F-22 and the lead structures engineer for the B-2 and T-6. He plans to spend more time with his family, keeping active in the National DeSoto Club, and continue to perform solo handbell benefit concerts at his church.
1990’s
Eka B. Danuwirana (MS’95), volunteered at a college fair in Jakarta, Indonesia. He had the opportunity to speak with more than 100 high school students about attending Purdue.

Brett Hoffstadt (BSAAE’93), San Antonio, TX, is an Enterprise Entrepreneur Architect at Boeing Defense, Space & Security.

Commander Russ Pesut (BSAAE’93), Dayton, OH, retired from active military service in the US Navy on Sept. 17. Commander Pesut led nearly 300 sailors in the maintenance and operations of more than 6,000 mishap-free flight hours over six continents. Over 35,000 passengers and two million pounds of cargo were safely transported during his tenure supporting operations.

2000’s
Austin B. Butler (BSAAE’09), St. Augustine, FL, is a P-3C Orion Pilot with the United States Navy with Patrol Squadron 26.

Alvin Chan (BSAAE’10), is a Manufacturing Engineer with The Boeing Company. Everett, WA.

Praaksh Dikshit (MS’09), is a Senior Consultant/Airport Planning, Landrum & Brown, San Francisco, CA.

Shariff d’Souza (MS’97), London, U.K. is Vice President for Credit Suisse.

Bradley Ferris (BSAAE’08), Long Beach, CA, is a Mechanical System Design and Analysis Engineer with The Boeing Company, C-17 Program.

Alex Fleck (BSAAE’02), Leonardtown, MD, was awarded the Naval Air Systems Command’s 2013 Propulsion & Power Fliedner Award for outstanding contributions upholding the highest traditions of the United States Naval Service.


Brendan M. Houlton (BSAAE’05), Pottstown, PA, Lead Deployment Engineer - Space Situational Awareness, Analytical Graphics.

Brent Joray (BSAAE’96), Burleson, TX, Senior Structural Analyst, D3 Technologies, Hurst, TX.

Andrew Krieger (BSAAE’07), is a Mechanical Design & Analysis Engineer with The Boeing Company, Brook Park, OH. He is currently working on NASA’s Space Launch System (SLS) program on payload fairings and adapters.

Julim Lee (BSAAE’07), is an Engineer with the Jet Propulsion Laboratory in Navigation and Mission Design Section.

Tony Lighthill (BSAAE’92), Sub-Section Manager, Thermal Management, Unison Industries, Beavercreek, OH.

Timothy Maes (BSAAE’10), Livonia, MI, is a Mechanical Engineer working with the Ford Motor Company in Transmission/Driveline Engineering. He is in Ford’s 32-month leadership rotational program.

Paul Moonjelly (MSAAE’08), Columbus, IN, Technical Specialist – Systems Engineering & Controls, Cummins Inc., graduated MIT System Design and Management Graduate Certificate Program in September 2012.

Joseph Moore (MSAAE’10), Kirkland, WA, is Lead Field Service Engineer for GE Aviation, Boeing Everett Delivery Center.

Matt Sharkey (BSAAE’09), is a Reliability Engineer with Swakelok Company, Solon, OH.

Dr. Oleg Sindiy (Ph.D.’10), was part of a NASA team that successfully beamed a high-definition video from the International Space Station to Earth using a new optical laser communications instrument. He is Deputy Mission Manager on the Optical Payload for Lasercomm Science (OPALS) project at NASA’s Jet Propulsion Laboratory. He is also in charge of training and certifying the operations team, preparing operational procedures, and deploying the workstation tools required for operations at the OPALS control center. Oleg is also on the spacecraft design team for the Europa Clipper mission concept.

Phillip Wagenbach (BSAAE’07), Santa Maria, is a Captain with the United States Air Force.

Brandon White (BSAAE’08), is a Technical Project Manager with GE Aviation, Cincinnati, OH.

Births
Kimberly (Chalmers) and Doug Hicks (BSAAE’06; MS Eng. Ed.’13) welcomed Jonathan Douglas Hicks on January 22, 2014. He weighs 8 lb 15.9 oz. and is 19.5 in long.

Rebecca (Kaczynski) Alferink (BSAAE’03), Madison, AL, and husband, Robert, celebrated the birth of their second son, Matthew Harrison on Feb. 18, 2013.

Matthew (MSAAE’06; Ph.D.’09) and Jili Churchfield welcomed their third child Sulien Cypress Māhealani in early June, 2014.

Julim Lee (BSAAE’07), welcomed Baby Boilermaker in May 2013.

Robert MacDermott (BSAAE’05), welcomed Henry William MacDermott on December 17, 2013.

Cindy Mahler (BSAAE’98), welcomed son Jake Riley Mahler May 8, 2013 weighing 6 lb. 10 oz. and measuring 19 in.

Paul Moonjelly (MSAAE’08), Columbus, IN, and her husband welcomed Catherine Mariette Paul on September 12, 2012.

Cody (MS’10) and Lori Short welcomed Branson Wayne Short on August 28, 2013. He joins big brothers Jackson and Grayson.

Brian and Anne (Anderson) Ventura (BSAAE’04; MS’06), Nathaniel was born June 1 at 1:51 PM. He was and 9 lbs. 1oz. and 22 inches long.

Professor Li Qiao and her husband celebrated the birth of their second child Emily Gu on March 14, 2014. She weighed 7 lbs 3 oz. and was 21 inches long.

Professor Sally Bane and her husband Thomas celebrated the birth of their son Nathaniel Raymond Bane on July 9, 2014. He weighed 6 lbs 9 oz.

Marriages
Joseph Moore (MSAAE’10), was married to Jennifer (Lilly) Moore of Opelika, AL on June 29, 2013 in Auburn, AL.

Michael Schlhabach (BSAAE’94, MS AAE’98) and Gina (Kocher) Schlhabach (T’05), Sterling, VA, married on May 18, 2013 in Falls Church, VA.

Breanne Wooten (BSAAE’07), celebrated her marriage to Daniel Sutton on September 14, 2013.
In Memoriam

1940’s
Vernon L. Arne (BSAE’47), Ogden, UT, Jul. 13, 2013.
Sam E. Rose (BSAE’47), Indian Wells, CA, Jul. 1, 2013.
Louis Philip Brady (BSAE’48), Sandwich, IL, Apr. 24, 2013.
Walter Davis Croker (BSAE’48), Balwin, MO, Mar. 13, 2013.
Robert P. Harvey (BSAE’48), San Diego, CA, Mar. 26, 2013.
Collins M. McKelvey (BSAE’48), Clearwater, FL, Nov. 2, 2013.
Franklin Michaels (BSAE’48, MS AE’49), Sewickley, PA, Sept. 21, 2013.
(see article on page 5)
Edwin E. Hanson (BSAE’49), Peoria, IL, Jun. 15, 2013.
Dan McKinnon (BSAE’49), Santa Barbara, CA, Aug. 5, 2013.
Joan (Pask) Mikelson (S’49), Sun City West, AZ, Mar. 4, 2013.
She is survived by her husband, Dwane (BSAE’49).
He is survived by his wife, Julie.
Linda L. (Ficklin) Weber (BSAE’45), Champaign, IL, February 4, 2014 (See article on page 11)

1950’s
Sally (Reed) Dunton (BSAE’50), Saint Michaels, MD, Mar. 4, 2013.
She is survived by her husband, William (BSAE’50).
George L. Mager (BSAE’50), Amarillo, TX, Apr. 1, 2013.
Dean Den Uyl (BSAE’50), Saint Charles, IL, Jun. 9, 2013.
Kenneth F. Wright (BSAE’50), Lake Barrington, IL, Oct. 7.
He is survived by his wife, Donna (HHS’49).
William S. Covington (BSAE’51), West Lafayette, IN, May 15, 2013.
He is survived by his wife, Phyllis (S’50).
William B. Spargur (BSAE’51), Santa Barbara, CA, Jul. 12, 2013.
He is survived by his wife, Kathleen.
Lee E. Ross (BSAE’55), Bellevue, WA, May 21, 2013.
Dr. Paul S. Lykoudis (Ph.D.’56 ME), Professor and Associate Head (see article on page 30)
Don W. Doak (BSAE’58), Bernalillo, NM, Apr. 16, 2013. He is survived by his wife, Nancy.
H. Michael Gray (BSAE’58), Los Angeles, CA, Apr. 30, 2013.
William F. Laird (BSAE’58), Waldron, IN, Oct. 29, he is survived by his wife, Faith.
James F. Ritchey (BSAE’59, MSAE’61), Noblesville, IN, Jan. 28, 2013.
He is survived by his wife, Nancy.

1960’s
Grant V. Welland (BSAE’63), MS S’65, PhD S’66), Saint Louis, MO, Aug. 1, 2013.
Russell P. Kuhn (BSAE’64), Visalia, CA, Aug. 6, 2013.
Robert R. Klopp (BSAE’65), Lake City, Fla, March 2, 2014.
His wife Judith A. Klopp passed on August 11, 2013.
James M. Dornan (BSAE’69), Alpharetta, GA, Aug. 16.
He is survived by his wife, Nancy (HHS’69).
Robert A. Metz (BSAE’69), Baroda, MI, Nov. 30, 2012.

1970’s
Craig S. Golart (MSAAE’70), Tampa, FL, Mar. 16, 2013.
Gary W. DeBaun (BSAE’72), Crawfordsville, IN, Jan. 7, 2013.
Bruce C. Gessley (BSAE’71), San Antonio, TX, May 27, 2013.

1980’s

Jerry Ross inducted into the U.S. Astronaut Hall of Fame 2014

Purdue astronaut alumni Jerry Ross was inducted into the U.S. Astronaut Hall of Fame on May 3, 2014 joining the ranks of well-known space explorers such as Alan Shepard, John Glenn, John Young, Neil Armstrong and Sally Ride.

Past inductees were part of the Mercury, Gemini, Apollo, Skylab and Space Shuttle programs. The total number of members in the Hall of Fame is now 87.

Ross was the first to break the world record for being the first human launched into space seven times. He flew as a mission specialist for six of his record-holding seven flights to space and logged 1,393 hours in space, including 58 hours, 18 minutes during nine spacewalks.

Throughout his career, Ross received 15 NASA medals and was awarded the American Astronautical Society’s Victor A. Prather Award for his numerous spacewalking achievements. From 2003 until his retirement from NASA in January 2012, Ross served as chief of the Vehicle Integration Test Office at Johnson Space Center. “Spacewalker: My Journey in Space and Faith as NASA’s Record-Setting Frequent Flyer” is Ross’ recently published autobiography.
Curtiss-Wright Cadette Programs
Purdue February 1943

The Purdue Curtis-Wright Cadette program lost one of their alumnae on February 4, 2014 with the passing of Linda L. (Ficklin) Weber.

During WWII, the urgent military demand for ten’s of thousands of airplanes presented industry with a tremendous engineering and production task. Although most U.S. aircraft companies expanded their facilities with new large plants built by the government, finding the necessary engineering staff became a critical problem.

The Curtiss-Wright Airplane Corporation decided to train 700 to 1000 young women in their engineering departments for technical positions traditionally held by men. The training was to be conducted at their three main plants in Buffalo, NY, Columbus, OH, and Louisville, KY.

Purdue was invited to participate in what became known as the Curtiss-Wright Cadette Training Program. Purdue started programs between 1943 and 1945. 100 young women cadettes arrived at Purdue on February 12, 1943 to start the first program. The program consisted of two 22-week long terms and was very heavy in drafting materials processing and testing.

George Palmer, Senior Aero Student (Professor Emeritus), teaching aerodynamics to the Class of 1944 Cadettes at Purdue

Sixth row, fourth from the left; Curtiss-Wright Cadette Linda Lou (Ficklin) Weber at the 50th reunion of the Curtiss-Wright Cadettes in Columbus, OH October 17th, 1994

Linda L. (Ficklin) Weber Second row, 4th from the left, at the Third Class of Cadettes at Purdue University October 1944 through March 1945

Purdue Alumnus Publishes New Book

Joseph Gangestad MSAAE ’08; Ph.D.’10 has published a new book ‘Good Grad! A Practical Guide to Graduate School in the Sciences & Engineering’ The book is a practical guide for current and future grad students trying to unravel the mysteries of the master’s degree and Ph.D.

A graduate student in the sciences and engineering has to attend conferences, write journal articles, navigate collaborations, negotiate for lab equipment, mediate between squabbling lab mates, indulge eccentric professors, teach undergraduates, and secure funding every semester. None of which is covered in an undergraduate setting.

Gangestad sent a copy to his advisor Professor Jim Longuski and gratefully acknowledged Longuski’s guidance and pearls of wisdom during his time at Purdue. In particular, Gangestad appreciated the time that Longuski took to shape his grad students into fully rounded professionals.

Gangestad is the author of several scholarly journal articles in the fields of aerospace engineering and astrodynamics and has authored the articles on “Celestial Mechanics” and “Orbital Motion” for the McGraw-Hill Encyclopedia of Science and Technology. A native of Boston, Massachusetts, he received his bachelor’s degree in Astrophysics from Williams College, a liberal arts college in western Massachusetts, and later a master’s degree and Ph.D. in Aeronautical and Astronautical
EVER GRATEFUL – EVER TRUE

Your financial support leaves a lasting impact on Purdue and the School of Aeronautics and Astronautics. These gifts help us to achieve our mission in preparing students to be leaders in the aerospace field and they signify your loyalty and belief in the university and the School of Aeronautics & Astronautics, its traditions and the power of a Purdue education to impact the world.

Our school continues to move forward. Students choosing aerospace engineering are outstanding and our faculty are committed to excellence in the classroom and laboratories. We want to continue to be the global leader in aerospace engineering and with your continued support, we will maintain that role.

You can have an impact with your participation with the school and by contributing to the future success of the school.

Our annual Donor Honor Roll covers the period July 1, 2013 - June 30, 2014 and lists our alumni, friends and corporate donors who have given generously of their financial resources to support the School of Aeronautics and Astronautics. Thank you for your support. The Donor Honor Roll is published on the Alumni page of the School Web site at https://engineering.purdue.edu/AAE/AboutUs/Giving/honoroll.

Dear Alumni and Friends,

As always, the first thing that I would like to say is Thank YOU! We have had an incredible year thanks to your generosity and engagement. The support for our student scholarships has continued to grow and aligns very well with President Daniels’ Purdue Moves initiative. This range of initiatives introduced by Daniels will broaden Purdue’s global impact and will enhance educational opportunities for our students. Another one of the strategic growth goals that will move us forward is upgrading our facilities to meet the needs of today’s students.

Many of you have already chosen to support the expansion and renovation of the Zucrow labs. We are well on our way of having that ground breaking ceremony to begin that building process. With your incredible help, we were able to engage many new and first-time donors, which is vital to meeting our long-range plans. Our first ever Day of Giving (p. 13) was largely responsible for finding many of those donors and resulted in gifts in the range of $10 to over $1 million. We truly value each of these donations and want to make this a foundation for further growth for our school. Amy Noah, our Vice President of Development said it quite well, “The value of a Purdue degree continues to rise, and, at all levels of giving, the Purdue family has responded enthusiastically and generously to make an already premier university even better.”

Our school has very exciting plans on the horizon, and we look forward to sharing those plans with each of you as we meet with you. Having the ability to meet with you and talk to you about your experiences continues to be a highlight of my job here at AAE. I look forward to working with you and finding ways of further engagement with your school. I would challenge each of you to think about this question: How do you see your relationship expanding with the School of Aeronautics and Astronautics?

Again, my sincere thanks to all of you for everything that you do to make us an even better institution.

Boiler Up!

Rita Baines
Director of Development
(765) 494-9124
rbaines@purdue.edu
The Ronald L. and Kathleen M. Kerber Engineering Scholarship

Dr. Ronald L. Kerber (BSAE’65; DEA’88; OAE’99) and his wife Kathleen M. Kerber recognize the value of education and Purdue in their thoughts for future graduates when they established The Ronald L. and Kathleen M. Kerber Engineering Scholarship in their philanthropic estate planning. Few gifts and endowments make as significant an impact as the gift of education, and the Kerber’s intention is that in the future, their scholarship would support full tuition costs for at least one sophomore student. One aspect that is very important to the Kerber’s is that the student should originate from a farming background. The Kerbers had a farming background and owns several thousand acres of farmland both near Purdue and in other areas.

Dr. Ronald L. Kerber is an experienced executive with a successful record of leading and growing domestic and global businesses. His leadership responsibilities have included innovation, product development, cost reduction, and profitability in diverse, global organizations. His background includes a variety of entrepreneurial and pro bono activities as president of SBDC, a small consulting firm; Partner and Co-founder of Dominion Development Company; visiting professor at The Darden School at the University of Virginia; and member of the Department of Defense Science Board.

During ten years as Executive Vice President and Chief Technology Officer at Whirlpool, Dr. Kerber had line responsibility for global product development and procurement, along with P&L responsibility for three worldwide businesses: microwave ovens, air conditioners, and compressors. Kerber also served as Vice President of Advanced Technology and Business Development at McDonnell Douglas, as Deputy Under Secretary of Defense for Research and Advanced Technology, and as a program manager at the Defense Advanced Research Projects Agency (DARPA) in the Department of Defense. His fields of specialty were in the areas of engineering management, new product development, procurement management, and laser physics.

In addition to his B.S. degree from Purdue in 1965, Dr. Kerber received his M.S. and Ph.D. degrees in engineering science from the California Institute of Technology. Before beginning his business career, Dr. Kerber was a professor of electrical and mechanical engineering and associate dean of graduate studies and research at Michigan State University. He has published more than 60 technical articles, co-authored the book Strategic Product Creation, and is a recipient of the Secretary of Defense Medal for Outstanding Public Service, the Michigan State University Teacher Scholar Award, the Purdue University Distinguished Engineering Alumni Award in 1988, and the Outstanding Aerospace Engineer Award in 1999. He was a NASA Fellow at the California Institute of Technology.

Purdue Day of Giving 2014

Purdue University received $7.5 million from 6,500 donations during its first Day of Giving on April 30. The Purdue Day of Giving was a 24-hour, online and social media event that focused on student affordability and accessibility, among other areas. The day’s theme was “Opportunity Granted.”

Gifts ranged from $10 to more than $1 million. Donors included long-time benefactors along with students, staff and recent graduates new to philanthropy. The online event drew contributors from 15 countries – including China, Australia and Uzbekistan – and all 50 states. Some donors honored family members or favorite professors with their gifts.

“We at Purdue are truly grateful to all of our students, parents, faculty and staff, alumni, and friends who made our first Day of Giving such a success,” said Amy Noah, Vice President for Development. “The Boilermaker family came together in a powerful way, and their gifts will help Purdue pursue extraordinary opportunities for innovation, achievement and growth while keeping an affordable education within reach of our students.”

More than $454,000 in donations to the President’s Student Affordability and Accessibility Fund received a dollar-for-dollar match, accounting for more than $908,000 of the total. The fund provides scholarships for Indiana students in need of financial support.

It’s not too late to donate.

More information on donating to Purdue can be found at www.purduedayofgiving.com

The photo gallery of the day’s events can be found here: http://purdue.photoshelter.com/gallery/Day-of-Giving/G0000PgS5tpsMxdOg

YouTube: http://youtu.be/u_ty7-NL9MQ
The model of the Boeing X-20 Dyna-Soar space vehicle was lifted into position in the Herman & Heddy Kurz atrium of the Neil Armstrong Hall of Engineering on January 10, 2014. The mock-up of the X-20 was unveiled at a ceremony on October 18, 2013 when Dean Leah Jamieson welcomed senior representatives from The Boeing Company to Purdue which included Darryl W. Davis, BSAAE’78; OAE’08; DEA’10, President, Phantom Works, Boeing Defense, Space and Security and a member of the school’s Steering Advisory Council and Engineering, and Operations & Technology Chief Engineer Mark Burgess, BSAAE’78, MSAA’79, MSIA’82, OAE’10; DEA’13. Senior Manager Research and Technology, Matt Symonds, spoke on the background of how the project came about, and its timeline.

On June 16, 1958, Boeing and the Martin Co. were selected to compete for the space plane, then designated the Dyna-Soar for Dynamic Soaring. Boeing would build the manned space glider and Martin would provide the booster rocket.

On March 15, 1962, four U.S. Air Force test pilots and two NASA pilots were assigned to the Dyna-Soar program. One of the NASA pilots was Purdue AAE alumnus Neil A. Armstrong.

The Dyna-Soar design contract was awarded to Boeing on Nov. 9, 1959, and designated the X-20 on June 19, 1962. It was designed to be a 35.5-foot piloted reusable space vehicle, had a sharply swept delta 20.4-foot-span wing and a graphite and zirconia composite nose cap and used three retractable struts for landing.

Eleven manned flights were to be launched from Cape Canaveral Fla., starting in November 1964. Dyna-Soar’s first orbital flight was tentatively scheduled for early 1965 once a series of unmanned orbital flight tests were successfully completed.

The X-20 reached the mockup stage. $410 million had been spent on its development, and a team of astronauts was training to fly it. However, the U.S. government canceled the program on December 10, 1963, because Dyna-Soar had no viable military mission and was too expensive for a research vehicle. Congress diverted the X-20 funding to the Manned Orbiting Laboratory, which used McDonnell-built Gemini capsules. The partially completed X-20 prototype and the mockup were scrapped, as well as initial tooling set up for a production line for 10 space planes. Although it never flew, the X-20 Dyna Soar helped pioneer the way for the Space Shuttle.
The Steering Advisory Council (SAC) advises and helps AAE in exploring and creating major opportunities in the aerospace arena that are timely and important at the national level, where Purdue’s AAE can take a leadership role.

The current members of the SAC are shown below. We sincerely appreciate the efforts of the members of the SAC to take time from their busy schedules to assist us in our programs, and look forward to working with them in the future.

**Natalie W. Crawford**
Senior Fellow • RAND Corporation

**Darryl W. Davis (BSAAE’78)**
President • Phantom Works • Boeing Integrated Defense Systems

**C. Douglas Ebersole (BSAAE’82)**
Director of Engineering • Joint Strike Fighter Program Office

**William H. Gerstenmaier (BSAAE’77)**
Associate Administrator • Human Exploration and Operations • NASA

**Thomas L. Maxwell (BSAAE’69)**
General Manager • Military Systems and Design Integration

**Alton D. Romig, Jr.**
Vice President and General Manager • Skunk Works • Lockheed Martin Aeronautics Company

**Munir Sindir**
Director of Engineering Technical Disciplines • Aerojet Rocketdyne

**Dr. Robert L. Strickler (BS’60, MS’62, Ph.D.ME’68)**
Private Consultant; Retired Vice President / General Manager for Space and Missile Systems • Energy and Environmental Systems • TRW

**Matt Szolwinski (BSAAE’93, MSAAE’95, Ph.D.’98)**
Manager • GE Aviation Systems Engineering • GE Aviation

**Tom Vice (BS’86)**
Corporate VP and President • Northrop Grumman Aerospace Systems

**Dennis Warner (BS’73, MSME’76)**
President and CEO • Rolls-Royce North American Inc. • Aero Engine Control, North America

**Sigmar Wittig**
Professor • Karlsruhe Institute of Technology, Member of the Board of Presidents • the Technical University System of the State of Niederachse — Association of Universities of Hannover, Braunschweig, and Clausthal

---

**Changes to AAE Academic Advising**

**Professor Bill Anderson** was appointed Associate Head for Undergraduate Education following **Professor Marc Williams’** retirement from Purdue on June 3rd.

**Taylor Weast**, AAE’s new academic advisor joined the School on June 2, 2014. Taylor graduated in May 2014 from the Higher Education and Student Affairs master’s program at Indiana University. She held a graduate assistantship as an Academic Advisor for two years before her graduation and received her bachelor’s degree from IU in December 2011 in General Studies.

The mission of undergraduate advising at Purdue University is to partner with students, faculty, staff, departments, and administration to empower students to develop and implement an individualized plan for academic success, personal and career development, while integrating learning and enrichment within the University and community, as well as assisting students in understanding the nature, purpose, and value of higher education. Students are welcome to send an email, or schedule an appointment using the online form: [https://appointments.pnhs.purdue.edu/](https://appointments.pnhs.purdue.edu/)

The addition of Taylor to the existing team of Gina Covarrubias, Senior Academic Advisor, and Lisa Crain, Undergraduate Program Coordinator brings a new level of service to prospective and current AAE undergraduates.
The Industrial Advisory Council (IAC) serves an important role in the School of Aeronautics & Astronautics. The success of our programs depends on strong support from industry and the Industrial Advisory Council serves as a link between industry and the university. The IAC meets twice a year in the fall and spring and reviews a large variety of topics related to our current operations and future goals.

The current members of the IAC are shown below. We sincerely appreciate the efforts of the members of the IAC to take time from their busy schedules to assist us in our programs, and look forward to working with them in the future.

**Thank You!**
The 2013 William E. Boeing Distinguished Lecture was presented by Lieutenant General C.D. Moore II, Commander, Air Force Life Cycle Management Center, Wright Patterson Air Force Base, Dayton, OH on October 1, 2013. His talk was entitled "Preserving aerospace combat advantages in a fiscally constrained environment."

The William E. Boeing Distinguished Lecture Series, named in honor of the Boeing Co.'s founder, is administered by the College of Engineering’s School of Aeronautics and Astronautics. Started in 1999, the series features an internationally known speaker from the aerospace or air transportation industries.

As commander of the Air Force Life Cycle Management Center at Wright-Patterson Air Force Base in Dayton, Ohio, Lt. Gen. Moore is responsible for total life-cycle management covering all aircraft, engines, munitions and electronic systems.

Lt. Gen. Moore graduated from the U.S. Air Force Academy and, as a Guggenheim Fellow, earned a master’s degree in aeronautical engineering at Columbia University before entering flight school in 1981. He served as a T-38 instructor pilot, an operational F-15 pilot and as an experimental test pilot. He also served as commander of the first F-22 squadron as well as a group commander at Eglin AFB, materiel wing director of the F-16 System Program Office, materiel wing commander of the F-22 System Program Office, and vice commander of the Aeronautical Systems Center.

His staff assignments include director of special programs in the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, and deputy director of the Global Power Directorate in the Office of the Assistant Secretary of the Air Force for Acquisition, and deputy program executive officer of the F-35 Joint Program Office.

Lt. Gen. Moore served as chief of air operations, Multi-National Forces-Iraq in 2004, and he is a command pilot with more than 3,000 flight hours in 30 types of aircraft.

Before assuming his current position, he was vice commander, Air Force Materiel Command.

---

Former Head Visits School of Aeronautics and Astronautics

The School of Aeronautics and Astronautics was delighted to receive a visit from former head Dr. Bruce A. Reese on September 6, 2013. Dr. Reese received a BSME from the University of New Mexico in 1944 and then served in the U.S. Navy from 1944 -1946. He earned a master’s degree in 1948 and a Ph.D. in 1953 both in Mechanical Engineering from Purdue. He joined the aero school as an assistant professor in 1949 and was promoted to associate professor in 1955 and full professor in 1958.

Dr. Reese taught a course in jet propulsion and assisted Dr. Maurice Zucrow with several research projects. When Dr. Zucrow left the aero school for a full-time position with ME, Dr. Reese accompanied him. When Dr. Zucrow retired in 1966, Dr. Reese was appointed director of the Thermal Sciences and Propulsion Center - now known as Zucrow labs, at Purdue. He later rejoined the School of Aeronautics and Astronautics in 1973, and served as head until his retirement in 1979. He then served as Chief Scientist, Arnold Engineering Development Center (AEDC), one of the world's largest and most advanced aerodynamics test facilities. Dr. Reese was accompanied by his grandson, Walker Reese, who is an aero/astro student at Georgia Tech.

(L-R) Dr. Tom Shih, Dr. Bruce Reese, Walker Reese, Dr. Wayne Chen

Dr. Bruce Reese with Linda Flack

---

Find us on Facebook

The School of Aeronautics and Astronautics enjoys utilizing Facebook, and we now have over 1600 people who follow us.

You do not need to join Facebook to view the page, just follow the link on the AAE web page https://engineering.purdue.edu/AAE.

We aim to keep alumni, faculty, students, staff and friends of AAE up-to-date on all relevant events!
Engineers from Boeing Phantom Works took advantage of a unique opportunity in February 2014 to exchange ideas with students from the School of Aeronautics and Astronautics. They spent a day touring the Boeing-sponsored projects in the laboratories of the Neil Armstrong Hall of Engineering.

For decades, Purdue University and The Boeing Company have enjoyed a fruitful relationship leading to the realization of research laboratories, faculty initiatives and well-prepared employees for The Boeing Company. Specifically, the School of Aeronautics and Astronautics has benefited from resources, such as the Boeing Wind Tunnel, Ludwig Tube and the McDonnell Douglas Composite Materials Laboratory. Purdue established the William E. Boeing Distinguished Lecture Series which is administered through the School of Aeronautics and Astronautics, to express our gratitude and to honor the memory of its founder. The lecture series features an internationally-known speaker from the aerospace or air transportation industry.

The students involved in the program in February presented their work to the Phantom Works team members. They were building an unmanned air vehicle designed for agricultural surveillance, designed to image a 60-acre field in less than 45 minutes.

The three strategies of Phantom Works are Engage, Innovate and Prototype, and the Phantom Works team saw that the students are already doing that in the classrooms. They also witnessed how Purdue students currently learn additive manufacturing technology, specifically 3D printing. Phantom Works Director of Special Pursuit Cells, Stuart Voboril, believes the training undergraduate students at Purdue receive very closely mirrors the engineering industry, better preparing them to enter the work force required to take Boeing through the next 100 years.

The visit to Purdue concluded with a presentation by the Phantom Works team members to a packed classroom. The discussion was titled Prototyping to Win, and gave the future engineers a behind-the-scenes look at how the advanced manufacturing techniques they are learning in college are applied to rapid prototyping in the engineering industry. After the presentation, several Boilermaker engineering students enthusiastically lined up to converse with the Phantom Works team members.
The 18th annual Purdue Space Day (PSD) took place October 26th with guest VIP astronaut Dr. Roy D. Bridges Jr. MSAE’66, DEA’98, OAE’99, HDR’01.

Dr. Bridges gave a presentation the evening before the event in the Class of 1950 Lecture Hall and then kick-started Space Day on Saturday morning in the Elliott Hall of Music.

The theme for 2013 was a tribute to Mars Exploration, each of the 21 groups were named for scientists, explorers, and missions to Mars. The quote was “In Curiosity Lies Opportunity.”

Organized by university students and hosted by the School of Aeronautics and Astronautics with support from the Indiana Space Grant Consortium, PSD is the largest educational STEM outreach program at Purdue. Since its inception in 1996, over 2,300 Purdue students have volunteered their efforts to run the event and over 7,100 school students have taken part.

PSD coordinator Ann Broughton completed her 14th and final Space Day before she returns to her native United Kingdom. Under her leadership, the program has grown from accommodating 270 to 650 grade school students and from 65 to 248 Purdue student volunteers from 58 majors. AAE and PSD alumni and their spouses Breanne (Wooten) and Dan Sutton, and Brian and Ann Ventre returned to help out with the event. Breanne presented Ann with a quilt made out of Space Day crew t-shirts from each of the years she was coordinator.
The first annual AAE Graduate Research Symposium was held on April 10, 2014 in the Stewart Center. The goal of this event is to showcase AAE’s latest research and to give our school’s industry and government partners the first opportunity to meet and recruit our outstanding M.S. and Ph.D. students who are graduating. At this symposium, all 28 of our Ph.D. students who will graduate in 2014 presented talks (see below). Also, a portion of our 100 M.S. students who will graduate in 2014 presented posters of their research. Attendees at this symposium included those from Aerospace Alcoa Inc., ATK Elkton Operations, Boeing Research and Technology, GE Aviation, Lockheed Martin Aeronautics, Lockheed Martin Skunkworks, Northrop Grumman Corp., Rolls-Royce Corp., and AIR Force Research Lab.

**Aerodynamics**

**Ph.D.**
Kurt Aiikens
Advisor: Professor Greg Blaisdell
High-Fidelity Large Eddy Simulation for Supersonic Jet Noise Prediction

Chien - Shing Lee
Advisor: Professor Tom Shih
Time-Accurate Conjugate CFD Analysis of a Jet-Impingement Configuration with Sudden Changes in Heating and Cooling Loads

Andrew Weaver
Advisor: Professor Alina Alexeenko
Assessment of High-Fidelity Collision Models in the Direct Simulation Monte Carlo Method

**M.S.**
Samantha Alberts
Advisor: Professor Steven Collicott
Feasibility Analysis of Large Length-Scale Thermocapillary Flow Experiment

Mounia Belmous
Advisor: Professor Sally Bane
Development and Characterization of Flow Control Actuators Based on Spark Discharge Plasmas

Di Huang
Advisor: Professor Alina Alexeenko
Understanding and Optimizing MPCVD Synthesis of Carbon Nanopetals

Yashas Keshav
Advisor: Professor Tom Shih
Unsteady Forces on a Spherical Particle Accelerating or Decelerating in an Initially Stagnant Fluid

Lalit Rajendran
Advisor: Professor John Sullivan
Skin Friction Measurement in the Trailing Edge Separation Region of a Wing-Body Junction

Zachary Stratton
Advisor: Professor Tom Shih
Effects of Cross Flow in an Internal-Cooling Channel with Ribs on Film Cooling of a Flat Plate Through Compound-Angle Holes

Nikhil Varma
Advisor: Professor Alina Alexeenko
Fluid Dynamics of Vacuum Freeze Drying

**Aerospace Systems**

**Ph.D.**
Kristopher Ezra
Advisor: Professor Dan DeLaurentis
Comparative Solution Methods for the Integrated Problem of Sensors, Weapons, and Targets

Donald Fry
Advisor: Professor Dan DeLaurentis
Cost, Performance, and Networked Information Sharing in a Ballistic Missile Defense System

Cesare Guariniello
Advisor: Professor Dan DeLaurentis

Ali Khalid
Advisor: Professor Dan DeLaurentis
A System-of-Systems Perspective for Information Fusion Systems

Kartavya Neema
Advisor: Professor Dan DeLaurentis
Robust, Distributed Sensor Management and Target Tracking using Large Scale Sensor Network

Payuna Uday
Advisor: Professor Karen Marais
Resilience-based System Importance Measures for System-of-Systems

**M.S.**
Thomas Antony
Advisor: Professor Mike Grant
Rapid Trajectory Optimization using Indirect Methods on Parallel Computing Architectures

Timothy Dannenhoffer
Advisor: Professor Dan DeLaurentis
A Mixed Discrete-Continuous Surrogate Model for End to End Ballistic Missile Defense Systems

Timothy Harris
Advisor: Professor Dan DeLaurentis
Integrating Allied Sensors in an Evolving BMDS SoS Architecture Model

Peter Klinhster
Advisor: Professor Dan DeLaurentis
Multiple Objective Interceptor Shot Selection within Time Constrained Bounds

**Astrodynamics and Space Applications**

**Ph.D.**
Amanda Haapala
Advisor: Professor Kathleen Howell
Spacecraft Trajectory Design in the Spatial Circular Restricted Three-Body Problem

Masaki Kakoi
Advisor: Professor Kathleen Howell
Access to a Destination Object from Earth-Moon Libration Point Orbits: Manifold and Direct Options

Blake Rogers
Advisor: Professor Jim Longuski
Establishing Cycler Trajectories Between Earth and Mars

**M.S.**
Rashmi Shah
Advisor: Professor Jim Garrison
Remote Sensing of Ocean Surface Using Signals of Opportunity

Jeffrey Stuart
Advisor: Professor Kathleen Howell
Design of End-to-End Trojan Asteroid Rendezvous Tours Incorporating Potential Scientific Value

Tiffany Le
Advisor: Professor Karen Marais
Investigating Performance Trade-offs of Unimpeded Taxiways for Efficient Arrival Taxi Routing and Environmental Benefits

Kshitij Mall
Advisor: Professor Mike Grant
High Mass Mars Exploration using Slender Entry Vehicles

Jessica Rivas
Advisor: Professor Karen Marais
Modeling Shaped Change of Slender Hypersonic Vehicles due to Ablation

Mughilan Thiru Ramasamy
Advisor: Professor M. Grant
Prediction of Optimal Trajectory States of Hypersonic Re-entry Vehicle using System Id

Haogong Wei
Advisor: Professor M. Grant
Real-Time Trajectory Optimization with Lag and Uncertainty
M.S.  
Ashwati Das  
Advisor: Professor Kathleen Howell  
Design and Control of Solar Sail  
Enabled Spiral Trajectories in the Earth Moon System

Dynamics & Controls  
Ph.D.  
Jian Wei  
Advisor: Professor Inseok Hwang  
Design and Evaluation of Design and Evaluation of Sector Design Algorithm for Terminal Airspace

M.S.  
Sangjun Lee  
Advisor: Professor Inseok Hwang  
Real-time RSSI-based Indoor Navigation for Autonomous Flight

Joseph Tuttle  
Advisor: Professor Art Frazho  
Feedback Controlling Systems with Nonholonomic Constraints

Propulsion  
Ph.D.  
Jacob Dennis  
Advisor: Professor Steve Son & Professor Tim Pourpoint  
Investigations of Condensed and Early Stage Gas Phase Hypergolic Reactions

Chris Fugger  
Advisor: Professor Bill Anderson  
Turbulent Mixing Characteristics of a Reacting Transverse Fuel Jet Injected into an Acoustically Oscillating High Pressure and High Temperature Vitiated Crossflow

Mark Pfeil  
Advisor: Professor Steve Son & Professor Steve Heister  
Solid Amine Boranes as Hypergolic and Energetic Additives to Hybrid Rocket Fuels

David Reese  
Advisor: Professor Steve Son & Professor Steve Heister  
A Novel Nitrate Ester for Next-Generation Solid Propellants

Mario Roa  
Advisor: Professor Bob Lucht  
Investigation of a Reacting Jet Injected into a Vitiating Cross Flow at Gas Turbine Operating Conditions

Matthew Wierman  
Advisor: Professor Bill Anderson  
Development of Combustion Response Functions in a Subscale High Pressure Transverse Combustor

Jian Xu  
Advisor: Professor Li Qiao  
Droplet Breakup of Micro- and Nano-Dispersed Carbon-in-Water Colloidal Suspensions under Intense Radiation

M.S.  
Prashanth Bangalore Venkatesh  
Advisor: Professor Sally Bane  
High-Pressure Combustion and Deflagration-to-Detonation Transition in Ethylene/Nitrous Oxide Mixtures

James D’Entremont  
Advisor: Professor Sally Bane  
Control of Combustion Instability Using Plasma Discharges

Jason Gabl  
Advisor: Professor Tim Pourpoint  
Portable, On-Demand, Solid State Hydrogen Generation Systems

Sarah Hester  
Advisor: Professor Bill Anderson  
The study of ORSC Rocket Engines Utilizing Single Element Gaseous Combustors

Ravichandra R. Jagannath  
Advisor: Professor Sally Bane  
Wave Rotor Combustion Turbine and Its Potential Application

Devin Kees  
Advisor: Professor Tim Pourpoint  
The Design and Test of a 900 lbf Hybrid Rocket

Evan Maynard  
Advisor: Professor Bill Anderson  
Efficient Experimental Design and Development of Injector Mixing Theories for Performance Prediction

William Murray  
Advisor: Professor Nicole Key  
Experimental Investigation of Forced Response Condition in a Multistage Compressor

Joe Neal  
Advisor: Professor Steve Heister  
A Process for Performing Constituent System Sensitivity Analysis: Effect of Interceptor and Sensor Performance

Kevin Shipley  
Advisor: Professor Bill Anderson  
Multi-Injector Modeling of Transverse Combustion Instability Experiments

Structures and Materials  
Ph.D.  
Benjamin Bratschi  
Advisor: Professor C.T. Sun  
Failure Load Predictions of Highly Constrained Specimens Using Cohesive Zone Models

Jeeyeon Hahn  
Advisor: Professor Skip Grandt  
Analysis on the Interaction of Two Parallel Surface Cracks

Yousung Han  
Advisor: Professor Vikas Tomar  
Ab Initio Analysis of the Influence of Helium Point Defects and Radiation Damage on Strength of SiC and Tungsten Grain Boundaries

Hongsuk Lee  
Advisor: Professor Vikas Tomar  
Understanding the Influence of Grain Boundary Thickness Variation on the Mechanical Strength of a Nickel Added Tungsten Grain Boundary

James Manimala  
Advisor: Professor C.T. Sun  
Acoustic Metamaterials with Oscillator Microstructures: Recent Advances and Device Implications

M.S.  
John Black  
Advisor: Professor Wayne Chen  
Dynamic Triaxial Compression Experiments on Borosilicate and Soda-lime Glass

Benjamin Claus  
Advisor: Professor Wayne Chen  
Characteristics of Fibrous Tissue at High Rates of Loading

Benjamin Denos  
Advisor: Professor Byron Pipes  
Characterization of Discontinuous Fiber Composite Microstructure Using CT Scan Image Analysis

Javier Esquivel  
Advisor: Professor Mike Sangid  
Strain Mapping of Heterogeneous Deformations Using Digital Image Correlation

Brittany Essink  
Advisor: Professor Wayne Chen  
Blast Mitigation in Porous Rocks

Zherui Guo  
Advisor: Professor Wayne Chen  
Transverse Mechanical Response of High-Performance Ballistic Fibers

Jianzhou Sun  
Advisor: Professor Wayne Chen  
Dynamic Failure of Spectra 130d & 100d Single Fibers Under Biaxial Shear/Tension

Yuankai Wang  
Advisor: Professor C.T. Sun  
Insufficiency of the Stress Intensity Factor in Failure Prediction of Brittle Materials
The Purdue University designation Outstanding Aerospace Engineer recognizes the professional contributions of graduates from the School of Aeronautics and Astronautics and thanks them for the recognition that their success brings to Purdue and the School.

The School was delighted to honor five graduates of AAE with the designation Outstanding Aerospace Engineer Award on September 13, 2013. Criteria for the Award state that recipients must have demonstrated excellence in industry, academia, governmental service, or other endeavors that reflect the value of an aerospace engineering degree.

Congratulations to our 2013 Outstanding Aerospace Engineers

OAE 2013 honoree George Palmer receives a standing ovation at the award ceremonies
Bottom Row (L-R) Porter Bridwell, Edward Morris, George Palmer, Jeff Tyrcha, Jeffrey Deckelbaum  
Top Row (L-R) Dr. Tom Shih, Michael Corso, John Rich, Jamie Renna, Bud Mitchell, Anthony Thornton, Glenn Weissinger, Tom McKane, Ken Miller, Dr. Robert Strickler, Ted Torgerson, David McGrath, Tom Maxwell, Robert Flemming, Brad Belcher, Stephen Kress, Frank Bauer, Gary Payton

Student Masters of Ceremonies  
Kathryn Johnson and Cory Back

Bill and Anastasia Uhrig with George Palmer

Professor Emeritus: (L-R) John Drake, Terry Weisshaar, George Palmer and Gus Gustafson
16TH ANNUAL

Outstanding Aerospace Engineer Awards

THE FACULTY OF THE SCHOOL OF AERONAUTICS AND ASTRONAUTICS

Invites you to attend

The Awards Dinner and Ceremony
to honor the recipients of the
2014 Outstanding Aerospace Engineer Awards

Friday, November 7, 2014

RECEPTION AT 6:00PM
DINNER AT 7:00PM

Four Points By Sheraton
1600 CUMBERLAND AVENUE
WEST LAFAYETTE, IN 47906

Adult Meal $40
Student Meal $30

Seating is limited. Reservations must be received by October 24, 2014.
If you would like to attend, you can sign up online
https://eng.purdue.edu/jump/9f077a
Then mail in your check with the total amount
due or complete and mail the form opposite.
If you plan to attend, please complete and mail this form along with a check for the total amount due to:

Purdue University
Attn: OAE
School of Aeronautics and Astronautics
701 W. Stadium Avenue
West Lafayette, IN 47907-2045

Make checks payable to: Purdue Foundation

Sorry no phone reservations accepted.
Email Rita Baines rtbaines@prf.org

Seating is limited.
Reservations must be made by October 24, 2014.

Name ________________________________________________________________
Guest Name __________________________________________________________
Degree/Year _________________________________________________________
Address ______________________________________________________________
City _______________________________ State ____________ Zip _____________
Phone ________________________________________________________________
E-Mail ________________________________________________________________

Vegetarian or special meal request – please specify __________________________

___ ADULTS @ $40 each
___ STUDENTS @ $30 each

☐ I would like to sponsor _____ students @ $30 each

RECIPIENTS OF THE

2014 Outstanding Aerospace Engineer Awards

C. Douglas Ebersole BSAAE’82
Amy S. Hess BSAAE’89
Rakesh K. Kapania Ph.D.’85
Paul E. Petty BSAAE’53
Tamaira E. Ross BSAAE’96; MSAAE’98
John D. Schmisser BSAAE’97
Jeffery A. Schroeder BSAAE’84; MSAAE’90
Panagiotis Tsiotras Ph.D.’93
J. William Uhrig Jr. BSAAE’82

16TH ANNUAL

Outstanding Aerospace Engineer Awards  Friday November 7, 2014

If you plan to attend, please complete and mail this form along with a check for the total amount due to:

Purdue University
Attn: OAE
School of Aeronautics and Astronautics
701 W. Stadium Avenue
West Lafayette, IN 47907-2045

Make checks payable to: Purdue Foundation

Sorry no phone reservations accepted.
Email Rita Baines rtbaines@prf.org

Seating is limited.
Reservations must be made by October 24, 2014.

Name ________________________________________________________________
Guest Name __________________________________________________________
Degree/Year _________________________________________________________
Address ______________________________________________________________
City _______________________________ State ____________ Zip _____________
Phone ________________________________________________________________
E-Mail ________________________________________________________________

Vegetarian or special meal request – please specify __________________________

☑ I would like to sponsor _____ students @ $30 each

___ ADULTS @ $40 each
___ STUDENTS @ $30 each

C. Douglas Ebersole BSAAE’82
Amy S. Hess BSAAE’89
Rakesh K. Kapania Ph.D.’85
Paul E. Petty BSAAE’53
Tamaira E. Ross BSAAE’96; MSAAE’98
John D. Schmisser BSAAE’97
Jeffery A. Schroeder BSAAE’84; MSAAE’90
Panagiotis Tsiotras Ph.D.’93
J. William Uhrig Jr. BSAAE’82

25
Aerospace Systems

D. Andrisani
Associate Professor; Ph.D., SUNY at Buffalo, 1979

W. A. Crossley
Professor; Ph.D., Arizona State, 1995

D. DeLaurentis
Associate Professor; Ph.D., Georgia Institute of Technology, 1998

M. Grant
Assistant Professor; Ph.D., Georgia Institute of Technology, 2012

I. Hwang
Associate Professor; Ph.D., Stanford, 2004

K. Marais
Assistant Professor; Ph.D., Massachusetts Institute of Technology, 2005

J. P. Sullivan
Professor; Sc.D., Massachusetts Institute of Technology, 1973

D. Sun
Assistant Professor; Ph.D., UC Berkeley, 2008

Astrodynamics and Space Applications

J. L. Garrison
Associate Professor; Ph.D., University of Colorado at Boulder, 1997

M. Grant
Assistant Professor; Ph.D., Georgia Institute of Technology, 2012

K. C. Howell
Hsu Lo Professor of Aeronautical and Astronautical Engineering; Ph.D., Stanford, 1983

J. M. Longuski
Professor, Ph.D., Michigan, 1979

Dynamics and Control

D. Andrisani
Associate Professor; Ph.D., SUNY at Buffalo, 1979

M. J. Corless
Professor; Ph.D., UC Berkeley, 1984

D. DeLaurentis
Associate Professor; Ph.D., Georgia Institute of Technology, 1998

A. E. Frazho
Professor; Ph.D., Michigan, 1977, Control Systems

M. Grant
Assistant Professor; Ph.D., Georgia Institute of Technology, 2012

I. Hwang
Associate Professor; Ph.D., Stanford, 2004

D. Sun
Assistant Professor; Ph.D., UC Berkeley, 2008

Propulsion

W. Anderson
Professor; Ph.D., Pennsylvania State, 1996

S. D. Heister
Raisbeck Engineering Distinguished Professor for Engineering and Technology Integration; Ph.D., UCLA, 1988

T. Pourpoint
Associate Professor; Ph.D., Purdue, 2005

L. Qiao
Associate Professor; Ph.D., Michigan, 2007

H. Wang
Assistant Professor; Ph.D., Cornell University, 2010

Structures & Materials

W. Chen
Professor; Ph.D., California Institute of Technology, 1995

W. A. Crossley
Professor; Ph.D., Arizona State, 1995

J. F. Doyle
Professor; Ph.D., UIUC, 1977

A. F. Grandt
Former Raisbeck Engineering Distinguished Professor for Engineering and Technology Integration; Ph.D., UIUC, 1971

R. B. Pipes
John L. Bray Distinguished Professor of Engineering; Ph.D., University of Texas, 1972

M. Sangid
Assistant Professor; Ph.D., UIUC, 2010

C.T. Sun
Neil A. Armstrong Distinguished Professor; Ph.D., Northwestern, 1967

V. Tomar
Associate Professor; Ph.D., Georgia Institute of Technology, 2005

W. Yu
Associate Professor; Ph.D., Georgia Tech, 2002

Faculty Emeritus

J. Drake - Professor Emeritus

W. Gustafson - Professor Emeritus

C. Kentzer - Professor Emeritus

M. C. Jischke - President Emeritus

F. Marshall - Professor Emeritus

C. Merkle - Professor Emeritus, Reilly Professor of Engineering

G. Palmer - Professor Emeritus

T. A. Weisshaar - Professor Emeritus

Adjunct Professor

Aerodynamics

A. S. Lyrintzis
Adjunct Professor; Ph.D., Cornell, 1988

Astrodynamics and Space Applications

D. Filmer
Adjunct Professor; Ph.D., Wisconsin, 1961

B. Marchand
Adjunct Associate Professor; Ph.D., Purdue, 2007

Dynamics and Control

D. Filmer
Adjunct Professor; Ph.D., Wisconsin, 1961

Propulsion

J. J. Rusek
Adjunct Assistant Professor; Ph.D., Case Western Reserve, 1983

K. Yerkes
Adjunct Professor; Ph.D., University of Dayton, 1994

Faculty by Courtesy

Aerospace Systems

B. S. Caldwell (By Courtesy)
Professor of Industrial Engineering; Ph.D., UC Davis, 1990

S. Landry
Associate Professor; Ph.D., Georgia Tech, 2004

Astrodynamics and Space Applications

H. J. Melosh (By Courtesy)
Distinguished Professor EAS/Physics; Ph.D., California Institute of Technology, 1972

D. Minton (By Courtesy), Assistant Professor; Ph.D., University of Arizona, 2009

Propulsion

T. Fisher
James G. Dwyer Professor of Mechanical Engineering; Ph.D., Cornell, 1998

J. P. Gore (By Courtesy)
Vincent P. Reilly Professor of Mechanical Engineering; Ph.D., Pennsylvania State, 1986

N. Key (By Courtesy)
Assistant Professor of Mechanical Engineering; Ph.D., Purdue, 2007

R. Lucht (By Courtesy)
Ralph and Bettye Bailey Professor of Combustion in Mechanical Engineering; Ph.D., Purdue, 1981

S. Son (By Courtesy)
Associate Professor of Mechanical Engineering; Ph.D., UIUC, 1993

Structures & Materials

P. Imbrie (By Courtesy)
Associate Professor; Ph.D., Texas A & M, 2000
Purdue students in Prof. James Longuski’s AAE 450 class presented their Senior Design Moon Colony Proposal – Project Artemis to NASA Associate Administrator Bill Gerstenmaier, and other top NASA managers.

The report and presentation is the culmination of an intensive spacecraft design course, AAE 450, undertaken by seniors during a single semester. The students perform a feasibility study for a specific mission goal, subject to certain constraints.

The goal of Project Artemis is to minimize the cost of establishing three human colonies on the Moon that, in a safe and timely manner, will ultimately enable a one-way-to-Mars mission. The first colony on Mars will consist of eight people who will not see another human until the second colony arrives, bringing the Mars colony up to 16 people. Colony cohesiveness and stability should improve as the size of the colony increases. The team was particularly interested in observing crew health (both mental and physical) while they live on the moon because little is known about how human physiology will fare on extended space missions.

Following the presentation to the NASA administrators, Prof. James Longuski received very positive feedback from Bill Gerstenmaier and Purdue President Mitch Daniels.

The team gratefully acknowledges the following for help and assistance: Prof. James Longuski, Mr. Frank Laipert, Prof. David Filmer, Prof. Stephen Heister, Prof. Kathleen Howell, Mr. Dayton L. Jones, Prof. Karen Marais, Prof. David Minton, Mr. Sarag Saika, Mr. John Steinmeyer, Prof. Boris Yendler, Mr. Jeffrey Stuart, Mr. James Waldie, Multi-Body Dynamics Research Group.
The Elmer F. Bruhn Teaching Award 2014

Congratulations to Professor Karen Marais who has been selected to receive our school’s prestigious Elmer F. Bruhn Award for 2014. By receiving this award, Professor Marais will be our school’s nominee for our college’s 2015 Potter Teaching Award.

The Bruhn teaching award is presented annually to an Outstanding Teacher in the Purdue University School of Aeronautics and Astronautics. The selection is through a vote by AAE’s sophomores, juniors, and seniors for excellence in teaching and made possible by the interest and generosity of friends and alumni of the school. The top five candidates for the Bruhn Award were: Prof. Karen Marais, Prof. Greg Blaisdell, Prof. Kathleen Howell, Prof. Mike Sangid, Prof. Mike Grant.

Congratulations to all for this recognition of their dedication to teaching and their efforts to provide the best possible education for our students.

The C.T. Sun School of Aeronautics and Astronautics Excellence in Research Award 2013

Congratulations to Professor Alina Alexeenko who is the recipient of the 2013 C.T. Sun School of Aeronautics and Astronautics Excellence in Research Award. Presented annually, this prestigious award is conferred to an individual or a team of faculty members in the Purdue University School of Aeronautics & Astronautics to recognize high quality contributions in science and engineering.

W.A. Gustafson Award for Outstanding Teaching

Congratulations to Professor Michael Grant who is the winner of the 2013 W.A. Gustafson Award for Outstanding Teaching.

The following five faculty members were also nominated and received the next five highest votes: Professors Mike Sangid, Alina Alexeenko, Karen Marais, Sally Bane, and Jim Longuski.

The recipient of this award is selected by the juniors and seniors of the AAE student body. It is made possible by the interest and generosity of friends and alumni of the school.

2014 Outstanding Undergraduate Murphy Teaching Award

Professor Kathleen Howell, the Hsu Lo Distinguished Professor of Aeronautical and Astronautical Engineering, was named a recipient of the 2014 Outstanding Undergraduate Teaching Award in Memory of Charles B. Murphy.

Charles B. Murphy was a history professor at Purdue from 1927 to 1970 and Howell is one of five out of Purdue’s approx. 1,800 professors to receive this prestigious award. This award is Purdue’s highest honor to recognize exceptional teaching at the undergraduate level by a faculty member. Professor Howell was informed of this honor on Monday, March 24 via a surprise visit from the provost’s office while she was teaching AAE 440.

Professor Howell has been a member of the faculty at Purdue since 1982. She received her B.S. in Aerospace Engineering from Iowa State University in 1973. Her M.S. (1977) and Ph.D. (1983) degrees in Aeronautical and Astronautical Sciences are from the Department of Aeronautics and Astronautics in the School of Engineering at Stanford University.

She maintains an active research program that includes spacecraft trajectory design and optimization to support active and planned missions within the Earth-Moon region as well as interplanetary science and exploration scenarios. Her investigations also include maneuver strategies for transfers and on-orbit operations.

Professor Howell teaches both undergraduate and graduate courses at Purdue and has been recognized with numerous national and local awards for excellence as an engineering educator.

Astrobiology Front Cover

A paper authored by Prof. Kathleen Howell, Prof. Jay Melosh, graduate students Loic Chappaz, and Mar Vaquero was highlighted on the cover of the October, 2013 issue of Astrobiology.

The paper Chappaz et al. (p 963) analyzes the possibility that samples from Phobos and Deimos may contain material ejected from the surface of Mars by large impacts.

The cover image illustrates computed trajectories of ejecta from an impact on Mars that could transport material from the surface of Mars to its moons. The impact occurred at (0°, 0°), and the trajectories shown in red and blue represent two sample curtains of ejecta for particles launched at 3.8 and 4.2 km/s, respectively. The inner and outer gold circles represent Phobos’ and Deimos’ orbit, respectively.

The sizes of the two spheres that represent the moons are exaggerated a hundred times.

Image credit: L. Chappaz.
Nearly 200 Purdue faculty and staff attended an award dinner on November 18, 2013 to celebrate the accomplishments and contributions of Purdue’s research community.

Among the honorees were faculty members who had received college or school awards for outstanding research in 2013, along with Seed for Success honorees — principal investigators and co-investigators garnering awards of $1 million or more per grant. The Seed for Success award was established in 2003 and each recipient receives a bronze acorn in which their name is engraved. Among the 163 principal investigators and co-investigators working on one of the 60 Seed for Success projects, 46 investigators earned their bronze acorn award in recognition of their contribution in acquiring a $1 million dollar or more award for the first time.

Three Seeds for Success awards went to faculty members and faculty by courtesy who were principal investigators or co-investigators from the School of Aeronautics and Astronautics.

Congratulations to:

Prof. Wayne Chen - U.S. Army Research Office, Multiscale Experiments and Computational Modelling of Transparent Ceramic and Glass Armors.

Prof. Bill Crossley, Prof. Karen Marais, Chien-Tsung Lu and Mary Johnson, Federal Aviation Administration, Partnership to Enhance General Aviation Safety, Accessibility, and Sustainability (PEGASAS)

Prof. Barrett Caldwell (by courtesy) - NASA, Indiana Space Grant Consortium Five Year Renewal Proposal for Activity Years 20-24.

Prof. Caldwell was selected as Member of NASA’s New Field Investigation to Enable Solar System Science and Exploration Team. It is one of nine research teams in a new institute that will bring researchers together in a collaborative virtual setting to focus on questions concerning space science and human space exploration.

The teams participating in the Solar System Exploration Research Virtual Institute (SSERVI) will address scientific questions about the moon, near-Earth asteroids and the Martian moons Phobos and Deimos, in cooperation with international partners.

University Research Awards July 2012 – June 2013

Prof. Robert Lucht (by courtesy) was honored with a Research Award.

Purdue Researchers Working with the U.S. Missile Defense Agency

Purdue University researchers are peering into the future to help the United States foil enemy missile attacks.

Professor Daniel DeLaurentis is working with the U.S. Missile Defense Agency to create software that makes it possible to pose various “what-if” questions; scenarios that explore plausible future missile advances in adversarial nations and the defensive capability of the United States. The research focuses on how to defend against attacks called “raids” in which many missiles would be launched against the United States.

DeLaurentis is leading the project with Saurabh Bagchi, a professor in Purdue’s School of Electrical and Computer Engineering, and Stephen D. Heister, Purdue’s Raisbeck Engineering Distinguished Professor for Engineering and Technology Integration, Joseph Pekny, a professor of chemical engineering, two research scientists and about a dozen doctoral students.

The project began in 2010 and is funded with a four-year, $4.8 million grant from the MDA, which is part of the U.S. Department of Defense. The project is inherently interdisciplinary because it requires expertise in aerospace and computer engineering.

Dr. Timothée Pourpoint was awarded tenure and promoted to Associate Professor. He received his Ph.D. from Purdue University in 2005.

Dr. Pourpoint’s research interests are aerospace propulsion systems, rocket engine combustors, liquid propellant injection systems, hypergolic propellants, and high pressure and hydrogen storage systems.
Dr. Buzz Aldrin was on the Purdue campus on October 16, 2013 to meet with AAE Professor James M. Longuski and his grad students. He has referenced their work in his new book - "Mission to Mars: My Vision for Space Exploration."

During his time on campus, Aldrin gave a public presentation "An Evening with Buzz Aldrin," in which he discussed his unified space vision. Dr. Aldrin also gave insights into the 1969 Apollo 11 Moon landing and followed his talk with a book signing.

Aldrin has long been an advocate for future space exploration and in his latest book he says that he believes that humans could arrive and settle on Mars between the time-period 2035-2040. Contained within his new book, on page 35 Dr. Aldrin references work done over the years by Professor James M. Longuski and his students. Also, on page 195, Buzz Aldrin writes "I have long admired and worked with James Longuski, professor of aeronautics and astronautics at Purdue University. Along with his colleagues, we have forged ways to launch a substantial large vehicle that would provide radiation shielding and spacious quarters in order to guarantee the safety and comfort of outbound-to-Mars and inbound-to-Earth astronaut crews."

Aldrin has referenced work of AAE alumni Dr. Damon F. Landau who is now with NASA’s Jet Propulsion Laboratory. Dr. Landau’s slides have also been used at conferences and venues on his book signing tour. During his tour of conferences and book signings, Aldrin also discussed figures and movies developed by AAE doctoral student Blake Rogers.
FACULTY
RESEARCH

Project aims to mass-produce 'nanopetals' for sensors, batteries

AAE Professor Alina Alexeenko is part of a research team from Purdue who are developing a method to mass-produce a new type of nanomaterial for advanced sensors and batteries. The underlying technology was developed by a research group led by Prof. Timothy Fisher, (AAE by Courtesy) the James G. Dwyer Professor in Mechanical Engineering. It consists of vertical nano-structures resembling tiny rose petals made of a material called graphene, which is a single-atom-thick film of carbon. Research findings indicate the material shows promise as a sensor for detecting glucose in the saliva or tears and for “supercapacitors” that could make possible fast-charging, high-performance batteries.

These color-enhanced scanning electron microscope images show nanosheets resembling tiny rose petals. The nanosheets are key components of a new type of biosensor that can detect minute concentrations of glucose in saliva, tears and urine. The technology might eventually help to eliminate or reduce the frequency of using pinpricks for diabetes testing.

The research is funded with a $1.5 million grant from the National Science Foundation. It focuses on creating a nanomanufacturing method that is “scalable,” or capable of mass production at low cost.

Science is harnessing shock waves to create new materials

A team of researchers at Purdue is part of a national effort to develop new materials having super strength and other properties by using shock waves similar to those generated by meteorites striking the Earth.

The team will perform experiments using equipment in the university’s Maurice J. Zucrow Laboratories and the Robert L. and Terry L. Bowen Laboratory for Large-Scale Civil Engineering Research. The Purdue team is led by Prof. Steven Son (AAE by Courtesy), a professor of mechanical engineering, and Prof. Wayne Chen, a professor of aeronautics and astronautics and materials engineering and associate head for Graduate Education.

A meteorite impacting the Earth generates high pressures and temperatures. The researchers are striving to replicate these conditions to create materials able to withstand extreme temperatures and possessing superior strength and unique electromagnetic properties.

The research is funded by the National Nuclear Security Administration (NNSA) through a new center led by the University of Notre Dame and also includes collaborators from Indiana University. The Center for Shock Wave-processing of Advanced Reactive Materials (C-SWARM) is funded with $1.6 million annually for five years.

AAE DISTANCE
GRADUATE EDUCATION

Distance Education Faculty Award 2014

Professor James Longuski

Congratulations to Prof. Jim Longuski who has been named as the winner for the 2014 award recognizing his excellence as a distance instructor. Each year Engineering Professional Education recognizes the outstanding contributions of faculty to the distance education program through Purdue’s annual Distance Teaching Award. The winner of the award is determined by distance students who nominate faculty and support those nominations through comments and evaluations.

The School of Aeronautics and Astronautics offers online master’s – level engineering courses designed for working professional engineers providing an opportunity to earn non-thesis online MSAAE degrees via distance learning.

The distance courses from Purdue’s School of Aeronautics and Astronautics are administered by engineering Professional Education.

One of the more unique features specific to Purdue is that distance students take the same courses as on-campus students. The non-thesis degree for distance students is the same degree as for on-campus students.

More details of available classes can be found at the EPE web site. https://engineering.purdue.edu/AAE/Academics/Grad/DistanceGradEd.

The Engineering Professional Education website can be found here: https://engineering.purdue.edu/ProE
Dennis Tito Visits Purdue
Inspiration Mars Mission

In February 2013, Dennis Tito created the Inspiration Mars Foundation and announced his intention to privately finance a mission to send a two-person American crew – a man and a woman – to fly by Mars, with a target launch date in 2018. The Inspiration Mars mission was inspired by a rare 501-day free-return opportunity that was discovered in 1998 by Professor James Longuski and his then student Moonish Patel. Tito holds a Bachelor of Science in Astronautics and Aeronautics from New York University, 1962 and a Master of Science in Engineering Science from Rensselaer Polytechnic Institute. He was a former scientist at NASA’s Jet Propulsion Laboratory, where he helped to plan and monitor the Mariner 4 and 9 missions to Mars.

In 2001, Tito spent nearly eight days in orbit as a crew member of the International Space Station on a visiting mission to the ISS, and he is widely known as the first privately funded space tourist. On July 31, 2014 Tito and two colleagues, John Carrico (of Applied Defense Solutions, Inc.,) and Michel Loucks (of Space Exploration Engineering Co.) began a collaborative design effort for the Inspiration Mars mission with Longuski’s research group and he came to visit Purdue on August 2, 2013. Prof. Longuski and two of his doctoral students, Kyle Hughes and Peter Edelman, have been working on studying the uniqueness of the Inspiration Mars 2018 opportunity as well as potential backup trajectories to give the mission a second chance if the 2018 launch date is missed. A portion of this work by Kyle Hughes focused on searching for opportunities that fly by Venus on the way to Mars, and then return to Earth (i.e. an Earth-Mars free-return trajectory with an intermediate Venus flyby). By using the Venus flyby on the way to Mars, the group was working with an entirely different set of trajectories, and their hope was that they could find one (with properties similar to the Inspiration Mars trajectory) soon after the 2018 opportunity. After an extensive search, the group found a few suitable trajectories with launch dates in 2021 that could be used as backups for Inspiration Mars.

Michel Loucks contacted Prof. Longuski in Feb. 2014 with the news that one of the trajectories that Longuski’s research group found (as part of their work with Dennis Tito) led to the development of a new mission to fly by Venus and Mars and was recently proposed in a U.S. House of Representatives Science Committee hearing (officially called the Committee on Science, Space, and Technology) on February 27, 2014. This mission would be a government funded mission as opposed to the privately funded Inspiration Mars mission, and would be launched in November of 2021 with a 580 day total flight time to Mars and back.

This image came from a reproduction of the team’s trajectory in STK and was provided by Mike Loucks. The House Science Committee discussed this trajectory on February 27th 2014.
IMPACT - Instruction Matters: Purdue Academic Course Transformation

AAE faculty Dr. Alina Alexeenko and Dr. Wenbin Yu were selected as IMPACT Faculty Fellows to participate in the Spring 2014 cohort of IMPACT.

Instruction Matters: Purdue Academic Course Transformation also known as IMPACT is a program that works to redesign key foundational courses to create more interaction between the instructors and the students. The mission is to improve student competency and confidence through redesign of courses by using research findings on sound student-centered teaching and learning.

IMPACT targets classes that serve as key introductory courses, especially those with high enrollments. IMPACT fellows are provided with a fellowship and learn about course redesign options by working with a team of instructional, technology, and assessment specialists.

The program, which also is partnering with the Discovery Learning Research Center, targets ten courses each semester and will be of value to faculty, students, the Purdue campus and to academic units.

Dr. Alexeenko redesigned AAE 333 Fluid Mechanics and Dr. Yu redesigned AAE 204 Aerospace Structures and Materials.

Faculty Investigator Awards 2013-2014

The School of Aeronautics and Astronautics is pleased to congratulate four faculty members who have been awarded a significant New Investigator or Young Professional Development Awards during the 2013 – 2014 academic year.

Associate Professor Karen Marais was awarded a National Science Foundation CAREER Award.

Assistant Professor Michael D. Sangid was awarded the Young Professional Development Award from The Minerals, Metals & Materials Society (TMS), Structural Materials Division (SMD), and the Young Investigator Program Award from the Office of Naval Research.

The International Journal of Fatigue has featured a paper by Professor Michael Sangid. The paper, entitled “The physics of fatigue crack initiation,” was Number 1 in the Most Downloaded Articles on the site over the late summer to early fall 2013 period. In this paper, Professor Sangid discusses the critical role of the material’s microstructure in determining fatigue crack initiation, providing an updated review of the field along with discussion on the current and future direction of research in this area. This paper appears in a special issue of the journal, “Fatigue and Microstructure: A special issue on recent advances.”

Assistant Professor Haieng Wang was awarded the Doctoral New Investigator Award from the American Chemical Society Petroleum Research Fund.

Professor Nicole Key (by courtesy) receives the Dilip R. Ballal Early Career Award from the ASME International Gas Turbine Institute.

These awards are the nation’s most competitive and prestigious honor for a young faculty member.

The Book of Great Teachers 2013-2014

Professor Bill Crossley and Professor Stephen Heister, Raisbeck Engineering Distinguished Professor for Engineering and Technology Integration and Director, Maurice J. Zucrow Laboratories, were selected by their peers to be inducted into The Great Book of Teachers.

The Book of Great Teachers is a permanent display in the west foyer of the Purdue Memorial Union. It was dedicated on April 23, 1999.

The book bears the names of 316 faculty members, past and present, who have devoted their lives to excellence in teaching and scholarship. They were chosen by their students and their peers as Purdue’s finest educators. The induction process takes place once every five years.

Past AAE faculty who have received this honor include:

- Professor Elmer F. Bruhn
- Professor Steven H. Collicott
- Professor Emeritus W.A. Gustafson
- Professor Kathleen C. Howell
- Professor Severino L. Koh
- Professor James M. Longuski
- Professor Paul S. Lykoudis
- Professor C.T. Sun
- Professor Henry T. Yang
Professional Recognition of Faculty Members

Congratulations to three faculty members who have received recognition by Professional Organizations

Prof. Alina Alexeenko
American Institute of Aeronautics and Astronautics (AIAA) Associate Fellow

Prof. Robert Lucht
(By Courtesy) American Institute of Aeronautics and Astronautics (AIAA) Fellow

Prof. Wenbin Yu
American Society of Mechanical Engineers (ASME) Fellow

Professional Recognition of Faculty Members – Faculty News

Morpheus Hot Fire Test

Purdue students successfully tested a 4000 lb thrust rocket combustor on May 13 at the High Pressure Lab.

The combustor is a test unit built to demonstrate technologies for a lunar lander, and was developed according to NASA requirements by AAE students during the Propulsion Design, Build, Test class taught by Professor Bill Anderson. The combustor uses liquid oxygen and liquid methane propellants, and must be throttled over a 4:1 thrust range.

Mike Bedard, a Ph.D. student in AAE, led the testing and the buildup of a methane liquefaction system. Mike was assisted by AAE students: Alix Crandell, Jacob Ediger, Daniel Goldberg, Logan Kampschroer, Daniel Kerstiens, Austin Link, Jenna Schreiner.

Video footage from the test attempt in the link: https://www.youtube.com/watch?v=m2xytZDvmDM

NASA Deputy Assoc. Administrator, Mr. Dan Dumbacher joins the School of Aeronautics and Astronautics

The School of Aeronautics and Astronautics welcomes Mr. Dan Dumbacher, Deputy Associate Administrator of NASA’s Human Exploration and Operations Mission Directorate on August 1, 2014 as a Professor of Practice.

Mr. Dumbacher will teach courses in systems and systems of systems. He will also work with Professors Bill Crossley and Abhijit Deshmukh, and other leaders in our College of Engineering in the systems area to develop the Purdue Systems Initiative.

Mr. Dumbacher comes to Purdue from the Exploration Systems Development Division, for the Human Exploration and Operations Mission Directorate at NASA Headquarters where he was Deputy Associate Administrator. In that capacity, he provided leadership and management for the directorate with a special focus as the Program Director for Exploration Systems Development encompassing Space Launch System, Orion, and Ground Systems Development and Operations (GSDO) development and integration efforts. He led a team of over 5000 people across all NASA Centers and Industry.

Mr. Dumbacher joined NASA in 1979. During his career, he has received numerous awards and honors. In 2007, he was awarded the Presidential Rank Award for Meritorious Executives — the highest honor for career federal employees. In 2003, he received the Outstanding Mechanical Engineer award from Purdue University. He received the NASA Exceptional Achievement Medal in 2002 for exceptional accomplishments related to NASA’s Space Launch Initiative Program, and in 1997 for his work on the DC-XA Project. In 1996, he was honored with a Marshall Director’s Commendation for accomplishing two flight tests within 26 hours in the DC-XA Project flight test series.

Mr. Dumbacher earned a bachelor’s degree in mechanical engineering from Purdue University in 1981 and a master’s in business administration from the University of Alabama in Huntsville in 1984. He has completed the Senior Managers in Government study program at Harvard University. Mr. Dumbacher has authored several papers on liquid propulsion technologies, space transportation systems development, and systems engineering.

We look forward to Mr. Dumbacher’s vast experience and expertise in enhancing the education of our students in the systems area, and to welcome him to our school.
Prof. Steven Collicott’s AAE418 “Zero-Gravity Flight Experiments” class submitted an original research proposal to NASA in October, 2013. It was announced on December 18, 2013 that they were selected by NASA’s Reduced Gravity Education Flight Program as one of the best proposals submitted this year.

NASA flew the student-built experiment and five of the students in weightlessness, or zero-gravity, on board a research aircraft in June, 2014. The student team, led by AAE senior Peter Geldermans, built their experiment during the spring 2014 semester.

The team’s proposal is “Flow Boiling Bubble Detachment Behavior on Enhanced Heat Transfer Surface Geometries in Microgravity.” Their experiment investigates the impact of some of the textured surfaces developed recently for enhancing boiling heat transfer on Earth, but in short-duration low-gravity. Boiling and condensation are necessary for creating phase-change heat transfer loops and are poorly understood, and hence, rarely used yet, in spaceflight. The students’ data from this rapid experiment program is expected to uncover new phenomena which will then stimulate the detailed experiments necessary to turn the textured surface boiling enhancement technology into useful spaceflight thermal control systems.

The team of AAE undergraduate students comprises of:

Daniel Bravo
Jessica Callinan
Ronak Dave
Peter Geldermans - Team Leader
Carter Grove
Jonathan Hughes
Eric Jones
Margaret Kleindl
Nathan Koerschner
Timothy Machin
Brent Mathis
Nicholas McGregor

The School of Aeronautics and Astronautics has been involved in the NASA Reduced Gravity Student Flight Opportunity program since fall 1996. Prof. Collicott specializes in research and engineering on low gravity fluids topics and he advised the first few teams of students. Collicott then created an upper-level undergraduate course for students to design zero-gravity flight experiments specifically for the NASA program which then became part of the curriculum. In all, it is a team-based, hands-on multidisciplinary experience.

The selection process is very competitive and teams of undergraduate students from all over the country send in proposals for experiments to be performed in a reduced-gravity environment.

The team that flew in June 2014 was AAE’s seventeenth year in a row with at least one student team winning a flight spot with NASA for their original zero-gravity science or spaceflight technology experiment.

“I am pleased to have this team of very capable young engineers and researchers carry on the type of team-based, open-ended real-world engineering education efforts which the previous students have benefited richly from.”

Periods of weightlessness lasting about 25 seconds during downward “parabola” give students scant time to ready their experiments for the next parabola. The plane varies the steepness of its maneuvers, and this varying steepness produces different degrees of weightless. Most of the maneuvers reproduce the weightlessness experienced by space shuttle astronauts flying in orbit around Earth, but a few of the maneuvers reproduce the gravity on Mars and the moon.
Professor Emeritus Winthrop A. (Gus) Gustafson was among six people who were inducted into the 2013 Co-Op Hall of Fame on September 27, 2013. Professor Gustafson was Co-Op Coordinator for the School of Aeronautics and Astronautics for 14 years (1984-1998).

Gus came to Purdue fall 1960 after working for the Lockheed Aircraft Corporation’s Missiles and Space Division as an associate research scientist in the areas of aerodynamics and high-speed gas dynamics. He received a BSAE in 1950, an MSAE in 1954, and a Ph.D. in 1956, all from the University of Illinois.

In addition to teaching in the aerodynamics area, he also taught the spacecraft section of the senior design course for approx. 10 years. Professor Gustafson served two terms as interim head and was named associate head by Dr. Yang on March 28, 1980. He continued in that role with Professors Grandt and Sullivan through 1995.

He played a key administrative role within the School and also performed the duties of undergraduate counselor and co-op coordinator. All undergraduate students during this period benefitted directly from the dedicated concern and attention to detail. He also had a major influence on the graduate programs as he was responsible for teaching assistant and graduate student office assignments during much of this period.

Professor Gustafson won the E.F. Bruhn Teaching Award twice in 1980 and 1998, and was presented with the Dean M. Beverly Stone Award by the Omicron Delta Kappa National Leadership Honor Society in 1997.

He retired from his position as associate head and professor at Purdue University in June 1998 and received the Sagamore of the Wabash Award from Indiana Governor Frank O’Bannon in August 1998.

The Purdue University Book of Great Teachers was dedicated in April 1999 and Professor Gustafson was selected as a former faculty member to be honored.

The W.A. Gustafson Teaching Award was established by the School of Aeronautics and Astronautics in 1997 to honor Professor Gustafson’s distinguished career of teaching and service to the school.

Purdue Team led by Prof. John Sullivan

AAE Professor John Sullivan led a team of students to break two land-speed records on August 28, 2013 at the Bub Motorcycle Speed Trials at the Bonneville Salt Flats, UT using 150-kilogram (330-pound) electric motorcycle.

The team of 15 students designed and built the electronic 200-pound aerodynamic motorcycle and used a state-of-the-art water-cooled prototype motor. They also used the ASL wind tunnel to test their streamlined design.

(L-R) Clayton Smith (AAE 2006), Drew Westrick (EE 2014), Professor John Sullivan, Grant Chapman (ME 2014), Sean Kleinschmidt (ME 2013)
Professor Marc Williams Retires from the School of Aeronautics and Astronautics

Prof. Marc Williams retired from the School of Aeronautics and Astronautics in June 2014. He received a Bachelor of Science from the University of Pittsburgh, Aeronautical Engineering, Magna Cum Laude, 1969, a Masters from Princeton University, Aerospace & Mechanical Sciences, in 1971, and his Ph.D. from Princeton in 1974.

He remained on the research staff at Princeton until joining Purdue in the school’s aerodynamics group as an assistant professor in 1981. He was promoted to associate professor in 1984 and to professor in 1990.

Following the retirement of Prof. ‘Gus’ Gustafson, Prof. Williams was promoted to Associate Head on July 1 1998. In this capacity, he continued Prof. Gustafson’s earlier responsibilities for undergraduate counseling, co-op coordination, and scheduling. During Prof. Williams’s tenure as associate head for undergraduate education, he introduced the Plan of Study (POS) which is unique to our school. The POS helps AAE undergraduates plan their BSAAE program and ensures that AAE students cover each of the areas that are required in order to graduate. In addition to his other responsibilities, Prof. Williams was the ABET Coordinator for the College of Engineering 2005-2014. His interests include Aerodynamics and Computational fluid Mechanics. Prof. Williams won the prestigious W.A Gustafson Teaching Award in 2004.

New Staff Welcomed

The School is delighted to welcome new staff members.

Jennifer Merzdorf joined the school on July 7, and as Communications Administrator, Jennifer’s duties include the editorship of the AeroGram newsletter and other communication publications for the School.

Anna Bowers – Secretary IV also started with the school on July 7 and will be at the front desk. Anna will be the first point of contact for visitors to the school and as always, we look forward to alumni coming back to visit.

We welcome them to the school and wish them well in their new endeavors.

Professor James Longuski Latest Book

Prof. James Longuski has published his latest book, "Optimal Control with Aerospace Applications." The book is co-written with Jose J. Guzman, Orbital Sciences Corp. Chantilly, VA, and John E. Prussing, University of Illinois at Urbana-Champaign, Urbana, IL.

In this book, it is noted that Optimal Control Theory has become such an important field in aerospace engineering that no graduate student or practicing engineer can afford to be without a working knowledge of it. The book does assume that the reader has the usual background of undergraduate engineering, science, or mathematics program with calculus, differential equations, and numerical integration.

The goal of this book is to provide the reader with sufficient knowledge so that he or she may read the literature and also apply the theory to find optimal solutions in practice.

An extensive annotated bibliography lists the references the authors found most useful, with a second bibliography listing numerous papers and reports that demonstrate the vast range of related aerospace applications.

Michael D. Griffin, Ph.D. NASA Administrator 2005-2009 and author (with James R. French) of Space Vehicle Design, was quoted in the book as follows: "Optimal Control with Aerospace Applications fills a huge void between Derek Lawden’s dated but classic 1963 text, Optimal Trajectories for Space Navigation and the exhaustive, and exhausting, treatment in Applied Optimal Control by Bryson and Ho. Modern in its approach and in its treatment of applications, this thorough but very accessible text is destined to become an instant classic."

Curious Quotations in Appendix D lets the reader know that many great minds and renowned authors have expressed their own concerns, often in humble and humorous ways, about the vast challenges that the calculus of variations and optimal control present.
Ph.D. degrees

AUGUST 2013
Jimmy Chiu
Niat Rahman
Escribano Vaquero

DECEMBER 2013
Ahmed E. Abdulhafez
Shao-Huan Cheng
Ming Gang
Christopher D. Geisel
Jonathan E. Goodsell
Alinda K. Mashiku
Bhisham N. Sharma

MAY 2014
Oscar Garibaldi
Seung Yeob Han
Matthew
Kube-McDowell
Chien-Shing Lee
James Manimala
David Reese
Mario Roa
Blake Rogers
Rashmi Shah
Steven Shark
Isaac Tetzloff
Andrew Thompson
Jian Wei
Jian Xu

Congratulations to Our Graduates 2013-2014

August 2013
B.S.
Melissa C. Brindise
Andrea E. Burkhardt
Cody J. Carey
Mark C. Danielson
Victor E. Gandarillas
Joseph T. Graham
Bryan A. Haring
Michael E. Hartel
Eric A. Imhoff
Roshan N. Jobanputra
Scott M. Johnson
Trevor D. Johnson
Eric B. Jones
Ravin Joshi
Shyngys Karimov
Seth A. Kreissler
Junhyung Lee
Robert J. Lundeen
Christian M. Lysholm
Nuraziz Makhiyev
Bhuvi S. Nirudhoddi
Shawn A. Olsavsky
Akash B. Patel
Ruchir S. Patel
Patrick J. Resler
Christopher A.
Riemer

Kaitie M. Schoenfeldt
Matthew C. Selling
Hang Sheng
Abubakar Sial
Michael J. Sparapan
Samuel W. Stoess
Sydney J. Taylor
Hao Wang
Jack J. Welter
Austen T. Wildberger
Kyle D. Zimmerle

M.S.
Andrew D. Abney
Adeel Ahmed
Joshua E. Altchuler
Ryan D. Bennett
Robles A.R. Castillejo
Lucas Cayzac
Jung Hoon Choiung
Matthew J. Durbin
Nanthaniel J. Forton
Nicholas L. Gurtowski
Kirsten Hughes
Madhur Aravind
Khadabadi
Sathyaranyan S.
Krishna
Julia J. Krupansky
Shankars S. Kuluman
Logan J. Larson
Daniel E. Lejeune
Boon Him Lim
Kshitij Mall
Bruno L.A. Marchessou
Ankur Mour
Chinnamani S.
Muthukannan
Kamwana N. Mwara
Jeeongmoon Park
Devon D. Parkos
Priyank Pradeep
Aaron M. Rosen
Subahhish Sasmal
Selcuk S. Sindir
Nandiganahiljay J. Suraj

May 2014
B.S.
Ryan A. Allen
Arika S. Armstrong
Joseph P. Avellano
James F. Behmer
Ian G. Bennett
Geoffrey V. Bianchini
Michael B. Bilyeu
Nityeshranjan
Bohidar
Divinaa Burder
Jessica C. Callinan
Congratulations to all of our graduates.
AeroAssault
Cricket Team Wins Silver Medal in the Indoor Cricket League

The Nataraj Iyer Indoor Cricket League (NIICL) at Purdue University saw AeroAssault as the silver medalist for Spring 2014. 14 teams comprising a total of 200 students hailing from different nationalities contended for the trophy.

Front Row (L-R) Kshitij Mall (Vice-Captain), Venkatesh Saranathan, Satadru Roy (Captain), Karan Bhise. Rear Row (L-R) Ravichandra Jagannath (Vice-Captain), Shankar Menon, Sambit Palit, Faheem Dar, Apoorv Maheshwari, Tanmay Chobbe

AEE General Scholarship
Peter Geldermans, Robert Ilgenfritz, Ryan Kober, Colleen Mahoney, Drew Sommer, Nicholas Spontgen, Yiqing Ding, Shyngys Karimov

Andrew Kasowski Scholarship
David Sotirovski

Arthur S. Remson Memorial Scholarship
Spenser Guerin

The Bob and Elly Hostetler Scholarship in Aeronautics and Astronautics
Samuel Fernon

Boeing Undergraduate Scholarship
Krista Garrett, My-Mustapha Lemcherfi, Christian Vuong, Parth Shah,

David L. Filmer Scholarship
Ryan Kober

Herbert F. Rogers Award
Nicoletta Fala

The John Gleiter – Engineering Perseverance Scholarship
James Geyer, Ahmed Khan, Joseph Riedle, Jacob Stepec, Christopher Treese, Alex Vanwye, Veronica Wiley, Samantha Sauer

John and Linda Hayhurst Scholarships in Aeronautics and Astronautics
Ellis Sepkovich

John L. and Patricia R. Rich Scholarship for Aeronautical Engineering
Andrew Cox, Roshan Jobanputra, Jeanne Methel, Shawn Olavsky, Bennett Olson

Lynn Fellowship
Tony Favaloro 2013-2014
Chandra Prakash 2014-2015

John Zink Company Graduate Fellowship
Huang Cheng

Magoon Excellence in Teaching Award
Samantha Alberts, Alden Black, Michael Fruhnert, Christopher Potter, Saverio Rotella, Isaac Tetzloff, Veronica Wu

The Marc Christopher Weaver Memorial Scholarship
Rebecca Pietrzycki, Jenna Schreiner, Amit Soni

NASA Aeronautics Scholarship
Joseph Lorenzetti, Samuel Otto, Christian Vuong, Emily Zimovan, Keith Wittner

National Science Foundation Award: Jared Willits
Honorable Mention: David Kun, Andrew Strongrich, Nicholas Zarbo

Northrop Grumman Corporation Scholarship
Saphal Adhikari, Scott Schwenker, Emine Atayurt

Orrin Arthur Austin Memorial Scholarship
Timothy Machin

The Peter Mueller Memorial Scholarship for Aeronautics and Astronautics
Emily Zimovan

Pratt and Whitney Rocketdyne Scholarship
Melissa Brindise, Hakusho Chin

Purdue Forever Fellowships 2013
Kurt Aikens, Jacob Dennis, Christopher Fugger, Nicholas Husen

Purdue Award for Teaching Academy Graduate Teaching Excellence
Alden Black, Saverio Rotella

Purdue Outstanding Researcher Award
Amanda Haapala

Purdue Outstanding Service Scholarship
Kaela Martin

Society of Women Engineers Awards:
Arika Armstrong
Women in Engineering Program Award
Sarah Marx
Women in Engineering Program Award
Emily Zimovan
Rockwell Collins, Inc. Corporate Award

Swenson Aeromodeler Scholarship
Ade Dillon
U.S. Department of Justice Challenge - The team led by Prof. Wayne Chen and included Ben Claus, Matt Hudspeth and Niranjan Parab won the U.S. Department of Justice’s first public competition challenge with its proposed concept for testing the viability of in-service body armor.

Warren G. Koerner Scholarship

William & Sally Dunton Scholarship
Ade Dillon

Best Paper Other Awards 2013-2014
Graduate student Cheolhyeon Kwon’s paper “Analytical Analysis of Cyber Attacks on Unmanned Aerial Systems” received First Place in the Best Graduate Student Paper Competition at the 2013 AIAA Guidance, Navigation, and Control (GNC) Conference, Boston, MA August 4-7, 2013. The AIAA GNC conference is the largest AIAA conference in the nation.

Graduate student James Goppert received Best Paper Award for “Model Checking of a Flapping-Wing Micro-Air-Vehicle Trajectory Tracking Controller Subject to Disturbances.” J. Goppert, J.C. Gallagher, I. Hwang, and E. Matson, presented in the International Conference on Robot Intelligence Technology and Applications 2013, Denver, CO December 18-20, 2013.

Professor Inseok Hwang is advisor to both James and Cheolhyeon.

Doctoral student Ming Gan won Second place in Best Poster award competition sponsored by NSF at ASME 2013 International Mechanical Engineering Congress & Exposition held in San Diego. He was also one of 44 to be awarded a NSF fellowship (with success rate of ~5%) to attend the competition based on an essay competition. His application was highly ranked by reviewers.

Doctoral student Sarag J. Saikia received the 2nd Prize in the Outstanding Student Oral Presentation for his paper, “Strategies For Mars Network Science Missions Via Innovative Aerocapture And EDL Architectures” at the 10th International Planetary Probe Workshop (IPPW10) held in San Jose, CA, USA, June 17-21, 2013. The coauthors are: Blake A. Rogers, James M. Longuski, Harish Saranathan, and Michael J. Grant. Sarag is a Ph.D. candidate in the Advanced Astrodynamics Concepts research group under the supervision of Professor James M Longuski.

Sarag J. Saikia was awarded three competitive travel grants to attend conferences in 2014. NASA’s Jet Propulsion Laboratory awarded him a grant to attend “Workshop on Venus Exploration Targets” held at the Lunar and Planetary Institute, Houston, TX in May 2014.

An award to attend the 11th International Planetary Probe Workshop at the California Institute of Technology, Pasadena, CA in June 2014 and an award to present a paper at the Asteroids, Comets, and Meteors (ACM) Conference in Helsinki, Finland in June/July 2014.

NASA Langley’s University Design Challenge
Congratulations to Prof. Bill Crossley’s AAE 451 Team 5 who won second place in NASA Langley’s University Design Challenge for aircraft design. The team members comprised: YiWei Lee, Sara Jacobson, Timothy Nye (First Lead), Brandy Shaffer, Cameron Gantz, Collin Ramsey, Nicholas Crass, Daniel St. Pierre (Second Lead), Zachary Harman.

2013-2014 AAE Research Symposium Series Winners

Best Presentation
Christopher Ward - Advisor Prof. Steven Schneider
Crossflow Instability and Transition in a Mach-6 Quiet Tunnel

Second Place Presentation
Christopher Zaseck - Advisor Prof. Tim Pourpoint and Prof. Steven Son
Development of High Performance Hybrid Rocket Fuels

Third Place Presentation
Samantha Alberts - Advisor Prof. Steven Collicott
Large Length-Scale Thermo-capillary Flow Experiment Design

Best Abstract
Kaela Martin - Advisor Prof. James Longuski
Reducing Velocity Pointing Errors for Spinning, Thrusting Spacecraft via Heuristic Thrust Profiles

Best Undergraduate Presentation
Jeanne Methel - Advisor Prof. Nicole Key
Vane Wake Profile Characterization for the Purdue 3-Stage Research Compressor
In conjunction with E-Week, Becky Cutting, SGT President was met with a pie in the face from AAE staff members Lisa Crain and Jenn LaGuire Feb 18th. $1 donations for the pie in the face benefited Project Lead the Way.

**Pie a President!!**

**Winners of the ATK Thiokol Propulsion S.P.A.C.E Award**

**Spring 2013 AAE 251 - Spacecraft Design**
**Team 20 Dreamliner**
Kartik Ancha
Arash Habibi
Santiago Ibarra
Tianya Xu
David McGrath - Director, Systems Engineer, Tactical Propulsion and Controls, ATK Elkton Operations.

**Spring 2013 AAE 251 – Aircraft Project**
**Team 12 – Optimus Sidera**
Alvaro Rangel Mendoza
Ji Hoon Seo
Reema Siddiqui
David McGrath - Director, Systems Engineer, Tactical Propulsion and Controls, ATK Elkton Operations.

**Fall 2013 AAE 251**
**Team 11 Hwurd**
Malcom Benion
Daniel Ellinwood
Narayan Iyer
Nathan Johnson
Rachel Lucas
Sam Otto
Anuj Shah
Andrew Tidwell
Professor Michael Grant and David McGrath, (BSAAE’83; MSAAE’84) Director, Systems Engineer, Tactical Propulsion and Controls, ATK Elkton Operations
**AAE Student Design Project Chosen as Finalist for International Inspiration Mars Design Contest 2014**

**Team Kanau**, a joint venture headed by students at Purdue University and Keio University in Japan, was chosen as a finalist for the *International Inspiration Mars Student Design Contest* by the Mars Society in March 2014.

The requirement of the global student competition was to design a two-person Mars flyby mission for 2018 as cheaply, safely and simply as possible. The idea of a manned Mars flyby mission of the type proposed by Inspiration Mars was motivated by trajectory designs investigated by **Professor James Longuski** as well as alumni **Dr. Moonish Patel** and **Dr. Jon Sims**.

The team from Purdue contributed to the design of the launch system, spacecraft trajectory, aerocapture, power, and communications systems. They will be invited to present and defend their designs during a public event at the NASA Ames Research Center in August 2014 and will be joined by 6 team members from Japan. A panel of six judges chosen by the Mars Society, Inspiration Mars and NASA Ames will then select grand prize winners.

The team members from Purdue’s School of Aeronautics and Astronautics are:

- **Professor Michael Grant**, Rapid Design of Systems Lab (RDSL), Systems, team co-advisor
- **Kshitij Mall**, graduate student in RDSL, Systems
- **Ashwati Das**, graduate student in Astrodynamics and Space Applications
- **Jeff Stuart**, graduate student in Astrodynamics and Space Applications
- **Max Fagin**, graduate student in RDSL, Systems, and Artisan Fabrication Lab (AFL)
- Additional assistance from Purdue’s School of Aeronautics and Astronautics was provided by:
  - **Professor Bill Crossley**, Systems
  - **Professor Stephen Heister**, Propulsion
  - **Professor Kathleen Howell**, Astrodynamics and Space Applications
  - **Professor Tom Shih**, Aerodynamics and Department Head
  - **Marat Kulakhmetov**, graduate student in Propulsion
  - **Jim D’Entrement**, graduate student in Propulsion
  - **Rizwan Qureshi**, AAE alumnus, now at NASA Goddard Space Flight Center
  - **Thomas Antony**, graduate student in RDSL, Systems

The Japanese team of **Shota Iino**, **Ayako Ono**, **Eriko Moriyama**, **Takuya Ohgi**, **Koki Tanaka**, **Yuri Aida**, and **Daichi Nakajima** worked on life support systems, spacecraft interior design and medical healthcare part of this mission for the team. The team co-advisor from Japan is **Professor Hiroyuki Miyajima**. **Nick Gillin**, a popular machinamist from Art Center College of Design, Pasadena, California is a team member working on the animation video for this mission.

For further information, please visit:
- Team Kanau website - [https://sites.google.com/site/occupyplanet4/](https://sites.google.com/site/occupyplanet4/)
News About You

There are many ways for you to stay involved with our school. Please keep us posted on where you are and what you are doing using the Update Alumni Records page from our Alumni section of our web site at: https://engineering.purdue.edu/AAE/AboutUs/Alumni/Update/AlumniRecords.

Alternatively, you can jot down personal news that you want to appear in the next edition of AeroGram or our E-newsletter the Aeroliner and either email it or send to the address below.

Our goal is to keep you abreast of the activities in the School of Aeronautics & Astronautics and across Purdue University. We hope that you find this information useful and relevant. We want to keep in touch with all our alumni and friends. Information provided by you is used to deliver up-to-date news and other information. We will not share your information with any other person or organization.

I can be contacted at the following email address: rlbaines@prf.org
Or by mail at:

Rita Baines
Director of Development
Purdue University
School of Aeronautics & Astronautics
Neil Armstrong Hall of Engineering
701 W. Stadium Ave.
West Lafayette, IN 47907-2045