The cover photo here represents one of a proud legacy of teamwork at AFIT. When Building 646, known then as Systems Engineering Building, opened in 2009, Ms. Karen Dobbyn, an Ed Tech staff member in the Department of Systems Engineering and Management, whose passion was amateur photography, was asked by the then department head to take an emphatically iconic photo of the building. The vision was to use the photograph to promote the systems engineering program in the department. The resulting photo was so telling that the department decided not to keep the photo to themselves. In sharing the photo with the AFIT community, a copy was sent to SC, from where the photo was picked as a representation photo for promoting the whole of AFIT. The photo is now a favorite screen saver on most (if not all) AFIT computers. Ms. Dobbyn, who has since left AFIT and retired from Air Force service, was recognized with a Dean’s Coin in 2015 for the visual legacy she left behind. This demonstrates that each one of us, at whatever level we find ourselves, can make a contribution to the advancement of our organization. We are proud to reprint the iconic AFIT photo in this inaugural issue of The AFIT ENGINEER.
Welcome to the inaugural issue of The AFIT Engineer newsletter

I am delighted to release the inaugural issue of The AFIT Engineer as the coordinated and consolidated outreach platform of the Graduate School of Engineering and Management, not only for the AFIT community, but also for our external stakeholders, constituents, sponsors, alumni, friends, and supporters.

AFIT has its footprints and fingerprints firmly and widely implanted in the STEM community. Not only do our graduates serve the needs of the US Air Force and DOD, but their technical tentacles also reach business, industry, academia, and general government. This is achieved through manpower transitioning, technology transfer, and intellectual engagements. In my travels around the world, I often encounter experts whose foundational preparations had their roots at AFIT. The wide contributions and impacts of AFIT cannot be overstated. We have been in this business of defense-focused education for 100 years. The Centennial celebration this year will highlight the essential trend lines of where and how we started, where we are now, and the march toward the future.

We are adept at responding to the current and future needs of the Air Force through education, research, and operational consultation. AFIT is organized into four schools—the Graduate School of Engineering and Management (EN), the Civil Engineer School (CE), the School of Systems and Logistics (LS), and the School of Strategic Force Studies (EX)—with an educational linkage to Civilian Institutions (CI). In this regard, the Graduate School leverages the operational connections provided by the continuing education arms of AFIT. Realizing that without practice, theory is for naught. As embodied in the chart below, where theory meets practice is what forms the nexus of our excellence and we strive to strengthen and advance both intra-AFIT partnerships as well as external collaborations.

Adedeji B. Badiru, Ph.D., PE, PMP, FIISE
Dean, Graduate School of Engineering and Management
The Air Force Institute of Technology Graduate School of Engineering and Management awarded 234 advanced degrees at the National Museum of the United States Air Force March 21. The graduating class included 203 Air Force officers, two Air Force non-commissioned officers, eight Army officers, two Marine Corps officers, and 15 civilians. The school also graduated three international students from Australia and Brazil.

The Graduate School awarded 214 master’s degrees and 20 doctorate degrees in science, technology, engineering and math fields. One graduate received dual master’s degrees.

Gen. David Goldfein, Chief of Staff of the USAF was the guest speaker for the graduation ceremonies.

“Our nation is going to look to you as the thought leaders for us to prepare and help solve our nation’s toughest challenges.”

-Gen. David Goldfein, Chief of Staff, USAF

The Graduate School announces newest Distinguished Professor

Dr. Meir Pachter has been selected as the Air Force Institute of Technology’s Graduate School of Engineering and Management’s newest Distinguished Professor. This distinction is reserved for individuals who have displayed exceptional, lifelong performance and achievement as a Graduate School faculty member.

Dr. Pachter is an internationally recognized expert in the Air Force mission-critical area of intelligent autonomous control and navigation of aerospace systems with a current focus on unmanned aerial vehicles and air-to-air operations. Dr. Pachter has published over 100 refereed journal articles and has received more than $2.3M in research funding, primarily from the Air Force Research Laboratory.

Dr. Pachter earned his doctorate in applied mathematics from the Israel Institute of Technology. He first arrived at AFIT as a Flight Control Chair Visiting Professor in 1990 and became a permanent faculty member in 1993 with his appointment as Associate Professor of Electrical Engineering. As a research advisor, he has graduated 16 doctoral students and 46 master’s students.

Dr. Pachter is a Fellow of the Institute of Electrical and Electronics Engineers, recognizing his high levels of impact in the field of electrical engineering, with a special focus on optimization, guidance, and control theory. He serves as an Associate Editor for the Journal of Optimization Theory and Applications and the Chairman of the International Federation of Automatic Control’s working group on Differential Games and Multiple Criteria Decision Making.

Dr. Pachter is the sixth Graduate School faculty member to receive the Distinguished Professor designation since its inception in 2009. Others are Dr. Shankar Mall (2009), Dr. Anthony Palazotto (2011), Dr. Marlin Thomas (2012), Dr. Richard Deckro (2014) and Dr. Mark Goltz (2014).
By Lt Col Edward Lee Hobbs

The effects of nuclear weapons have far-reaching implications to strategic missions, which drive various research and development interests spanning multiple academic disciplines. In addition to the traditional disciplines of nuclear physics and nuclear engineering, these varied disciplines include: material science, meteorology, biology, chemistry, electrical engineering, political science and systems engineering. Technical expertise that is “nuclear aware” in these areas resides in a relatively small population of human capital within the Nation and our strategic allies.

The Air Force Institute of Technology (AFIT) currently possesses the most capable faculty and student base to serve as the focal point to provide technical expertise for classified and unclassified interdisciplinary research efforts for national defense, academia and industry. AFIT has a long history of supporting the Nation’s nuclear research and development efforts. During the Cold War, AFIT was host to the Nuclear Engineering Center (NEC), centered at the (now decommissioned) research reactor. The NEC was decommissioned as national priorities shifted. However, a renewed interest exists within the Air Force and the national nuclear enterprise to form a multi-disciplinary focal point for the development of nuclear knowledge and to conduct defense-focused nuclear research.

The Nuclear Event Analysis and Testing (NEAT) Center of Specialized Research (CSR) is proposed to address these requirements and coordinate nuclear knowledge development and research activities throughout the Air Force and the nuclear enterprise. The primary functions of the center will be to develop career professionals in support of the US nuclear modernization and sustainment mission, provide research consultation to ensure the USAF remains an informed customer in nuclear diagnostics and weapon related topics, provide educational support to enhance nuclear knowledge across the board, and provide a publication/interaction space to share important ideas and concepts for the nuclear enterprise.

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Civilian graduate student chooses AFIT for astronautical engineering degree

By Jaclyn Knapp

Air Force Institute of Technology astronautical engineering graduate student, William Gallagher shows local STEM students interested in space an example of CubeSat hardware from the Center for Space Research and Assurance (CSRA). The mission shown is scheduled to launch in 2019. CSRA is currently developing a space-qualified 6U CubeSat bus, or a space vehicle designed to carry a variety of different mission payloads to support hands-on student education and research. The bus will be designed with the ability to upload new flight and payload software while on-orbit.

When considering graduate schools, Gallagher, a PALACE Acquire (PAQ) intern from Hill AFB was interested in spacecraft and space operations. Through the PAQ program, Gallagher is able to attend Air Force funded graduate school full-time. He chose AFIT since it was one of less than ten schools in the nation to offer a Master of Science degree in astronautical engineering.

“I recommend graduate or PhD civilian students pursuing federal employment attend AFIT since the school has connections to agencies and departments inside and outside of the United States Air Force,” said Gallagher.
Dr. Julie Jackson has been selected as the 2019 recipient of the Fred Nathanson Memorial Award. This award is in honor of the late Fred Nathanson and is sponsored by the IEEE Radar Systems Panel of the AES Society. This award grants international recognition for outstanding contributions to the radar art. The goals in granting this award are to encourage individual effort and to foster increased participation by developing radar engineers. This award is to recognize an AESS member as the top radar contributor under 40 years of age.

Capt Richard Uber, Assistant Professor of Mathematics within AFIT’s Graduate School of Engineering and Management, was selected for the prestigious National Intelligence University’s Center for Strategic Intelligence Research Fellowship program for the academic year 2019-2020. As part of his fellowship, Capt Uber will research artificial intelligence and machine learning while working directly with subject matter experts on staff at the Center for Strategic Intelligence Research.

ON THE RESEARCH RADAR

PROSPECTIVE STUDENTS INTERESTED IN: ★ ASTRONAUTICAL ENGINEERING
★ SPACE SYSTEMS
★ SOFTWARE PROGRAMMING
★ HYPERSONICS
★ SATELLITES

AFIT CENTER FOR SPACE RESEARCH & ASSURANCE
OPEN HOUSE

WEDNESDAY, 17 JUL 1000-1200
THURSDAY, 18 JUL 1200-1400
AREA B BUILD 246
SNUSSER HALL ATRIUM (AFIT CAMPUS)

SPONSORS OF FISCAL YEAR 2018 PROJECTS

Total Funding: $22.5 M
USAF pilot, AFIT student, hopes to inspire young girls to reach for the skies

USAF pilot and AFIT PhD student Lt Col Olivia Elliott, right, talks to anchor Rebecca Smith about her career as a pilot in the U.S. Air Force and how the Captain Marvel movie may inspire young girls to become pilots.

View Elliott’s interview on Cincinnati’s Fox 19 here: bit.ly/USAFpilot

Lt Col Olivia S. Elliott
AFSC: K11E3B, Instructor Test Pilot

Lieutenant Colonel Olivia S. Elliott is a PhD candidate assigned to the Air Force Institute of Technology at Wright-Patterson AFB, OH. She entered the United States Air Force Academy as a member of the Class of 2000. Lt Col Elliott graduated second in her class with a Bachelor’s degree in Astronautical Engineering and received the Marshall Scholarship which allowed her to complete a Master’s degree in Micro-satellite Engineering at the University of Surrey, United Kingdom. Lt Col Elliott started Euro-Nato Joint Jet Pilot Training, 80th Flight Test Wing, at Sheppard AFB, TX in 2002. She remained at Sheppard AFB, TX as an instructor pilot in the T-38A/C Talon until 2008. Lt Col Elliott attended A-10A/C Thunderbolt II Fighter Training, 358th Fighter Squadron at Davis-Monthan AFB, AZ. In 2010, she was selected to attend the USAF Test Pilot School. Upon completion, she worked as an A-10C test pilot with the 40th Flight Test Squadron at Eglin AFB, FL. Following this assignment, she returned to USAF Test Pilot School and in 2016, Lt Col Elliott was selected to attend the Air Force Institute of Technology as part of the Advanced Academic Degree program, where she is currently working on her PhD research in hypersonic aerodynamics.

Engineer’s Week
Maj Joshua Hess, PhD, faculty member in the Department of Aeronautics and Astronautics, led and served as the POC for the 2019 AFIT Engineer’s Week. The event featured eight department faculty and staff, along with 16 department MS students and 41 volunteers from across the AFIT Campus, as facilitators for 13 STEM demos. The group interacted with approximately 200 high school students from six local area high schools.

Ohio State Science Day
Maj Joshua Hess, PhD, along with two students (Ms. Elizabeth Pickering and 1st Lt Brian Erickson), served as judges in the Engineering and Physics Categories at the 71st Ohio State Science Day. This event was a state-level science fair held at Ohio State University in Columbus, OH, which featured approximately 1,200 students from grades 5-12 as participants, with over $500K in scholarships available.

REHEDS ERB
Dr. James Petrosky, Department of Engineering Physics, served on the annual Radiation Effects & High Energy Density Sciences External Review Board at Sandia National Lab in Albuquerque, NM. The REHEDS ERB provides assessment/advice to the REHEDS Research Foundation Leadership, Sandia CTO, and The Sandia Research Advisory Board on the health, opportunities and strategy associated with Sandia’s REHEDS Research Foundation.

AFRL LEGACY Program
Dr. Adedeji Badiru, Dean, Graduate School of Engineering and Management, gave an inspiration/mentoring presentation to over 60 summer interns in AFRL’s LEGACY program, which is designed to cultivate and encourage future engineers as a potential workforce for the U.S. Air Force.
Award Recipients
Capt Joseph Ausserer, Department of Aeronautics and Astronautics was recognized by the Society of Automotive Engineers (SAE) as the recipient of 2018 SAE Charles M. Manly Memorial Medal for his outstanding technical paper.

During its recent graduation ceremony, the 2019 Class of the Advanced Study of Air Mobility (ASAM) recognized Dr. Jeff Weir, Professor of Operations Research and Associate Head, Department of Operational Sciences, Graduate School of Engineering and Management, with its “Outstanding Professor” Award.

Dr. Brian Lunday was selected to receive the Professor Ezra Kotcher Award. This Air Force Association sponsored award is given to recognize an individual who has made significant contributions to curriculum development within AFIT. Dr. Lunday is an Associate Professor of Operations Research within AFIT’s Graduate School of Engineering and Management.

Maj Omar Nava, PhD, was selected to receive the Colonel Charles A. Stone Award. This Air Force Association sponsored award is given to recognize an individual who has made outstanding contributions to furthering the AFIT mission. Emphasis is on new and innovative efforts or approaches, involving demonstrated personal leadership. Maj Nava is an Assistant Professor of Atmospheric Science within AFIT’s Graduate School of Engineering and Management.

Recently Published
Dr. Gilbert Peterson, Department of Electrical and Computer Engineering, and Dr. Mark Oxley, Department of Mathematics and Science, were cited as crucial partners in the recently published work “Autonomous Horizons, The Way Forward,” a collaborative effort between the AF Chief Scientist’s office and AFRL and endorsed by SecAF and CSAF.


Summer School Select
Department of Engineering Physics PhD student 1st Lt Rob Olesen was selected for the Pacific Northwest National Laboratory Radiation Detection for Nuclear Security Summer School.

Elected to S&T Advisory Committee
Lt Col Andy Geyer, PhD, (ENC), was elected to a two-year term as chair of the S&T Advisory Committee on Probability & Statistics for the American Meteorological Society beginning Jan. 2021.

2019 NSF Student Grants
The Metal Powder Industries Federation (MPIF) announced Capt Erin Hager and Maj David Newell, Department of Aeronautics and Astronautics MS and PhD students, as recipients of the 2019 National Science Foundation Student Grants for powder metallurgy research. Maj Ryan O’Hara, PhD, Department of Aeronautics and Astronautics, served as their advisor.
UPCOMING EVENTS

JULY 2019

ROTC Advanced Cyber Education (ACE) Program
Center for Cyberspace Research
AFIT Campus, Wright-Patterson AFB, OH
July 8 - August 3, 2019

AF Cyber Technical Center of Excellence (AF CyTCoE) BOA
and Center for Cyberspace Research (CCR) DRB
Center for Cyberspace Research
AFIT Campus, Wright-Patterson AFB, OH
July 16-17, 2019

Center for Space Research & Assurance (CSRA) Open House
Squier Hall Atrium, Bldg. 646
AFIT Campus, Wright-Patterson AFB, OH
July 17-18, 2019

Air Education & Training Command (AETC)
Change of Command
Randolph Air Force Base, TX
July 26, 2019

SEPTEMBER 2019

2019 Air, Space & Cyber Conference
National Harbor, MD
September 16-18, 2019

Air Force Marathon
Wright-Patterson AFB, OH
September 21, 2019

OCTOBER 2019

AFIT Graduate School of Engineering & Management
Fall Quarter Begins
AFIT Campus, Wright-Patterson AFB, OH
October 1, 2019

2019 Defense Innovation Convention
Sinclair Community College, Dayton, OH
October 22, 2019

NOVEMBER 2019

AFIT Centennial Day Celebration
AFIT Campus, Wright-Patterson AFB, OH
November 7, 2019

AFIT Official 100th Anniversary
November 10, 2019

For more information about research areas and AFIT faculty members, please visit us online at www.afit.edu/BIOS and click on the new Faculty Expertise Search Button

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Graduate School of Engineering & Management
www.afit.edu/EN
(937) 255-3025

Office of Research & Sponsored Programs
www.afit.edu/ENR
Research@afit.edu
(937) 255-3633

Office of Alumni Affairs
www.afit.edu/ALUMNI
AFITAlumni@afit.edu