

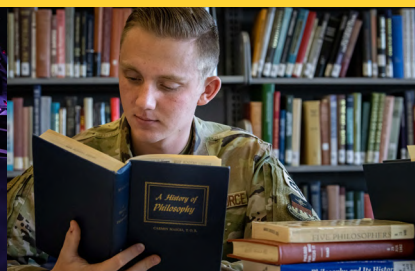

24-25

ACADEMIC YEAR

RESEARCH DIRECTORY

UNITED STATES
AIR FORCE ACADEMY



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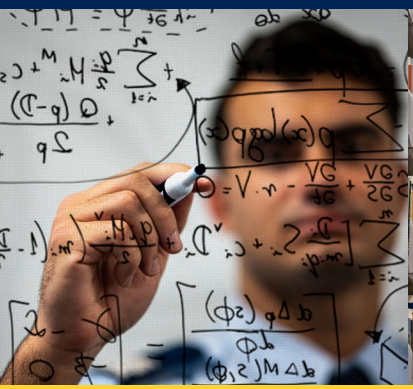



RESEARCH DATA

DIRECTORY

DIRECTORY (cont.)

OTHER DEPARTMENTAL RESEARCH

OFFICE OF RESEARCH

RESEARCH DATA

RESEARCH AT A GLANCE

24 Research Centers and Institutes

$40M+ in Annual Research Funding

259 active national and international research agreements

34 Visiting Researchers

1K+ Research Publications Per Year

56 Patents Awarded to Cadet and Faculty Researchers (2002-2024)

USAFA RESEARCH FUNDING

#1 Funded Undergraduate Research Institution

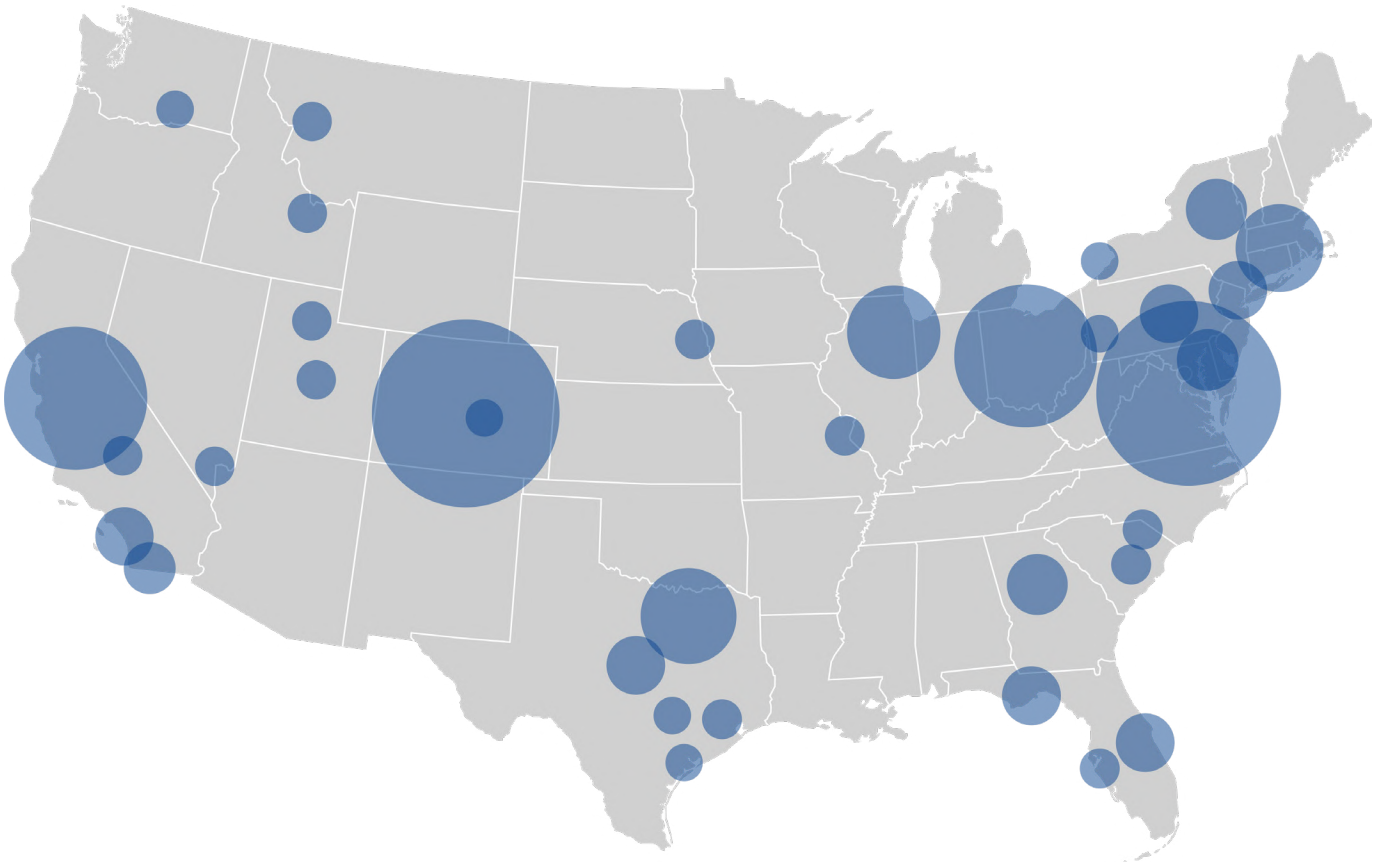
USAFA brings in more research funding than the other Military Service Academies combined.

$46,056,000

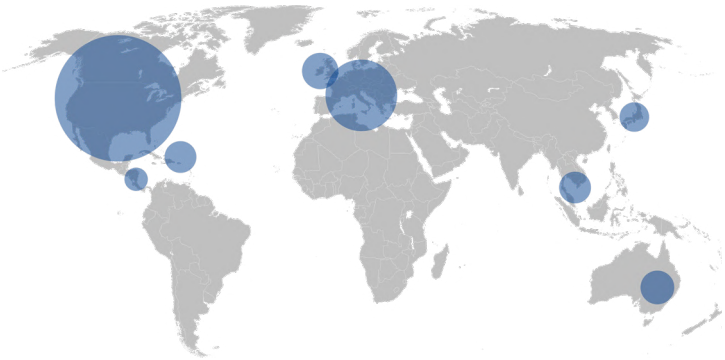
FY 2024 Total Research Funding

Air Force Office of Scientific Research (AFOSR) Funding **$3,600,000**

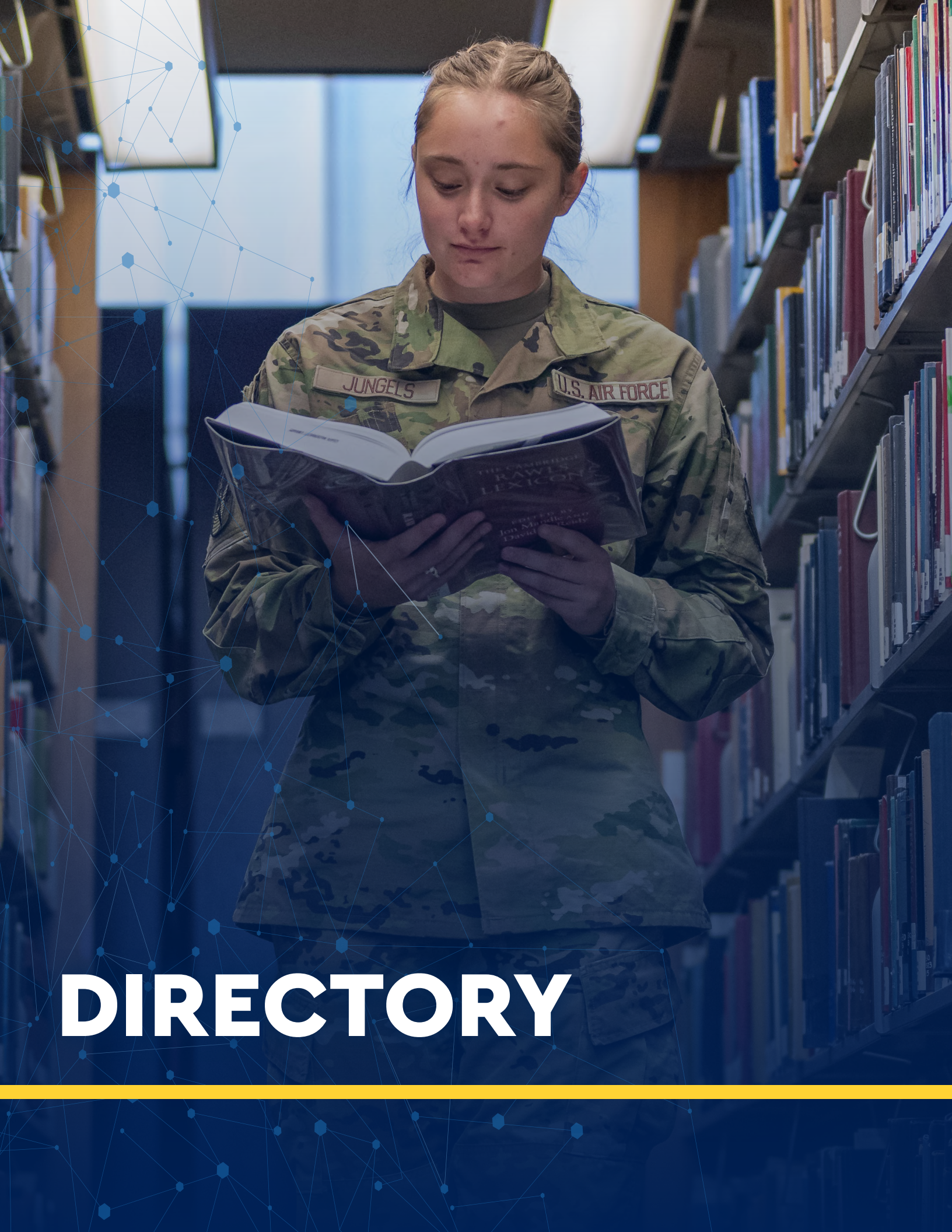
RESEARCH BEYOND USAFA



- **Size of circles represent the number of collaborations in the area.**
- **12 USAFA military faculty participating in exchange programs around the world.**
- **USAFA military faculty are serving as Air Force Office of Scientific Research (AFOSR) Program Officers in Santiago, Chile; Tokyo, Japan; and London, England.**



Cadet Summer Research Program (CSRP) Locations



DIRECTORY

AIR

Aeronautics Research Center (ARC)

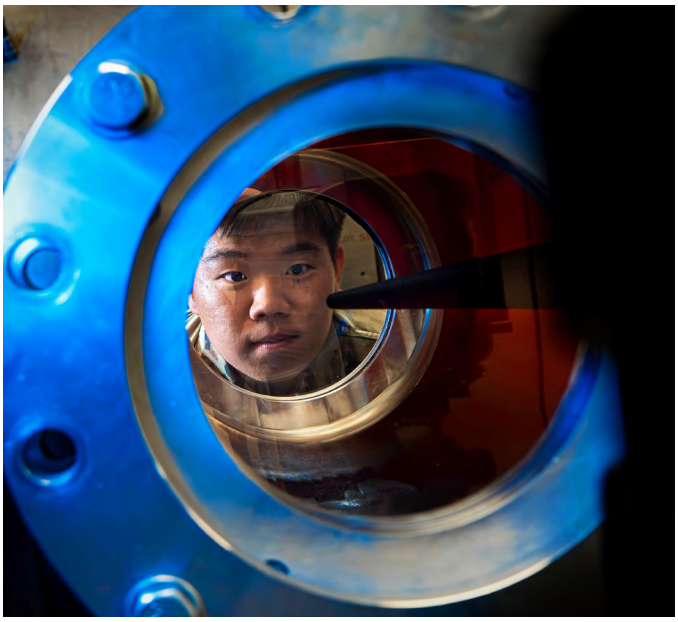
The Aeronautics Research Center in the Department of Aeronautics seeks to provide every Aeronautical Engineering cadet with a meaningful research experience, employing projects supporting customers in the Air Force, DOD, other government agencies and commercial partners. The center makes use of the USAFA Aeronautics Laboratory, the best-equipped aeronautics facility in all of academia. It is complemented by a broad range of faculty and researcher expertise in aerodynamics, flight control, propulsion and flight test. These capabilities combine to produce highly motivational cadet learning experiences, quality research products for the customers, and faculty/researcher technical currency.

CORE COMPETENCIES

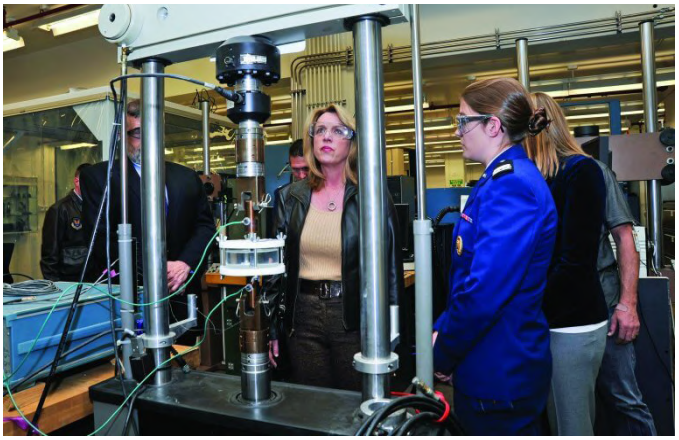
- Low & High Speed Aerodynamics
- Combustion & Propulsion
- Aerospace Structures
- Design and Test of Small Unmanned Aerial Systems
- Aircraft Design, Modeling, Control, and Simulation

MAJOR PROJECTS

- Demonstrated aircraft adaptive control via flight experiment
- Developed hypersonic turbulent boundary layer management techniques
- Implemented active flow control actuation for aircraft primary flight control
- Characterized crippling strength of battle damage repaired aircraft structures
- Performed wind tunnel evaluations of aerodynamic stability performance of multiple aircraft concepts



DR. MATTHEW MUNSON
matthew.munson@afacademy.af.edu



Center for Aircraft Structural Life Extension (CAStLE)

The Center for Aircraft Structural Life Extension has a two-fold research mission in support of the safe sustainment of aging structures. First, CAStLE research and technology development projects deliver critical science and technology (S&T) data and tools required to understand the impact of material degradation in structural systems for various government, academic, and commercial sponsors. Second, but no less important, CAStLE educates, trains, and inspires future generations that will become the core of the S&T community within the government and the general professional population. CAStLE's core competencies, developed over more than two decades of successful research product delivery to our sponsors, fully address all aspects of the mission.

CORE COMPETENCIES

- Aircraft Structural Integrity Program (ASIP) support; component & full-scale testing, teardown analysis, flight data acquisition, root-cause analysis, modeling, etc.
- Structural re-design, material substitution, prototyping, and validation testing
- Basic research in material degradation prevention and control, OSD sponsored Technical Corrosion Collaboration between university, DOD, and commercial research groups
- Short courses, videos, science center exhibits, design challenges, college readiness programs, etc.

MAJOR PROJECTS

- Aircraft Structural Integrity Program (ASIP) Engineering support for sustainment of a wide variety of DoD weapon systems
- Digital transformation support and Product Lifecycle Management (PLM) for major weapon systems
- Flight Loads Instrumentation system design, installation, data collection, and data analysis for multiple weapon systems to update evaluate/update load spectrum
- Fatigue testing of full-scale aircraft structural components

MS. CINDY KLAHN
cindy.klahn@afacademy.af.edu

Hypersonic Vehicle Stimulation Institute (HVSI)

The Hypersonic Vehicle Simulation Institute, sponsored by the DOD High Performance Computing Modernization Program, is a national effort managed from the USAFA. The vision of this effort is to bring together disparate DOD, DOE, NASA, academic and industry hypersonic researchers to address current shortcomings and advance the state-of-the-art in hypersonic vehicle simulation. This program will enable academic and research institutions around the country to pursue advances in the ability to simulate the challenging aerothermodynamic and propulsion system phenomena—such as boundary layer transition, shock-shock and shock-boundary layer interactions, ablation, non-equilibrium chemistry and fluid/thermal/structural interactions—of hypersonic flight in order to accelerate technology development and transition into superior defense capabilities for the United States. Faculty and cadets associated with the USAFA Research Centers may compete for funding through this effort in areas such as development and evaluation of hypersonic turbulence models, and creation of experimental data sets to enable verification and validation of new simulation capabilities.

CORE COMPETENCIES

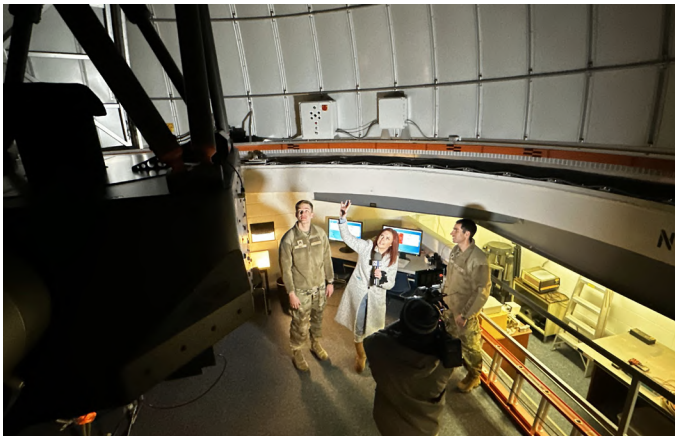
- Access to DOD supercomputing resources
- High-speed network access and local storage systems
- Partnerships with universities throughout the country for hypersonics research
- Supersonic/hypersonic experiment and computation

MAJOR PROJECTS

The first area for funding was chosen to be development of improved turbulence models for use in hypersonic flight simulations, including design and conduct of experiments that could provide validation data for these models.

DR. RUSSELL M. CUMMINGS
russ.cummings@afacademy.af.edu

SPACE



Astronomical Research Group and Observatory (ARGO)

The Astronomical Research Group and Observatory, based at the USAFA Observatory, houses a one-meter Ritchey–Chrétien telescope installed in 2019, and a 0.5-meter Ritchey–Chrétien telescope installed in 2023. The 0.5-meter telescope supports the worldwide Falcon Telescope Network (FTN), acting as a test bed for trouble shooting and upgrades for the 12-telescope network. The one-meter system contains a large-format camera, and a high-resolution Whoppshel spectroscope. ARGO conducts deep space research including asteroid tracking, supernova phenomena, and exoplanet studies. ARGO supports four academic courses, the Center for Space Situational Awareness (CSSAR), Space Physics and Atmospheric Research Center (SPARC), and the USAFA Physics and Astronomy Club. Some of the organizations ARGO partners with include the Colorado Springs Astronomical Society (CSAstro), American Association of Variable Star Observers (AAVSO), Colorado College, Embry Riddle Daytona, and Colorado Mountain College.

CORE COMPETENCIES

- Deep space photometry and spectroscopy
- Space object identification and tracking
- Space object photometry and spectroscopy
- STEM education and outreach in astronomy and space science

MAJOR PROJECTS

- Four Conference Presentations & One publication
- 2023 Installation of 0.5-meter telescope
- 11 Cadet and 6 HS researchers
- Standup of Chandra data server
- Data Collections on SN 2023ixf & Exoplanet HD189733b

LT COL BENJAMIN ROTH
benjamin.roth@afacademy.af.edu

Center for Space Situational Awareness Research (CSSAR)

The Center for Space Situational Awareness Research provides cadets and faculty at the United States Air Force Academy an education and research program in space situational awareness (SSA) using world-class facilities and capabilities.

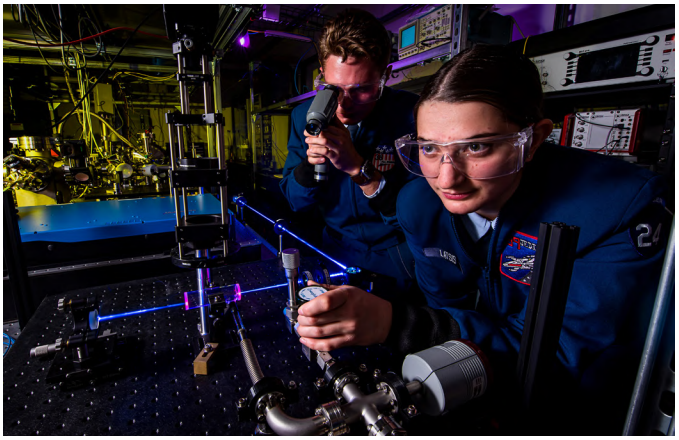
CORE COMPETENCIES

- Small aperture optical telescopes for satellite characterization
- Non-imaging photometric, spectral and polarimetric techniques for characterization of unresolved space objects

MAJOR PROJECTS

- Modeling of upper stage rocket bodies to determine spin state in support of space debris removal technologies
- Development of satellite spectral signatures for analysis using machine learning techniques
- Comparison of polarized signatures using an event-based camera and a traditional CMOS camera
- Upgrade and calibration of the Academy's global Falcon Telescope Network and 1-meter telescope
- Spectral polarimetry measurements of geosynchronous satellites
- Determine circular polarization states from unresolved satellite optical signatures

DR. FRANCIS CHUN
francis.chun@afacademy.af.edu



Laser and Optics Research Center (LORC)

The Laser and Optics Research Center performs research in laser development, laser applications and large optics for space with cadets, faculty and contractors using a well-equipped laboratory. Lasers and large optics are increasingly used by the military for directed energy weapons, precision munitions, communications and surveillance.

CORE COMPETENCIES

- Pulsed tunable lasers
- Laser and optical test equipment
- Laser and optical modeling
- Design and fabrication of unique laboratory apparatus
- High power continuous wave lasers

MAJOR PROJECTS

- Diode pumped alkali lasers
- Fiber lasers
- Atomic and nuclear physics
- Novel materials
- Photon sieves and wavefront sensors

DR. RANDY KNIZE
randy.knize@afacademy.af.edu

Space Systems Research Center (SSRC)

The Space Systems Research Center designs, builds, tests, and flies cadet-built, DOD-backed satellites. It focuses on cadet education while achieving real DOD objectives and supports national Science, Technology, Engineering and Mathematics (STEM) educational objectives.

CORE COMPETENCIES

- Designing, building, testing and flying small spacecraft
- Systems engineering
- Avionics testing and simulation

MAJOR PROJECTS

- FalconSAT-Xtra
- FalconSAT-X
- FalconSAT-6
- Cadet Space Operations Squadron

LT COL DANIEL SHOWALTER
daniel.showalter@afacademy.af.edu

Space Physics and Atmospheric Research Center (SPARC)

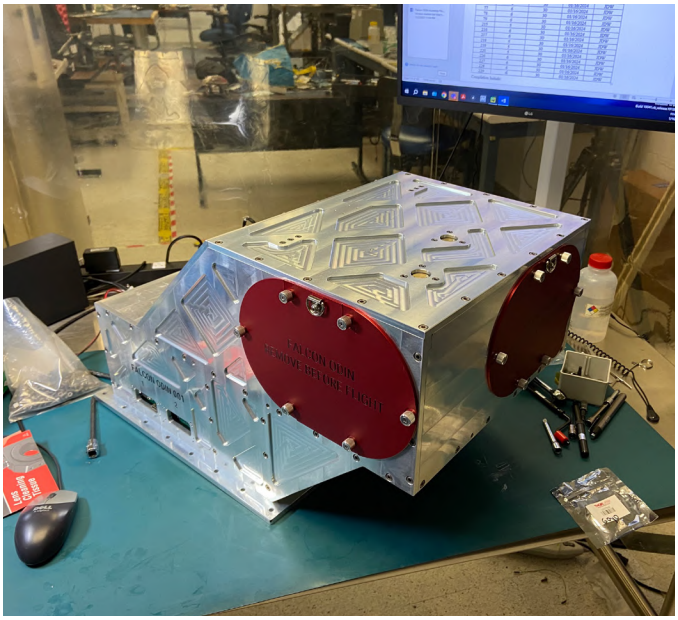
The Space Physics and Atmospheric Research Center faculty and cadets perform basic research in the solar terrestrial environment and investigate how perturbations in that environment can negatively impact the performance and longevity of U.S. Air Force space assets. SPARC specializes in the development of aggressively miniaturized payloads that fly on experimental spacecraft to make observations of the ionosphere. SPARC then works with cadets to incorporate these measurements into the broader framework of the ionospheric system, with the long-term goal of developing physics-based predictive models eventually leading to the ability to forecast the geospace environment.

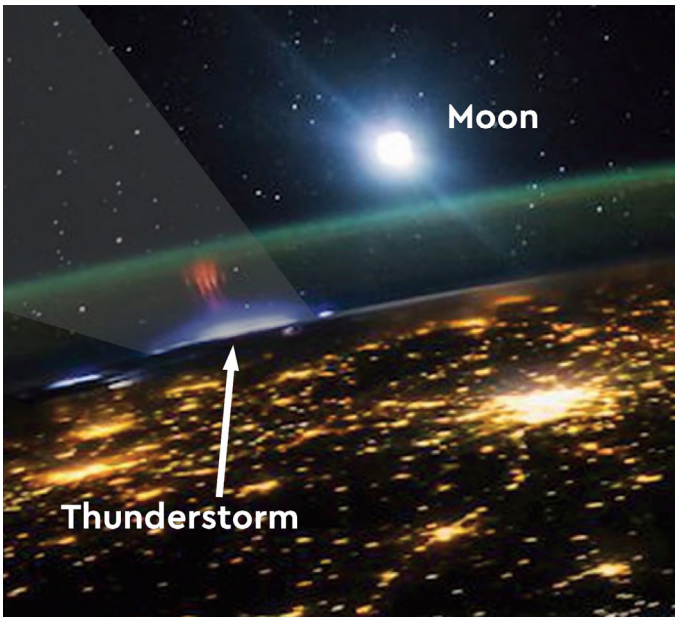
CORE COMPETENCIES

- Miniaturized payloads
- Space physics
- Applied physics

MAJOR PROJECTS

- Analysis of data from the Falcon Solid State Energetic Electron Detector in collaboration with the Air Force Research Laboratory. This electron detector has been operating in Geosynchronous orbit (GEO) using commercial-off-the-shelf non radiation hardened electronics for the past three years.
- Operating and analyzing data from Falcon Neuro, the first ever flight in space of a neuromorphic camera. Falcon Neuro has demonstrated the capability to make high speed observations (up to 1000 frames per second) of lighting.
- Falcon ODIN is the next neuromorphic imager and will fly to the International Space Station in early 2025. Cadets and faculty will operate and analyze data from Falcon ODIN in conjunction with colleagues at the Air Force Research Laboratory Space Vehicles Directorate





DR. GEOFF MCHARG
matthew.mcharg@afacademy.af.edu

CYBER

Academy Center for Cyberspace Research (ACCR)

The Academy Center for Cyberspace Research is the research center for the USAFA's Department of Computer and Cyber Sciences (DFCS). Through deliberate development, the faculty in the DFCS is prepared to conduct high-impact research driven by partnerships with internal research centers, operational Air Force entities, and industry. All of the ACCR projects are designed to match operational needs, industry partners, faculty expertise and cadet interest. Through this pairing we are able to create powerful capabilities that are targeted for providing a direct capability to USAF operations.

CORE COMPETENCIES

- System Security Analysis
- Artificial Intelligence and Autonomy
- Immersive Environments
- Business Process Automation

MAJOR PROJECTS

- Modern Cyber Security Operations
- Autonomous Drone Swarms
- Robotic Process Automation

LT COL DAVID HANCOCK
david.hancock@afacademy.af.edu

Air Force Cyberworx

Air Force CyberWorx collaborates with Airmen, academic, and industry experts to solve operational problems using human-centered and agile design methods. CyberWorx aims to resolve challenges for the Air Force with forward-looking solutions. Partnering with AF CyberWorx provides airmen and cadets with the opportunity to work with real-world practitioners, creating teaming environments that will help with their leadership skills in their Air Force careers. CyberWorx is based at the Air Force Academy to harness the ingenuity of 4,000 digital-native airmen and cadets and more than 100 Ph.D. faculty members, its vibrant research partnerships with industry, as well as the growth of the cyber business sector in Colorado Springs.

CORE COMPETENCIES

- Use industry best practices
- Collaborative design groups
- Create impactful solutions
- Rapid, low-fidelity prototyping
- Collaboration with public and private partnerships
- Educating Airmen to be innovators

MAJOR PROJECTS

- Cyber Risk Ecosystem(CRE): An AI/ML multi-domain command and control tool
- Program Unified Combat Coordinator (PUCC): A web-based application that mimics existing AF flight scheduling puck boards
- Position Navigation Timing (PNT) without GPS
- Readiness Dashboard (COP): A web application that consolidates numerous data sources into one dashboard
- Self-Healing Drone Swarm: Algorithms to establish an autonomous drone swarm
- Optimis (Flight Evaluation App): An app-based training management program that can be accessed on issued government iPads with real-time inputs that sync wirelessly to a central database.
- Software Guard Extensions (SGX)
- Autonomous Drone Swarms
- Robotic Process Automation

COL BERT GIOVANNETTI
robert.giovannetti@afacademy.af.edu

High Performance Computing Research Center (HPCRC)

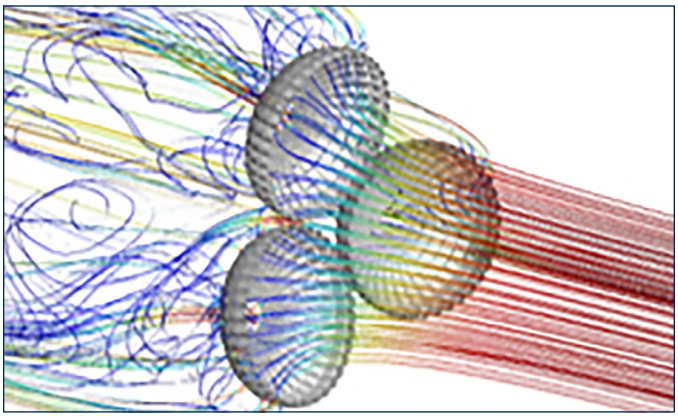
The High Performance Computing Research Center (HPCRC) provides access to high performance computing resources (local and remote), high speed network access to those resources and the expertise to use them efficiently. HPCRC staff helps push USAFA research beyond laptops to access vast computing systems for traditional computing, artificial intelligence, machine learning, large language models, and more. These resources are available to all faculty, staff and cadets, regardless of academic department or discipline. As part of the Department of Aeronautics, HPCRC researchers assist aeronautical engineering majors to conduct research in computational modeling of aerodynamics and high-speed gas dynamics.

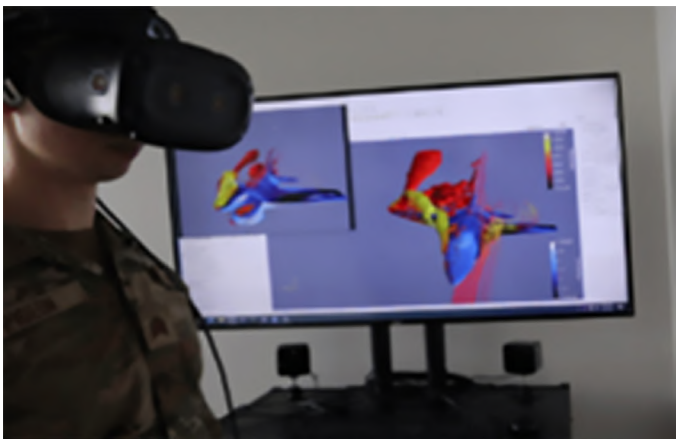
CORE COMPETENCIES

- Access to DOD supercomputing resources
- High-speed network access and local computer and storage systems
- Defense Engineering and Research Network (DREN) access for all DF research centers
- Expertise in Computational Fluid Dynamics (CFD)
- Complex unsteady flows
- Full aircraft simulations: engines, spinning propellers, etc.
- Fluid-structure interaction
- Flexible structures
- Multi-body aerodynamics
- High-speed gas dynamics
- Hypersonics
- Reduced-order modeling (ROM) Aircraft stability and control
- Mesh generation
- Virtual reality for scientific data exploration

MAJOR PROJECTS

- Physics-based computational modeling of full aircraft for USAF and DOD
- High fidelity modeling of propeller and engine flow interactions with aircraft
- CFD-based reduced-order modeling for aircraft stability and control characterization
- Computational modeling of hypersonic flows
- Fluid-Thermal-Structure-Interaction (FTSI) simulations for hypersonic vehicles
- Multi-fidelity aircraft design and optimization tools





DR. JÜRGEN SEIDEL
jurgen.seidel@afacademy.af.edu

READINESS

Office of Labor and Economic Analysis (OLEA)

The Office of Labor and Economic Analysis (OLEA) is a Department of the Air Force-level research agency located at USAFA and providing direct support to the Assistant Secretary of the Air Force for Manpower and Reserve Affairs (SAF/MR), The U.S. Air Force's Deputy Chief of Staff for Manpower, Personnel, and Services (AF/A1), and the U.S. Space Force's Deputy Chief of Space Operations for Human Capital (SF/S1). OLEA's mission is to provide evidence-based research and analysis, rooted in Labor Economic Theory, to inform strategic personnel policy for the U.S. Air Force and U.S. Space Force. OLEA exists to help senior leaders make better talent management decisions and implement effective human capital policies. The office builds and maintains a robust repository of service member personnel data, which underpins analysis of policies and provides extensive research opportunities across the human capital lifecycle. OLEA excels in policy analysis, problem-solving research, and program evaluation within the human capital space.

CORE COMPETENCIES

- Economic theory
- Causal analysis
- Personnel policy development and analysis
- Data processing & structures
- Strategic HR communication

MAJOR PROJECTS

- Blended Retirement System (BRS) program evaluation
- Warrant Officer selection process evaluation
- Remote & Isolated Working Group
- Modernization of Initial Officer Classification (i.e., job matching)
- Rated personnel studies and analysis

COL JON "MATT" HART
jon.hart@afacademy.af.edu

Human Performance Laboratory (HPL)

The Human Performance Laboratory applies sports science principles to improve Academy athletic teams and individual cadet performance. Coaches, cadet athletes and cadets receive specific physiological information by way of testing, research, training and education. The Human Performance Lab also provides subject matter expertise on the Air Force fitness program and human performance, offering scientific data through research and exercise physiology principles. Through the use of various physiological tests, to include Dual Energy X-ray Absorptiometry (DXA) scans for body composition, Resting Metabolic Rate, VO2max, Anaerobic Endurance, Anaerobic Power and Anaerobic Threshold, the HPL can aid athlete and cadets to improve their performance, nutritional habits and overall fitness levels. The HPL tests and trains more than 2,000 cadets and approximately 200 faculty, staff and active duty members annually while also hosting and conducting informational and educational tours for more than 150 high schools, college universities, elite athletes, professional sport teams and military personnel from all over the world.

CORE COMPETENCIES

- Physiological tests to aid athletes and cadets to improve their performance,nutritional habits, and overall fitness level, including: Dual Energy X-ray Absorptiometry (DXA) scans for body composition, Resting Metabolic Rate, VO2max, Anaerobic Endurance, Anaerobic Power and Anaerobic Threshold
- Testing and training of more than 1,800 cadets and approximately 100 faculty and staff members annually
- Altitude Training Tent to simulate sea level to 16,000+ feet, used for interval or maximal effort training events to further adapt the skeletal muscle and improve athletic performance

MAJOR PROJECTS

- Conducing a multi-year study with Fighter Squadrons around the United States to investigate the negative physiological effects of long-duration passive and active heat stress on cognitive function and hydration status in aviator population.
- 1.5-mile Altitude Dose research study to determine if a significant difference in aerobic performance exists between five different altitudes and if it does, to what extent and if possible, determine a regression equation for each altitude to aid the Air Force in determining an appropriate correction factor at bases around the world
- Falcon Fuel continues to provide nutritious options to help fuel cadets before, during and after physical activity.

MATT HAWKEY, PhD
matthew.hawkey@afacademy.af.edu

Scholarship of Teaching and Learning (SoTL)

The Scholarship of Teaching and Learning (SoTL) represents a growing national and international professional movement that recognizes, publicizes, funds, and advocates the scholarly approach to understanding factors that impact student learning. SoTL and innovation go hand-in-hand. Those engaged in SoTL have inquiring minds and the motivation to try new approaches and measure how cadet development and learning are impacted. They push boundaries and ask questions pertinent to their classrooms, their programs, the USAFA, and to higher education at large. The SoTL Program provides support for faculty, cadets, and staff at USAFA who are engaging in or applying SoTL research as a means by which to enhance cadet education and development.

CORE COMPETENCIES

- Educational resources for evidence-based teaching approaches
- Research method design for educational research
- Guidance for ethics approval (IRB) for the use of human subjects' data
- Funding support for SoTL Program project implementation and dissemination

MAJOR PROJECTS

- Investigation of the impact of artificial intelligence (AI) integration on teaching and learning across the disciplines and professional domains of faculty members at USAFA.
- Investigation of an intervention to promote cadet feedback literacy in academic and leadership realms.
- Investigation of a design cognition approach to developing strategic thinkers within complex and ambiguous contexts.

ANNUAL EVENTS

- Annual SoTL Forum: Held each fall semester, this day-long event showcases USAFA SoTL research, brings in an internationally renowned speaker, and includes panels, workshops and poster presentations. Attendees include USAFA faculty, staff, and cadets, and faculty from institutions along the Front Range. (Program for the 2023 SoTL Forum)
- Annual Martinson SoTL Research Award: This institutional-level award recognizes impactful SoTL research at the annual USAFA Research Awards Ceremony

DR. LAUREN SCHARFF
lauren.scharff@afacademy.af.edu

STRATEGIC STUDIES

Strategy and Warfare Center (SWC)

The Department of Military and Strategic Studies (DFMI) hosts the Strategy and Warfare Center (SWC). The two pillars of the SWC are Research and Experiential Learning. Through SWC, cadets have opportunities to engage in hands-on policy-relevant research with prominent faculty, think tanks, and to collaborate with Academy research centers and other external academic, commercial, and government agencies to analyze and address pressing security concerns. The fully immersive Multi-Doman Lab (MDL) housed in SWC leverages a holistic approach to enrich cadet learning of military and strategic studies and provides a laboratory to explore multidisciplinary problems as cadets prepare for their roles as 21st-century military officers. The MDL's combat snow globe concept of wargaming creates a flexible and scalable learning environment where students develop leadership and decision-making skills while testing the merits of theory, cooperation, competition, and conflict. SWC integrates research and academic education with live-virtual-constructed experiences to enhance junior officer readiness. SWC contributes to the enterprise's analysis of wicked security problems, explores contemporary, joint all-domain conflict, and continually assesses, reassesses, and explores the critical roles air, space, and cyberspace power could, should, and do play in our nation's defense.

CORE COMPETENCIES

- Air, Space, and Cyberspace Power for Joint, Multi-Domain Effects
- Strategic & Operational Decision-Making for Today's and Tomorrow's Fight
- Adapting Defense Organizational Culture and Practices to Improve Institutional Effectiveness
- Wargaming, Modeling, and Experimentation for Educational and Professional Development

MAJOR PROJECTS

- Modular Effects-Based Transmitter for Integrated Simulations (METIS)
- Athena Leadership Project
- LEAP: Assessing military-engagement decision-making using stochiometric methodologies
- Cognitive Security (COGSEC) in Officer Development, Education, and Decision-Making
- Resiliency Against Disinformation (RAD) with 16th Air Force, USAFA, and National University Partners
- Tri-Service Academy Wargaming Collaboration
- Future of Vertical Lift Operations in INDOPACOM
- Assessing the Role and Utility of Artificial Intelligence and Emerging technologies in the Joint Planning Process
- Developing Correlates of War (COW) Militarized Interstate Dispute (MID) dataset, version 6
- Space Domain Visualization, Integration, and Experience for Guardian & Airmen Development
- Collaborative, cross-domain modeling, simulation, and experimentation for USAFA Research & Education

DR. WILLIAM "OX" HERSCH
william.hersch@afacademy.af.edu

Eisenhower Center for Space and Defense Studies

Named after President Dwight Eisenhower, the first American president to establish a national policy-shaping U.S. engagement in space for both military and peaceful purposes, we continue his tradition of pioneering national security policy through the domains of space, cyber, nuclear, and emerging technology. The Eisenhower Center continues this tradition by providing cadets and faculty with unique opportunities to participate in research and policy discussions on the future of American defense policy through first-hand contact with senior leaders and experts in the military, civilian government, and private sector from the United States, and major space-faring nations. Through its journal, Space and Defense, the Eisenhower Center promotes the research done by the Academy and our colleagues, to fuel the ongoing discussion of space and security policy issues. In addition to contributing to these ongoing discussions, we are also improving space policy education for Officers and Guardians at all levels of education. Eisenhower Center innovates space and national security policy research and education to produce impactful research and Officers and Guardians.

CORE COMPETENCIES

- National security policy, with an emphasis on deterrence theory, particularly in the space, nuclear, cyber, and emerging technology domains
- Supports teaching and scholarship related to USAFA's National Security learning outcome, including the Nuclear and Space Minors
- Collaborates with external partners such as the Office of the Secretary of Defense, SpOC Space Force, U.S. STAR Command, U.S. Space Command, U.S. Strategic Command, U.S. Northern Command, National Laboratories, and Stanton Foundation for faculty and cadet research.

MAJOR PROJECTS

- The Space and Defense Journal, co-published with the University of Nebraska Omaha, publishing work from cadets, faculty, and our Scowcroft Fellows.
- Working with USSPACECOM, SpOC, STAR Command, Space ISAC, and Catalyst Campus to involve cadets in operationally relevant research projects.
- Creating the Space Opportunities for Learning and Research (SOLAR) group that is focused on facilitating and cataloging interdisciplinary space research at USAFA.
- Creating a PME educational space board game utilized during Azimuth and is being distributed to ROTC detachments.
- Continuing to sponsor national security and emerging domains that bring together experts to discuss cutting-edge issues across their fields and share their expertise with cadet conferences, as we have done seven times in two years.

MS. MADISON WALKER, J.D.
madison.walker@afacademy.af.edu

Institute for Future Conflict (IFC)

The Institute for Future Conflict (IFC) at USAFA is dedicated to creating and cultivating flexible warfighters who are prepared to prevail in conflict regardless of the form it may take in the future. The IFC works across all three mission elements – the Cadet Wing, Dean of Faculty, and Athletic Department – to develop warfighters on the training ground, in the classroom, and through athletic competition. IFC fellows and staff are located in each mission element, teaching courses, developing training, and incorporating best practices into human performance optimization. The IFC teaches Strategic Competition, Adversary Doctrine, Fiction & Future Conflict, as well as a classified course focused on real-world problems. It maintains a publishing platform, *Future Conflict*, which provides analytic and commentary pieces on issues related to the current operating environment. Additionally, the IFC hosts an annual essay and fiction competition for cadets and provides monthly research and intelligence briefings throughout the academic year.

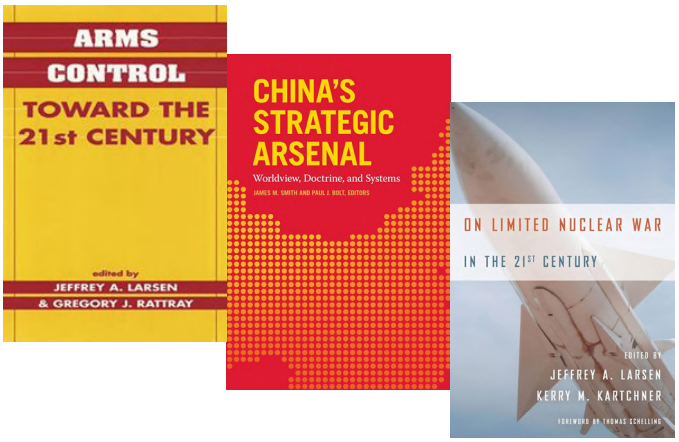
CORE COMPETENCIES

- Strategic Competition
- National Defense Strategy
- People's Republic of China & Russia
- Adversary Doctrine
- Counterterrorism
- Emerging technologies: advanced computing, "bigdata" analytics, artificial intelligence, autonomy, robotics, directed energy, hypersonics, and biotechnology, cyber technology, and drone technology and tactics
- Nuclear Strategy & Deterrence
- Contested Logistics
- Joint Warfighting Concept
- Space Warfighting
- DOD & Air Force Doctrine and Concepts

MAJOR PROJECTS

- Summer Seminars on emerging technologies, warrior ethos, diversity/demography, and the humanities
- United States Space Force Fellowship
- Visiting scholar/scientist program with LANL
- Support of MyMajors academic and career assessment program

GREGORY JOHNSEN
gregory.johnsen@afacademy.af.edu



Institute for National Security Studies (INSS)

The USAF Institute for National Security Studies (INSS) was established in 1992 to advance research and education on strategic policy issues. Its core mission is to promote a better understanding of the nuclear aspects of competition and conflict in the 21st century, although INSS sponsors work on a broad range of national security topics. It aims to prepare current and future U.S. leaders to meet the evolving requirements for strategic stability and deterrence through independent and innovative scholarship, instruction, and outreach. INSS funds and publishes leading-edge, policy-relevant research and organizes workshops, strategic dialogues, and table-top exercises in support of Department of Defense sponsors. It contributes to the Nuclear Weapons and Strategy Minor and broader education and leadership development goals at the U.S. Air Force Academy.

CORE COMPETENCIES

- Strategic stability, deterrence and allied assurance
- US nuclear weapons policy and capabilities
- Analyzing the strategic arsenals, operational concepts, and doctrines of nuclear-armed adversaries
- Arms control, threat reduction, and WMD proliferation
- Integrated deterrence concepts

MAJOR PROJECTS

- *China's Strategic Arsenal: Worldview, Doctrine, and Systems*, published by Georgetown University Press
- *Arms Control at a Crossroads: Renewal or Demise?*, published by Lynne Rienner Publishers
- Alternative North Korean nuclear command and control arrangements: implications for U.S. deterrence and defense planning
- Assessing Japan's evolving "nuclear sharing" debate
- Assessing alternative future deterrence postures for the Indo-Pacific

DR. SHANE SMITH
shane.smith@afacademy.af.edu

Nuclear Enterprise Research Center (NERC)

The Academy Nuclear Enterprise Research Center, hosted by the Department of Physics, focuses on interdisciplinary research in support of the nuclear weapons complex. The center utilizes partnerships across the nuclear enterprise to perform cutting edge research across the nuclear science and policy spectrum. The center supports the Nuclear Weapons and Strategy Minor, and provides research opportunities for cadets of all academic backgrounds and majors.

CORE COMPETENCIES

- Ability to due Classified Research
- Nuclear Detection
- Nuclear Weapon Effects
- Countering Nuclear Proliferation
- Radiation Health Physics

MAJOR PROJECTS

- Space Dosimetry on the iMESA and FalconSEED instruments
- Noble Gas Analysis for Nuclear Forensics
- Nuclear Reactor Modelling
- Particle Distribution Modelling
- Modelling of Radiation Damage and Repair

DR. THIENBAO CARPENCY
thienbao.carpency@afacademy.af.edu

WARFIGHTER SUPPORT

Academy Center for Unmanned Aircraft Systems Research (ACUASR)

The Academy Center for Unmanned Aircraft Systems Research, hosted by the Department of Electrical and Computer Engineering, focuses on adding autonomy to sUAS devices, allowing one operator to control multiple UAS that can autonomously find, fix, identify and track various targets. UAS serve as an excellent platform for our cadets across various disciplines to conduct meaningful research supporting the warfighter.

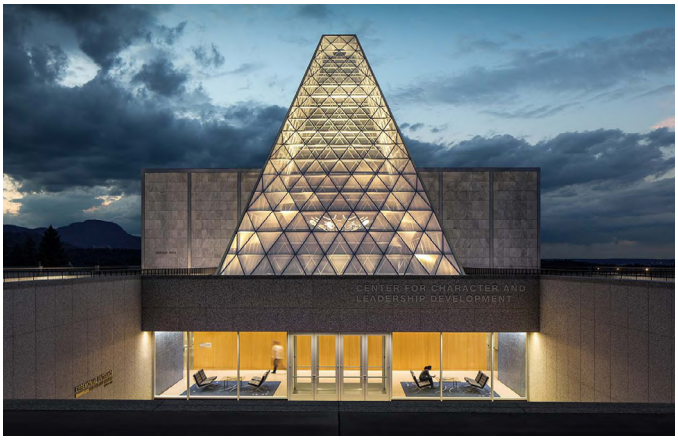
CORE COMPETENCIES

- Simulating and test flying autonomous algorithms for multiple UASs
- Sensor Fusion (EO, IR, RF) & Novel sensor integration
- GPS-Denied Navigation
- Sense and avoid path planning
- Counter-UAS methods
- Red-team swarms

MAJOR PROJECTS

- Won the Boeing Tri-Service Autonomous MicroUAS Swarm Challenge, defeating USMA and USNA
- Hosted a five University Counter-UAS demonstration at the USAFA
- Developed Range-Sensor and Image-based Navigation for GPS denied environments
- DARPA Service Academy Swarm Challenge Competition, a drone war fielding 25 autonomous USAFA UASs vs 25 USMA/ USNA UASs

LT COL NEIL ROGERS
neil.rogers@afacademy.af.edu



Center for Character and Leadership Development (CCLD)

The Center for Character and Leadership Development is the Academy's most visible focal point for understanding, enhancing and integrating Academy cadet and staff efforts to achieve the essential mission of developing officers of character. CCLD conducts research and brings scholars and practitioners together to understand the evolving Profession of Arms and the changing demands of military leadership and character development. We support the developmental processes which prepare cadets to serve effectively as leaders.

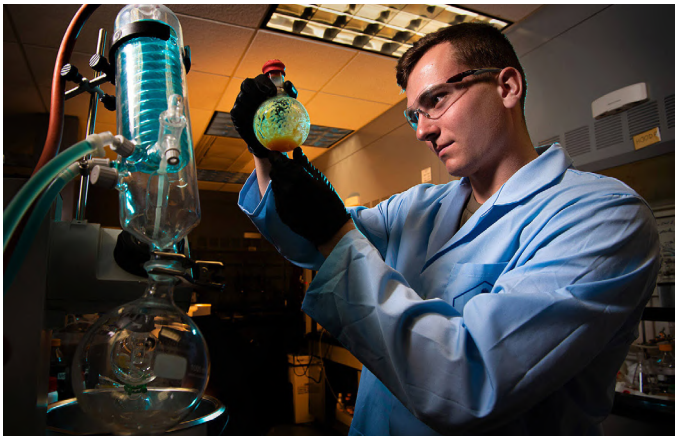
CORE COMPETENCIES

- Generates and shares research, assessment and understanding of military character and leadership questions of importance
- Designs and coordinates selected professional development activities for Academy-assigned personnel, to provide for their own personal growth and to enhance cadet development
- Leverages the newly-completed Polaris Hall to support both cadet development and USAFA institutional outreach to external (USAF, DOD, national and international) discussants in character and leadership issues
- Publishes print and electronic scholarship in the field of character and leadership integration

MAJOR PROJECTS

- Publication of the Journal of Character and Leadership Development
- Executed the annual National Character & Leadership Symposium and Scholars Forum
- Developed and delivered professional development workshops and seminars for staff, faculty, and cadets and created the Superintendents Leader of Character Certificate program

DR. JUSTIN STODDARD
justin.stoddard@afacademy.af.edu



Chemistry Research Center (CRC)

The research team in the Chemistry Research Center at the U.S. Air Force Academy focuses on new chemical discoveries from to meet operational Air Force and DOD mission partner needs as well as private partnerships with academia and industry. CRC and the Department of Chemistry faculty have proven success through external partnering with academia, industry and national laboratories in order to leverage an expanding technology base.

CORE COMPETENCIES

- Advanced materials and composites processing and fabrication
- Robust small molecule, biomolecular and macromolecular synthesis and characterization
- Molecular computational modeling and simulation for predictive chemical properties
- Senior and post-doctoral associates and faculty with a broad spectrum of specialties to adapt to the ever-changing world of chemistry challenges
- Support expanding DFC cadet research, faculty professional development, and pedagogical innovation through grant management and resource allocation

MAJOR PROJECTS

- Light harvesting material for new solar/green technologies towards federal zero net energy goals
- Stimuli-responsive coatings for the development of chemical warfare nerve agent detection
- High temperature resins and high strength fibers for next-gen solid rocket motor case composites
- Metallized composites from additive manufacturing towards structural energetics for propellants with tunable energy output

DR. SCOTT IACONO
scott.iacono@afacademy.af.edu

Life Sciences Research Center (LSRC)

The Life Sciences Research Center's primary mission is to support the Air Force Office of Scientific Research (AFOSR) and the Defense Health Agency (DHA) through faculty and cadet research efforts. The main objective of the LSRC is to develop basic research within a broad range of biological sciences topics. Multidisciplinary, there are two main research thrusts which include biomedical and Natural Materials and Systems.

CORE COMPETENCIES

- Wastewater-based epidemiology for human infectious disease
- Engineering biology – cultivating/isolating select extremophile cyanobacteria towards creating new synthetic biology tools under various environmental conditions for materials synthesis

MAJOR PROJECTS

- Natural Materials and Systems – isolate extremophiles with interesting and robust mechanisms in order to harvest genetic parts from unusual chemistries/phenotypes found in nature, such as desiccation, biostasis, radiation resistance, etc., and impart those phenotypes into different biosystems for materials synthesis and/or synergistic functionalities.
- Biomedical – Wastewater-based epidemiology: evaluate methodologies to perform surveillance of wastewater to identify the prevalence of human pathogens within a population. Vaccine development: investigate the immunologic response to a vaccine candidate strain of *Francisella tularensis* to assess cell types associated with immunity and their responses.

LT COL DAVID MORRIS
david.morris@afacademy.af.edu

Warfighter Effectiveness Research Center (WERC)

Since 2015, the WERC's motto has been "developing tomorrow's leaders with today's warfighter research." Cadets, faculty, staff, and external collaborators engaged in this research conduct basic and applied studies in human-machine teaming, trust in autonomy, the science of influence and the will to fight, ethical and trustworthy social robotics, wearable technology, and use of virtual and mixed reality systems in training and operations. As part of the Department of Behavioral Sciences and Leadership, the WERC examines human, team, and organizational performance with these new tools and artificial teammates in laboratory and real-world mission environments. Current collaborators include government laboratories, academia, industry and military operators — all dedicated to the same warfighter-focused approach to science and technology.

CORE COMPETENCIES

- Systematically develop cadets to think more scientifically, innovatively design technology and operate on the battlefields of future conflict
- Fuse interdisciplinary methodologies to understand and develop future human-autonomy systems for effective and ethical performance
- Integrate robust objective, subjective, and physiological measurement of concepts, strategies, and technologies into real-world mission environments
- Understand the social, psychological, and physiological mechanisms of influence and assist with its use in the human/information domain

MAJOR PROJECTS

- Robots as ethical social agents in human-machine teaming contexts
- Autonomous driving using the Tesla Research Vehicle
- Future Warrior: Wearable Technology & Human State Monitoring
- Pilot Training Next – Experimental: Using VR and XR in future training
- Cross-cultural research towards understanding the will to fight and assisting real-world influence operation

DR. RICHARD NIEMEYER
richard.niemeyer@afacademy.af.edu

OTHER DEPARTMENTAL RESEARCH

Department of Civil and Environmental Engineering (DFCE)

The Department of Civil and Environmental Engineering produces problem solvers, meeting the challenges of environmental degradation, building and improving infrastructure, energy needs, natural disaster responses, sustainable development and community planning by improving the full spectrum of the built environment.

CORE COMPETENCIES

- Fully functional soils laboratory
- Static structural testing capability via a 25-foot-long reaction floor and multiple hydraulic actuators
- A high-bay laboratory space with a 5-ton crane and multiple universal testing machines
- Extensive experience with multiphase flow simulation techniques

MAJOR PROJECTS

- Forest service bridge design and construction
- Screening-level modeling of bioenhanced dissolution in field-scale bioremediation remedies
- Tools for the prediction of PFAS transformation, transport and retention in AFFF source areas
- Use of energy foundations to provide geothermal heating and cooling to buildings
- Integrating responsible engineering and local knowledge to design, implement and evaluate sustainable engineering solutions in Latin America

DR. SEAN MULHOLLAND
sean.mulholland@afacademy.af.edu

Department of Electrical and Computer Engineering (DFEC)

The Electrical and Computer Engineering Department complements its rigorous and diverse course of study with a wide variety of immersive research projects. Each cadet is required to select a capstone project and contribute meaningfully to the advancement of the state-of-the-art in their chosen depth area. Each of the Department's research projects applies directly to a current challenge within the Department of Defense or commercial sector. These projects integrate concepts from coursework, while building critical thinking and systems engineering skills. They serve as a pathway to develop the next generation of technical leaders in the world's most technologically advanced Air Force, whether as Pilots, Developmental Engineers, Cyber Officers, Intelligence Officers, or any other career field.

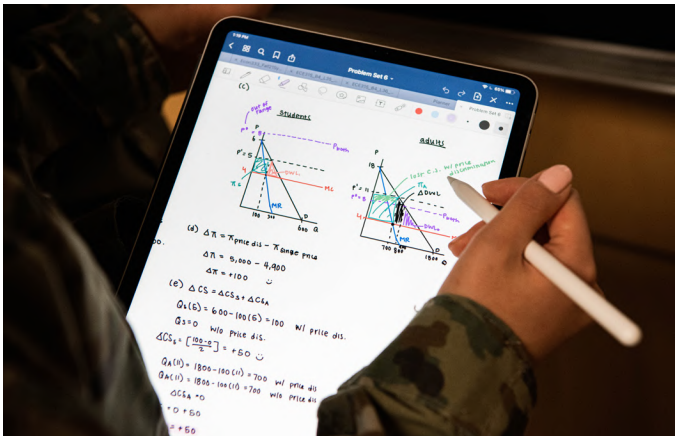
CORE COMPETENCIES

- Alternative Computing Architectures
- Assistive Technology
- Autonomy
- Electronic Warfare
- Machine Learning
- Power Electronics and Power Systems
- Robotics
- Target detection and tracking

MAJOR PROJECTS

- Autonomous Radio Frequency Direction Finding Robot
- BDA Using Alternative Sensors and Compute Devices
- Detection, Tracking, and Mitigation of small Unmanned Aerial Systems (sUAS)
- Electronic Cyber Warfare
- Embedded Systems Capture-the-Flag Team
- Flexible power systems for wireless charging
- Multi-agent Robot Teaming
- Rapid Autonomous Triage System (mass casualty assessment)
- Semi-autonomous, eye-gaze controlled wheelchair
- Small Cheap Assisted Munitions Pointer

DR. GEORGE YORK
george.york@afacademy.af.edu



Department of Economics and Geosciences (DFEG)

The Department of Economics and Geosciences (DFEG) combines economics and geosciences. The use of mathematical models and econometrics develops cadets' skills in critical thinking, scientific reasoning and data analysis. Geography is the study of people, place and their interactions and the use of geospatial tools such as Geographic Information Systems (GIS) and remote sensing to aid in solving problems ranging from geospatial intelligence to environmental studies. The department also supports the Foreign Area Studies and Operations Research majors. DFEG faculty are also involved in research projects for the Office of Labor and Economic Analysis (OLEA).

CORE COMPETENCIES

- Applied Microeconomics including Economics of Education, Environmental, Sports, Defense, Labor and Public Economics
- Experimental and Behavioral Economics
- Physical and Human Geography and Geospatial Science
- Geospatial technologies including Cartography, Geographic Information Systems (GIS), and Remote Sensing

MAJOR PROJECTS

- Publications in academic journals and presentations at scholarly conferences
- USAFA academic probation, academic advising, cadet pay and their effects on student outcomes
- US Thunderbirds performances and USAF retention/ reenlistment
- Remote Sensing (including UAS) and GIS Environmental Research

DR. AMELIE DAVIS
amelie.davis@afacademy.af.edu

Air Force Humanities Institute (AFHI)

This interdisciplinary organization offers a wide array of programs, lectures, interviews, art exhibits, fine art performances, seminars, colloquia, and discussions aimed at fostering cross-disciplinary conversation and exchange. AFHI allows USAFA faculty and cadets a forum for exploring a range of diverse intellectual traditions and paradigms that enrich our understanding the human condition.

CORE COMPETENCIES

- Examining the intersections of art, literature, technology, history, culture, science and ethics
- Promoting interdisciplinary dialogue about perennial questions bearing on the human condition
- Fostering cross-talk between STEM and the Humanities
- Facilitating creativity and ethical reflection through fine art, imaginative literature, history, philosophy and foreign language
- Providing professional development and research opportunities for faculty and cadets.

MAJOR PROJECTS

- Lectures
- Speakers
- Critical Conversations for cadets
- Interdisciplinary faculty conversations & colloquia
- Performing arts presentations & studio art exhibits
- Faculty development seminars
- Returning warrior & veteran outreach

DR. TOM MCGUIRE
thomas.mcguire@afacademy.af.edu

Department of English and Fine Arts (DFEN)

Research in the Department of English and Fine Arts takes many forms: faculty publications and conference presentations, cadet research under faculty mentorship, and an international footprint with the journal *War, Literature and the Arts*. Cadets also conduct faculty-supervised research through the department's extracurricular enrichment opportunities, including USAFA's undergraduate literary magazine *Icarus*, work displayed in the Permanent Professors Art Gallery, USAFA Forensics, poetry performance team Steel Script, and more.

CORE COMPETENCIES

- Research and scholarship for professors and cadets
- Effective communication in oral and written formats
- Research in the multiple academic disciplines, including classical studies, creative writing, literary studies, rhetoric and composition, public speaking, and creative art
- Development of critical thinking skills and respect for the human condition through the analysis of literary and artistic works

MAJOR PROJECTS

2024 Cadet Capstone Research Projects:

- C1C Maximillian J. Buck, "The Metatheatricality of *Hamlet*: Uniting Literary Critical and Performance Studies Methods"
- C1C Emilee Denslow, "Lesbian Love in 17th- and 18th-Century Poetry"
- C1C Chloe Edwards, "Overshadowed" (poetry and narrative prose collection)
- C1C Daniel T. Garza, "Delusions of the Civil War: How the Film *Gone with the Wind* Influences How We Remember One of America's Most Destructive Conflicts"
- C1C Keillan Elijah Laurenceau, "Changing the Changeling: How Marilynne Robinson Repurposes the Myth for Modern Life"
- C1C Mack Lucas, "A Necessary Drive to Understand Trauma: How Aimee Bender Merges the Real and Magical"
- C1C Kristina McCune, "Setting Fiction on Fire: My Reflections on Adoption in Ng's *Little Fires Everywhere*"
- C1C Russell Olson, "American Cryptids"
- C1C Jaricsa M. Vega, "Improving USAFA Admissions' Outreach in Inner-City Districts: A Look at South Los Angeles"

DR. AMY COOPER
amy.cooper@afacademy.af.edu

Department of History (DFHI)

DFH connects the past and the present, sharpening analytical and critical thinking skills through the study of history. Both faculty and cadets conduct research that is vibrant and thoughtfully engages U.S., military, and global perspectives. Cadet research, which regularly includes travel to archives and historic sites, culminates in a two-semester capstone experience that allows cadets to present the fruits of their research labors by either writing a senior thesis, producing a series of podcasts, or creating a video documentary. Faculty research not only leads to the production of numerous scholarly works, but also enhances faculty members' teaching and mentoring of cadets.

CORE COMPETENCIES

- Critical thinking and analytical skills.
- Effective spoken and written communication.
- Research opportunities for cadets and faculty mentorship of cadet research.
- Faculty research, publications, participation on editorial boards, and presentations at conferences and public events.
- Faculty affiliations with the American Historical Association, the Society for Military History, the Society for French Historical Studies, the Society for Historians of American Foreign Relations, the Organization of American Historians, the American Society for Ethnohistory, the Society of Civil War Historians, the African Studies Society, and the World History Association.

MAJOR PROJECTS

- 14 CSRP slots for History and FAS-History cadets.
- 22 cadets took part in a two-day Holocaust, Genocide, and Prevention of Mass Atrocities Workshop with the U.S. Holocaust Memorial Museum.
- Faculty publications in Middle East Studies, Journal of Intelligence and Counter-intelligence, War on the Rocks, Journal of Character and Leadership Development, Journal of West African History, Innovations in Higher Education Teaching and Learning, International Journal of Naval History, and The Handbook of Latin American Studies.

DR. CHUCK STEELE
charles.steele@afacademy.af.edu

Department of Languages and Cultures (DFLC)

Research and faculty development in the Department of Foreign Languages is about encouraging innovative, interdisciplinary research and teaching at once, while paying due attention to the details of a particular topic without losing sight of the larger questions raised by history, literature, philosophy and the study of language and cultures. Today's officers from all Air Force career fields and specialties will find themselves globally engaged. The Department of Foreign Languages & International Programs provides future officers with broad-based, foreign area-related skills for worldwide service commitments.

CORE COMPETENCIES

- Educational and developmental resources for teachers and cadets
- Research publications and scholarly presentations for teachers and cadets
- Faculty hold memberships in various professional organizations including: Colorado Congress of Foreign Language Teachers, Southwest Conference on Language Teaching, American Council on the Teaching of Foreign Languages, and Modern Language Association
- Cadets can study Arabic, Chinese, French, German, Japanese, Portuguese, Russian or Spanish—eight of the most important languages in the world.

MAJOR PROJECTS

- Cadet Summer Language Immersion Program (CSLIP)
- Cadet Semester Exchange Abroad Program (CSEAP)
- Cadet Semester Study Abroad Program (CSSAP)
- Foreign Academy Visit (FAV) Program
- Cultural Immersion Program (CIP)

DR. JAMES RASMUSSEN
james.rasmussen@afacademy.af.edu

Department of Law (DFLA)

The Department of Law uses the law as a vehicle to fine-tune cadets'critical thinking and communication abilities, preparing them to think through and develop clear solutions for the complex challenges they will encounter throughout their careers. Along with educating cadets, DFL also has two research efforts – the Law, Technology, and Warfare Research Cell (LTWRC) and the Leadership and Appropriate Dispute Resolution (LADR) Program. The LTWRC researches the law related to the use of technology in military operations. The LADR Program is a center for thought leadership in managing and resolving conflict in the mil-mil, mil-civ, and international domains.

CORE COMPETENCIES

- Critical Thinking
- Effective Communication
- Law of War/International Humanitarian Law
- Legal Use of Technology in Warfare
- Negotiations and Appropriate Dispute Resolution

MAJOR PROJECTS

- Participation in International Humanitarian Law, Negotiation, and Cyber Policy undergraduate competitions
- Collaboration with USSPACECOM and USCYBERCOM on researching the legality of military operations in those domains
- Facilitating undergraduate legal research opportunities
- Leading Air Force wide conflict resolution training and knowledge production

DR. JEFFREY BILLER
jeffrey.biller@afacademy.af.edu

Department of Management (DFMA)

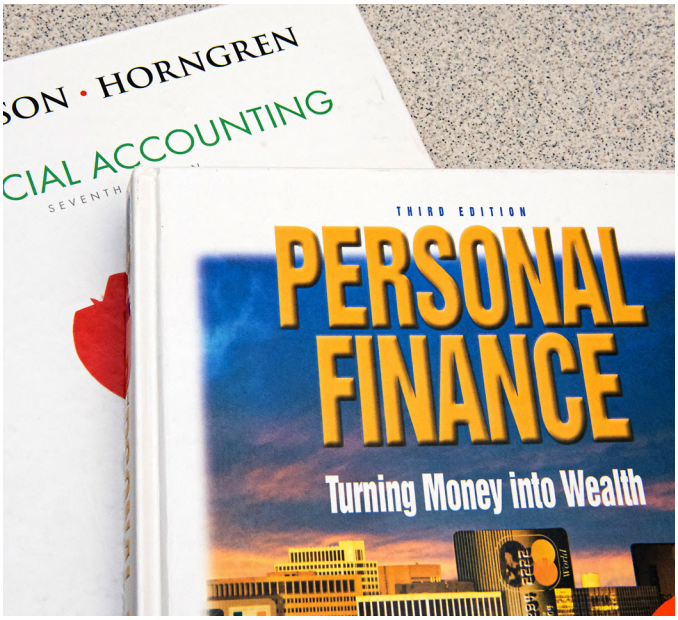
The Department of Management produces critical thinkers who are able to adapt quickly in today's dynamic, technologically complex, global environment—skills that are essential for Air Force officers and future community leaders. Depending on their focus, cadets study traditional business topics like accounting, finance, human resource management, marketing, production & operations, information systems, strategy, operations research, systems engineering and other aspects of management.

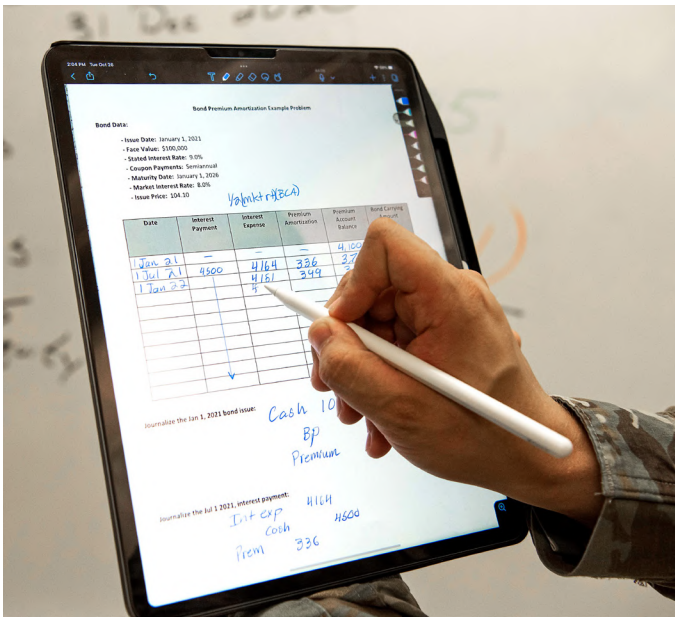
CORE COMPETENCIES

- Human Systems – to include Organizational Behavior, Human Resource
- Management, and Organizational Development
- Financial Systems – to include Financial and Managerial Accounting and Finance
- Material Systems – to include Data Science and Analytics, Operations Research, and Systems and Management Sciences
- Integration of Systems – to include Strategic Management, Innovation, and an international perspective in a systems environment

MAJOR PROJECTS

- Collaboration with local government organizations and nonprofits to improve processes and provide decision support
- Consultation with local nonprofits and social service organizations on marketing, volunteer retention, social media and management
- Review and evaluate institutional marketing strategies to bolster the USAFA brand
- Finance research, including analyzing correlation in investment portfolios and the relationship between student loan debt and bankruptcy
- Research to develop a theoretical understanding of how individuals and systems thrive
- Sports analytics research, including entropy modeling to understand momentum in hockey
- Data analytics research, including data visualization dashboards for pandemic response and assessing the public health effect of university reopening decisions





DR. AMANDA BUDDE-SUNG
amanda.budde-sung@afacademy.af.edu

Department of Mechanical Engineering (DFME)

The Department of Mechanical Engineering develops Air Force problem-solvers to meet the needs of the warfighters through innovative design techniques, infrastructure monitoring and improvements, aging aircraft analysis and solutions and aircraft structural integrity improvement. In addition to consistent faculty research, multiple cadet research opportunities are provided via cadet summer research opportunities, senior capstone projects and independent cadet research endeavors.

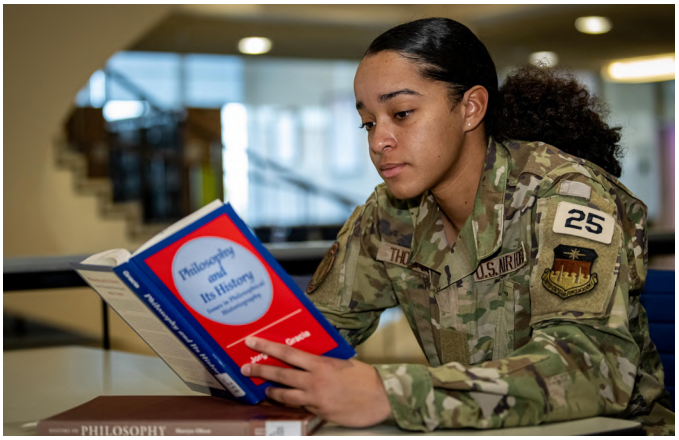
CORE COMPETENCIES

- Developing and teaching innovative design methodologies
- Materials characterization including microstructure, properties and corrosion effects
- Fatigue, corrosion and welding effect testing
- Composite structures and additive manufacturing
- Automotive laboratory including chassis dynamometer
- Vibrational and structural response testing under transient loading
- Finite Element Analysis (FEA) and Computational Fluid Dynamics (CFD)

MAJOR PROJECTS

- Effects of friction stir welding on metal microstructure, corrosion resistance and mechanical properties
- Fatigue and corrosion characterization and protection, including crack growth and residual stress effects
- Additive manufacturing for ordnance disposal, titanium alloys and supersonic particle deposition for aircraft structural repair
- Cadet capstone competitions resulting in multiple first place finishes for the annual Corrosion Design Competition and the Service Academy Challenge
- Thermodynamic analysis of real-world applications, including aircraft icing, athletic stadium field de-icing, and airbase petroleum oil and lubricant distribution systems
- Dynamic characterization of composite aircraft skin panels

DR. IOAN FEIER
ioan.feier@afacademy.af.edu



Department of Philosophy (DFPY)

The Department of Philosophy takes great pride in being the only stand- alone philosophy department among U.S. service academies. Like nearly all philosophy departments, DFPY emphasizes critical thinking in several domains, including aesthetics, ethics, applied ethics (e.g. military and STEM ethics), philosophy of language and mind, logic, metaphysics and philosophy of religion. In addition to the philosophy major, the department administers the philosophy minor and religion studies minor.

CORE COMPETENCIES

- Critical thinking in military ethics, especially the just-war tradition; all department members teach and publish in this area
- Cadets hone oral and written communication, critical thinking, and decision-making skills throughout 40 discussion-oriented, writing-intensive lessons

MAJOR PROJECTS

- Publishing textbook in engineering ethics
- Study of the philosophy of religion while growing and sustaining the first studies minor at a U.S. service academy
- Publishing and providing editorial assistance in major disciplinary organs such as the international Journal of Military Ethics
- Hosting the biennial meeting of the International Society for the Philosophy of Architecture
- Co-hosting the International Symposium on Military Ethics (ISME) annual meeting with UCCS

MAJ AMANDA RODRIGUEZ
amanda.rodriguez@afacademy.af.edu

Department of Political Science (DFPS)

DFPS develops officers who are intellectually agile, who are alert to new domains and new threats, who can adapt to rapidly changing environments, who will question dominant or conventional thinking, and who will be ready as strategic thinkers to lead the Air Force in facing multiple complex challenges. We develop strategic thinkers in part through our research programs, which include our annual Academy Assembly, model experiences (Model NATO/EU), cadet participation in conferences, the Dean's Summer Research Program, the department's Cadet Summer Research Program, and encouragement of faculty members to conduct research that contributes to the body of knowledge in the political science discipline.

CORE COMPETENCIES

- National security and grand strategy
- The institutions and behavior of American government, including civil-military relations
- Political philosophy and methodologies for understanding political science
- International relations
- The political institutions and behaviors of countries around the world

MAJOR PROJECTS

- *American Defense Policy*, published by Johns Hopkins University Press
- Partnership with the Army War College on civil-military relations in the U.S. and abroad
- Book project on space policy
- Minerva grant with the University of California-San Diego and other institutions funding research on economic statecraft
- Brazilian responses to COVID
- Russian strategic culture

DR. DAMON COLETTA
damon.coletta@afacademy.af.edu

OFFICE OF RESEARCH

SERVICES

Col Dan Finkelstein, Associate Dean of Research, is the Director of the USAFA Office of Research (DFQ). DFQ exists to support researchers as they develop our nation's future leaders. The Office of Research does this by enhancing cadet education, providing DOD warfighter support, opportunities for faculty development, and partnership for technology transfer. Contact DFQ to find out more about additional services offered.

BUDGET OFFICE

DFQ Budget Analysts are responsible for assisting research centers and departments execute over $40M in annual funding, from providing contract support, accepting and obligating funds, processing purchase requisitions, to funds reconciliation, reimbursements and everything in between.

AGREEMENT SERVICES

DFQ provides administrative guidance and support on agreements (CRADAs/MOUs/MOAs/EPAs/etc.) and assists with research and tech transfer tasks, inquires, and deliverables.

PUBLIC RELEASE

DFQ is responsible for approving the public release of USAFA research publications and other external communications. PA numbers are provided after submissions are cleared for public release.

RESEARCH EXCHANGE PROGRAM

DFQ provides guidance and coordination for the Summer Faculty Fellowship Program (SFFP), Engaging Scientists and Engineers Program (ESEP), Administrative Professional Exchange Program (APEP), and the National Research Council/Research Associate Programs (NCR/RAPs). Research over a summer period of 8-12 weeks.

TECHNOLOGY TRANSFER AND TRANSITION SERVICES

The Office of Research offers in-house services to assist researchers in the T3 process. Services include assistance with invention disclosures, patents, and agreements. The Office of Research also coordinates with industry partners for commercialization opportunities.

DFQ DEPUTY DIRECTOR

Directs the Office of Research Staff in managing the annual research budget, sustaining hundreds of research collaborations, and facilitating technology transfer & transition in support of Air Force Academy research endeavors involving faculty, staff and cadets, often in partnership with government and industry research partners.

AFRL LIAISON

The Air Force Research Laboratory (AFRL) Liaison to The United States Air Force Academy and coordinates research activities between USAFA Research Centers and Dean of Faculty entities with AFRL promoting collaborative research and Science & Technology (S&T).

CONTACTS

COLONEL DANIEL FINKELSTEIN
Associate Dean of Research
719-333-4195

MR. DAVID BLANKS
AFRL Liaison to HQ/SpOC & USAFA
719-333-3378

MR. RICK ROGERS
Deputy Director, Office of Research
719-333-2847

MS. TIANA LOPEZ
Research Administrative Assistant
719-333-4195

MS. TERESA WHINNERY
T3 & Agreements Program Manager
719-333-3978

MS. ANDREA OSTEROOS
Chief Budget Officer
719-333-2759

MS. AMY BERG
Director of Outreach
719-333-3327

DR. JANA WEINER
Assistant Director of Research Curriculum and Programs
719-333-6479

OFFICE OF RESEARCH

Website
usafa.edu/research/office-of-research

Email
researchoffice@afacademy.af.edu

Mailing Address
Dean of Faculty Office of Research
HQ USAFA DFQR
2354 Fairchild Drive, Ste 2H29
U.S. Air Force Academy, CO 80840
Phone: 719-333-4195

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