NEVADA SYSTEM OF HIGHER EDUCATION

NSHE Aerospace / UAV Research & Programs

The Nevada System of Higher Education's ongoing goal is to continue to drive innovation and economic development, while aligning with a highly-skilled workforce. One of those key sectors is aerospace technology and the rapidly growing field of Unmanned Aerial Vehicles (UAV).

Selected Research

Nevada NASA EPSCoR and Space Grant

Nevada's NASA Experimental Program to Stimulate Competitive Research (EPSCoR) and Space Grant programs provide funding for faculty and students to engage in research on topics of strategic interest to NASA, the State of Nevada and NSHE.

Aerospace engineering and research is an important element of NASA's strategic plan and as such, NSHE faculty and students may apply for grants, scholarships and internships to advance education and research within this topic area.

NSHE submitted a new Space Grant proposal, for which we recently received notice of award, that listed Unmanned Aircraft Systems (UAS) as an important focal topic for new research infrastructure development. NSHE faculty will be encouraged to seed funding from this new award to advance UAS education and research within the state.

Current projects funded by NV NASA EPSCoR and Space Grant programs related directly or indirectly to aeronautical research include:

- Advanced Computer Vision, Robotics, and Visualization Algorithms for Improving Planetary Exploration and Understanding; Lead PI is George Bebis (UNR). The goal of this project is to advance NASA's computer vision, robotics, and visualization technologies with the purpose of improving planetary exploration and understanding.
- Advanced Electroactive Polymer Sensors and Actuators for Aerospace Robotic Applications; Lead PI is Kwang Kim (UNLV). This collaborative project involves technical experts from UNLV and UNR who are developing enhanced electroactive polymer material sensors and actuators with improved adaptability for space-related applications and environments. Also, aerospace related educational activities are being developed in close collaboration with Truckee Meadows Community College.

Desert Research Institute

Scientists and engineers at the Desert Research Institute have utilized manned and unmanned aerial acquisitions since the early 1970's to meet research goals associated with atmospheric and ecological assessment and monitoring. Many of the Institute's early unmanned efforts employed various balloon platforms to measure a number of atmospheric properties along a vertical profile.

Recognizing the importance of assessing horizontal spatial heterogeneity and acquiring timely synoptic coverage of ecosystem processes, DRI faculty and students have been actively developing modern UAV platforms with several partner institutions.

Examples of these efforts include the design, fabrication and deployment of sensors and sensor packages, real-time and post data collection analytics and data visualization utilizing DRI's state-of-the-art, six-sided Virtual Reality Enclosure.

Several DRI researchers are pursuing atmospheric sensor miniaturization to adapt sensors and sensor packages originally deployed on manned aircraft for UAV platforms and look forward to the potential to collaborate with industry on these efforts. DRI faculty currently hold four sensor patents and have commercialized three versions of a photoacoustic instrument for Droplet Measurement Technology. Other researchers are actively pursuing enhancement of DRI's UAV hardware through future purchases of both fixed wing and helicopter UAV platforms and several commercially available sensors such as a hyperspectral imaging sensor.

For details on specific programs, please visit www.nevada.edu/aero

University of Nevada, Las Vegas

UNLV is committed to high quality research and programs in robotics and autonomous systems and is quickly becoming a hub for this burgeoning industry. An interdisciplinary team of scientists, engineers, policy and legal experts are active partners with state research and economic development agencies. UNLV faculty have funded research in a variety of UAS applications, from sensor design and system development to legal and policy implications; program alumni have started a spin-off robotics company that develops aerial systems for scientific and industrial use; and this spring, the College of Engineering launched a Drones and Autonomous Systems Laboratory led by noted UAS researcher Paul Oh.

University of Nevada, Reno

UNR is home to the Nevada Advanced Autonomous Systems Innovation Center (NAASIC) which focuses on finding solutions to advance the development, application, and commercialization of UAS. NAASIC team members collaborate with Nevada private industry to enhance funding opportunities, training programs, networking and technology transfer opportunities.

Certificate & Degree Programs

College of Southern Nevada

Offers an Associate of Applied Science in Aviation Technology. Students learn the application of concepts pertaining to airport and aircraft operations for domestic and international flights. Students may select from track options that place an emphasis on professional pilot or flight operations. After earning their degree, students are prepared to enter the market as professional pilots, flight crew members, or flight operations specialists, crew schedulers, flight followers, customer service representatives, and aircraft servicing personnel.

Truckee Meadows Community College

Offers classroom training required before future pilots take to the air. TMCC's pilot training courses meet all Federal Aviation Administration standards and are taught by highly-qualified, FAA-certified instructors. Course work is supplemented with visits to local airports, tower control, radar service stations and aircraft maintenance shops. Students who complete the TMCC aviation courses are referred to local flight schools to continue their training.

TMCC also offers an Unmanned Aerial Systems Certificate Program which prepares students to build and repair unmanned aerial vehicles.

Western Nevada College

Offers a Private Pilot/Sport Pilot Ground School through the college's Division of Economic and Workforce Development. The non-credit class is offered twice a year and provides private pilot/sport pilot instruction in the following areas: airspace, Federal Aviation Regulations (FAR), aeronautical medical factors, weather, navigation, aerodynamics, airplane systems and weight and balance. Advanced aviation device simulator training is included. Successful completion of the course enables students to take the Private Pilot Ground School examination.

University of Nevada, Las Vegas

Offers a Master of Science in Aerospace Engineering designed to improve and enhance the capabilities of those students seeking careers in the aerospace field and supporting engineering work for the aerospace and aviation technology community.

Also offers an Unmanned Aircraft Systems certificate and minor program. This program provides an interdisciplinary approach that covers UAS design and operation, as well as privacy and legal issues. UNLV's proximity to federally designated UAS airspace combines with substantial faculty expertise to create a unique opportunity for learning state-of-the art UAS technology. The UAS certificate is offered in partnership through UNLV Continuing Education and The Howard R. Hughes College of Engineering.

University of Nevada, Reno

Offers an interdisciplinary minor in unmanned autonomous systems for students majoring in computer science and engineering, electrical engineering, and mechanical engineering.

For details on specific programs, please visit www.nevada.edu/aero