



The School of Engineering: KU Aerospace Engineering (KUAE) Small Satellite Initiative

“A healthy and vibrant Aerospace Engineering Program requires experiential research opportunities for diverse students in both aeronautics and astronautics. The time is right to leverage our strengths in suborbital remote sensing to expand opportunities for orbital remote sensing with small satellites, ensuring we recruit and retain the best students to KU Engineering.” - Richard Hale, Ph.D., C.E. and M.J. Spahr Professor and Chair, Aerospace Engineering

Immediate Opportunity: NASA has approved the University of Kansas proposal for the CubeSat Launch Initiative that launches small payloads beyond Earth’s atmosphere. As such, we are officially in the queue for a future launch, likely in 2019/20.

Vision: While current students, staff and faculty can rally to develop a single small satellite launch, *KUAE wishes to see a sustained student program of designing, fabricating, ground testing, launching and operating small satellites for education and research opportunities.* Investments in faculty, facilities, equipment and students will provide a state-of-the-art infrastructure for education and research leading to:

- A vibrant training ground for aerospace engineers with experience in space systems
- Innovations in payloads, aerospace systems, and industry relevant research
- Scientific discovery in other disciplines by enabling orbital remote sensing
- Practiced, experienced engineering leaders prepared for the workforce

KUAE Strengths: The University of Kansas offers a broad education in Aerospace Engineering, with more required technical depth across subsystem specialties than most accredited programs. KUAE students have won more aerospace design awards (aircraft, propulsion and spacecraft) than any other aerospace program. Our research on developing airborne systems for suborbital environmental remote sensing is recognized internationally. This vision leverages these strengths leading to sustained developmental of orbital remote sensing systems for education and research.

Action Plan:

- 1) Support for Initial Launch: (\$50,000 in hardware and travel)
- 2) Facility Renovations (naming opportunities also available)
 - a. Renovation of dedicated small satellite maker-space, with clean room (\$75,000)
 - b. Contribution of flight hardware, ground “flat-sat” hardware, and industry expert consulting (identified)
 - c. Renovation of collaboration space for student design and analysis (\$75,000)
 - d. Equipment for newly renovated graduate student collaboration space (\$25,000)
- 3) Faculty Hire in the area of space systems, to include small satellites, space robotics and related sub-specialties supporting orbital remote sensing, to supplement our existing strengths in suborbital remote sensing. The new hire will collaborate with many faculty in Aerospace Engineering, the Center for Remote Sensing of Ice Sheets (CRISIS), Electrical Engineering, Physics and other to advance multi-disciplinary research and education, and build a sustained externally funded research program.
 - a. Position to be filled as early as Fall 2019, with available funds for entry-level faculty salary.
 - b. Donors wishing to see a more immediate transition to an established program of relevant research may consider supporting a senior faculty hire. Recruiting a candidate with exceptional qualifications, likely to require rank of Full Professor, will require philanthropic support to provide salary augmentation and higher start-up costs. A named, Endowed Professorship would be required.
 - c. Faculty Startup Funds support research facilities, equipment and graduate and undergraduate research assistants
- 4) Unrestricted program support to offer annual flexibility in needs for undergraduate and graduate student support, research infrastructure, faculty startup, equipment, supplies, travel, launch costs and other (>\$500k optimal)

Join us to Make a Difference: The Department of Aerospace Engineering provides the knowledge and experience necessary to enable generations of technical innovation. Partner with us on one or more action plans in this initiative and position KU as a leader in Aerospace teaching and research for orbital and suborbital remote sensing. For more information on the Small Satellite Initiative, please contact Richard Hale, Spahr Professor and Chair, Aerospace Engineering, (785)-864-2949, rhale@ku.edu. To join us to make a gift in support of the small satellite initiative, please contact Michael Arp, Development Director and Team Lead, KU School of Engineering, Kansas University Endowment Association, (785) 832-7410, MArp@KUEndowment.org.