Kentucky Space Grant Consortium Profile

The Kentucky Space Grant Consortium began serving the Commonwealth in 1991 and since 2010 has been managed at the University of Kentucky

Kentucky Space Grant Consortium (KYSGC) is led by the University of Kentucky (UK) and consists of 29 affiliate members, including 18 Kentucky higher education affiliates (universities, colleges and community colleges), 5 industry partners, and 6 STEM educational organizations. The primary goal of Kentucky Space Grant Consortium is to serve the needs of its stakeholders, develop expertise and expand capacity for aeronautics, space and science research and education in Kentucky. KYSGC uses a portfolio-of-programs approach and best practices to set students and faculty on *Pathways of Opportunities* toward aerospace-related career goals, contributing to a more skilled and high-performing workforce to meet emerging needs of both NASA and Kentucky. KYSGC programs engage competitively selected participants in STEM education and training primarily at the post-secondary level, including developmental pipeline pre-college programs. Participation of the state's students and faculty, multiple academic disciplines and institutional types is essential and integral to success of the program. KYSGC is administered and hosted by the UK Department of Mechanical and Aerospace Engineering.

State Demographics: Kentucky is the 36th largest state by land area with a population of 4.5 million, divided 60/40 between urban and rural residents of which 22% identify among minority and multiracial groups. Kentucky's economy, once largely agricultural and extractive, is now led by healthcare, education and manufacturing as major employers. Key industrial sectors include automotive (Toyota, Ford, GM), logistics (UPS Worldport, DHL, Amazon), and business/consumer products (Lexmark, GE). Aerospace industries support 23,000 jobs, generating $16.2 billion in 2022 revenue and recognized as a national leader in aerospace manufacturing.

State and NASA Priorities: KYSGC integrated programs leverage NASA alignment and state educational goals to directly address Kentucky's needs for STEM engagement and experiential opportunities in workforce development and research initiatives. Three strategic themes chosen by the Consortium to help define KYSGC priority areas are *Data + Science*, *Earth + Space*, and *Aerospace + Innovation*. These themes enable multiple programs to be unified in a portfolio approach balanced to serve state and national aerospace needs.

Unique Consortium-wide Aspects and Specialization: STEM tracks related to aerospace are available at the state's community colleges, regional, and research universities, including aerospace engineering, training for professional pilots, and specialties in remote sensing, along with engineering, physics, astronomy and astrophysics programs statewide. For example, the University of Kentucky College of Engineering offers Bachelors, Masters, and PhD degree programs in aerospace engineering. Students in space science programs at Morehead State University learn firsthand using a large-aperture radio telescope and in small sat development labs. Students in Advanced Manufacturing at Owensboro Community and Technical College have put training into action with NASA team projects. Current NASA research projects at University of Louisville, Western Kentucky University, and University of Kentucky allow students and faculty to work directly with NASA personnel and make significant contributions in aeronautics, space science and technology, advanced materials and fluid dynamics, hypersonics, re-entry thermal protection systems, autonomous satellite navigation, UAVs, biomedical, energy and more, with NASA, national lab, and industry partners. Kentucky universities have recently participated in launching scientific payloads, orbiting small satellites and conducting research on the ISS. Industry partners work with commercial laboratory platforms and unique experimental facilities to conduct advanced research in microgravity.