

Kentucky Space Grant Consortium

Western Kentucky University

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KSGC Affiliate Member Institutions:

- Bellarmine University, Louisville
- Centre College, Danville
- Eastern Kentucky University, Richmond
- Kentucky Center for Space Enterprise, Lexington, Non-profit Corporation
- Kentucky State University, Frankfort, HBCU
- Morehead State University, Morehead
- Murray State University, Murray
- Northern Kentucky University, Highland Heights
- Thomas More College, Crestview Hills
- Transylvania University, Lexington
- Tribo Flow Separations, LLC, Lexington, Industry Affiliate
- University of Kentucky, Lexington
- University of Louisville, Louisville
- Western Kentucky University, Bowling Green

Program Description:

The National Space Grant College and Fellowship Program consists of 52 state-based, university-led Space Grant Consortia in each of the 50 states plus the District of Columbia and the Commonwealth of Puerto Rico. Annually, each consortium receives funds to develop and implement student fellowships and scholarships programs; interdisciplinary space-related research infrastructure, education, and public service programs; and cooperative initiatives with industry, research laboratories, and state, local, and other governments. Space Grant operates at the intersection of NASA's interest as implemented by alignment with the Mission Directorates and the state's interests. Although it is primarily a higher education program, Space Grant programs encompass the entire length of the education pipeline, including elementary/secondary and informal education. The Kentucky Space Grant Consortium is a Designated Consortium funded at a level of \$590,000 for fiscal year 2007.

African American mentor Dr. Charles McGruder and his African American Louis Stokes Alliances for Minority Participation student Jahi Palmer are studying Eclipsing Binary Stars at Western Kentucky University through the Kentucky Space Grant Consortium in support of the NASA Science Mission Directorate. Jennifer Carter at Morehead State University has a KSGC Fellowship for Establishing VHF/UHF and S-Band Command Nodes for KySat-1 CubeSat in support of the NASA Exploration Systems Mission Directorate. Dr. Suzanne Weaver-Smith mentored 25 students at the University of Kentucky in the BIG BLUE multi-university project with Oklahoma State University to develop an aircraft light enough for balloon launch to high altitude for autonomous flight testing in support of the Aeronautics Mission Directorate. Dr. Jamie Rogers led Murray State University to a second place in the Space Operations Mission Directorate Great Moonbuggy Race.

Benefits to the State: The Kentucky Space Grant Consortium benefits Kentucky by conducting a balanced program of Research, Education, and Public Service that emphasizes involvement of Kentucky's faculty, students, teachers, and general public through support for the affiliate universities, industry, and non-profit corporation.

Program Goals:

The purpose and goal of our Research Infrastructure Program is for faculty to provide research experiences for students, thus developing and increasing capabilities of Kentucky researchers at all levels in contributing to the aerospace workforce.

The purpose and goal of our Precollege Program is to enhance teachers' abilities to provide hands-on learning activities that present standards-based content in ways that inspire students' interest in STEM subjects and STEM careers.

The purpose and goal of our Higher Education Program is to provide the ultimate arena for refining career directions and developing students' fullest abilities to become part of the aerospace workforce of the future. In addition to our mentored research opportunities for individual students in Fellowship, Scholarship, and Research Infrastructure projects, we provide targeted higher education workforce development projects that *involve teams of students* in projects beyond the traditional disciplinary bounds of the curriculum and of individual-based research. The goal of the program is to attract, motivate, and prepare students for technological careers in support of NASA, its missions, and its research efforts. We reach outstanding Kentucky students to provide experiential learning directed specifically toward personal preparation for entering the aerospace workforce. The program provides an effective *interface* between the education "pipeline" and the workforce consumers -- NASA, its contractors, and its principal investigators.

The overall purpose and goal of our Public Service Program is to enhance the public's awareness of science and technology and of NASA- and aerospace-related research and applications.

Program Accomplishments:

During 2007, the Research Infrastructure Program supported 5 faculty and 15 students in 9 collaborations with NASA producing 13 publications.

The Precollege Program trained 6 teachers for the Great Moonbuggy Race.

The Higher Education / Workforce Development Program involved multi-university collaborations. The University of Kentucky and Oklahoma State University collaborated on the BIG BLUE project.

- The KySat collaborating universities are
- Morehead State University
- Murray State University
- University of Kentucky
- University of Louisville
- Western Kentucky University

Student Accomplishments:

During 2007, the Kentucky Space Grant Consortium supported 13 students in our Fellowship/Scholarship program, including 7 graduate and 6 undergraduate students with 4 female graduate students and 2 female undergraduate students. All 13 recipients progressed in their degree programs. One female student completed her Ph.D. degree research, found STEM education employment, and completed her Ph.D. dissertation on the job, graduating in May.