

Kentucky Space Grant Consortium
Western Kentucky University

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<http://www.wku.edu/KSGC/>
<http://nasa.engr.uky.edu/>

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 **\$785000** for fiscal year 2009.

PROGRAM GOALS

The Kentucky Space Grant Consortium has been established as a major avenue for connecting Kentucky's students, faculty, teachers, and general public to NASA's scientific exploration of the universe. KSGC supports a broadband spectrum of activities that *involve* learners at all levels in the excitement of NASA's journey. The program is designed to meet NASA's needs in *The Vision for Space Exploration* and the needs of Kentucky.

KSGC recognizes that the students in schools and colleges today will provide much of the workforce who will contribute to NASA's realization of the *Vision for Space Exploration*. They *are* the next generation of explorers, whom NASA and KSGC seek to inspire. The inspiration of these students and their preparation for the needed workforce are the central mission of the Kentucky Space Grant Consortium.

KSGC specifically addresses and supports the outcomes sought in the *2006 NASA Strategic Plan for Education*:

ED-1: Contribute to the development of the STEM workforce in disciplines needed to achieve NASA's strategic goals through a portfolio of investments

ED-2: Attract and retain students in STEM disciplines through a progression of educational opportunities for students, teachers, and faculty.

ED-3: Build strategic partnerships and linkages between STEM formal and

informal education providers that promote STEM literacy and awareness of NASA's mission.

Needs of Kentucky: The KSGC Program is designed to serve identified needs of the Commonwealth of Kentucky within the framework of national emphases for Space Grant programs. Relevance of KSGC to the needs of Kentucky is indicated by the following basic facts:

Kentucky in 2003 ranked 39th in NASA funding and 40th in federal R&D funding Kentucky in 2004 ranked 48th in percentage of scientists/engineers in the workforce Kentucky in 2005 ranked 47th in educational attainment of the workforce

Kentucky began in 1990 a process of thoroughly revising its system of public education

Kentucky has a population of 4.0 million (2000 U.S. census), of which 7.7% are African American, 0.9% are Asian, 0.6% are Native American, and 0.9% are other races (totaling 10.1% minority population). The Hispanic and Latino population of all races is 1.5%. The urban population increased from 52% in 1990 to 56% in 2000. Kentucky's economy was traditionally based largely on agriculture and mining; however, manufacturing and service industries now lead the economy. Kentucky's major industries include Ford, Toyota, and GM/Corvette manufacturing plants, Lexmark, GTE, GE, and a major UPS air hub. Kentucky has neither a NASA Center nor a significant aerospace industry presence. For enhancing its technology-based state economy, Kentucky can benefit from involving more of its faculty and students in space-related R&D, working toward future employment of graduates by NASA and aerospace industry.

Needs of Kentucky are addressed through the following KSGC objectives, by using the inspiration of aerospace- and NASA-related subjects and activities to achieve:

- Enhancement of research and education capabilities in space-related fields
- Increased numbers of people training for the workforce in space-related fields
- Greater public exposure to NASA and space-related research and applications

PROGRAM/PROJECT BENEFIT TO OUTCOME (1,2, OR 3)

The work I completed under the KSGC fellowship directed my educational path in two directions, teaching and astrophysics. I feel I have the competency to both transfer knowledge and skills to students in both astronomy and space science. Additionally, I have chosen to pursue a PhD program in Astrophysics within the next 5 years. I have taught a pilot course in astronomy and space science this past year and am scheduled to teach both courses this year. Two of my students have enrolled at Morehead State University in the Physics program - area in Astrophysics. This summer I attended a NSF-NRAO workshop for teachers and students to become part of the Pulsar Search Collaboratory. A program designed to allow students analyze data collected from the GBT searching for evidence of previously non-discovered pulsars. A pulsar search organization will be formed at my school and our middle school. (Jennifer Carter, 2006

Space Grant Fellowship, 2006 KySat Scholarship/Internship, 2007 Space Grant Fellowship, 2008 Space Grant Fellowship, 2009 Space Grant Fellowship, Fleming County High School - Teacher)

I believe participation in the program has given me a better look at what I am capable of and where my limits are. My education is still progressing in the way it was before I participated in the program. (Jessamyn Delgado - on 01/21/10, 2008 Space Grant Scholarship, 2009 Space Grant Scholarship, Morehead State University Tutoring and Learning Center - Student Tutor and Professor Assistant)

The KSGC program provided the means to conduct astronomical research that gave me experience that I expect to prove crucial in consideration for graduate studies. It also gave the opportunity to attend national meetings to present my research further allowing for experience and vital networking events. (Kyle Cook, 2008 Space Grant Scholarship, 2009 Space Grant Scholarship, Western Kentucky University - Laboratory Manager)

It has been a tremendous opportunity to pursue research. I have already come a long way in learning about the space program, and I look forward to fully solidifying my knowledge of Fourier transform. (Benjamin Draper - on 01/08/10, 2009 Research Project - Higher Ed, Pacers and Racers - Sales Associate)

PROGRAM ACCOMPLISHMENTS

KSGC Fellowship/Scholarship Program

- Diversity: 4.5% minority (target 10%)
- Diversity: 31.8% female (target 50%)
- 1 student took their next step in FY09 (SG participation supported from FY06-FY09 funds)
- 1 graduated and is pursuing an advanced STEM degree
- 22 students received Scholarship/Fellowship awards (target 11)
- 100% retained to graduation so far (target 95%)
- 100% of graduates entering advanced studies or STEM employment (target 90%)

KSGC Higher Education Program

- 0 students participating (target 25) –lack of appropriate and timely response to our call for data from our Higher Education awardee. We are aware there are students, we do not have an accurate count.

KSGC Research Infrastructure Program

- 15 students and faculty (target 10) supported in fourteen (14) research infrastructure projects

KSGC Precollege Program

- 6 workshops awarded (target 2)
- 67 teachers intensely trained (target 20)

KSGC Public Service Program

- 8810 members of the public reached (target 5,250)

PROGRAM CONTRIBUTIONS TO PART MEASURES

- Longitudinal Tracking: Total awards = 37; Fellowship/Scholarship = 22, Higher Education/Research Infrastructure = 1; 4.5% of the total awards represent underrepresented minority F/S funding. During the FY09 program year 1 student graduated and is pursuing an advanced STEM degree.

- Course Development: N/A

- Matching Funds:

We matched 1:1 all funds from NASA that required such matching.

- Minority-Serving Institutions:

We continue our efforts at developing a strong partnership with our lone minority serving institution in the State, Kentucky State University.

IMPROVEMENTS MADE IN THE PAST YEAR

2009 was a year of turmoil and transition in KSGC. In March, 2009, the administration at Western Kentucky University decided that a change in program leadership was necessary, in order to insure the continued success of the program in Kentucky as well as continued compliance by the program with established University and Federal regulations. Thus, Dr. Michael Carini assumed the Directorship of KSGC replacing Dr. Karen Hackney. However, this leadership change was not accepted by the KSGC advisory committee. They opted to open up for competition within the state the leadership of KSGC. A process was established, overseen by the Kentucky Statewide EPSCoR Committee, and proposals were submitted by three Kentucky Institutions of Higher education in August, 2009. After careful consideration of the proposals and a re-evaluation of the process due to some irregularities, the KSGC advisory committee accepted the recommendation of the proposal review committee to award the leadership of KSGC to the University of Kentucky, under the direction of Dr. Suzanne Weaver Smith and Dr. Janet Lump. The transition was effective April 1, 2010.

During 2009, improvements in communication between the program office and the advisory committee as well as between the program office and the constituents across the state were enacted. Proposers were provided summary comments of their proposal strengths and weaknesses for the first time in many years. The advisory committee was provided, for the first time, complete information about the program budget, NASA HQ directives and plans. Steps were taken to formalize the role of the advisory committee, define consortium operating procedures, and create by-laws for the consortium. Vigorous discussion on consortium organization, management and program implementation took place. Since the consortium was in transition, these discussions did not lead to concrete actions in 2009, but will come to fruition in 2010.

PROGRAM PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION

Kentucky Space Grant Consortium Network		
Institution	Location	Description
Bellarmino University	Louisville	Private Comprehensive University
Centre College	Danville	Private Liberal Arts College
Eastern Kentucky University (EKU)	Richmond	Public Comprehensive University
Kentucky Science & Technology Corp	Lexington	Non-profit Organization
Kentucky State University	Frankfort	Public Comprehensive Univ./HBCU
Morehead State University	Morehead	Public Comprehensive University
Murray State University	Murray	Public Comprehensive University
Northern Kentucky University (NKU)	Highland Hgts.	Public Comprehensive University
Thomas More College	Crestview Hills	Private Liberal Arts College
Transylvania University	Lexington	Private Liberal Arts University
Tribo Flow Separations, LLC	Lexington	Industry
University of Kentucky (UK)	Lexington	Public Doctoral Granting University
University of Louisville (U of L)	Louisville	Public Doctoral Granting University
Western Kentucky University (WKU)	Bowling Green	Public Comprehensive University

Coordination of the consortium program occurs from a central office at the host institution. The office and management team support each member institution, each of which has an Institutional or Campus Director who serves on the KSGC Governing Committee. Programmatically, faculty and students at all member institutions compete for research, workshop, scholarship, and fellowship funding from the KSGC budget allocations for these purposes. Decisions regarding the awards are made by the KSGC Committee, in accordance with stated KSGC policies and objectives, as established by the Committee. The Committee consists of the Institutional Directors from all of the member institutions as the voting membership. The KSGC Director chairs the committee. Policies made by the Committee concern the distribution of information

about program opportunities to faculty and students throughout the state, the democratically decided distribution of funds for projects at the institutions, and the development of cooperation and possible collaborative efforts, etc, in accordance with stated KSGC and Space Grant objective.