

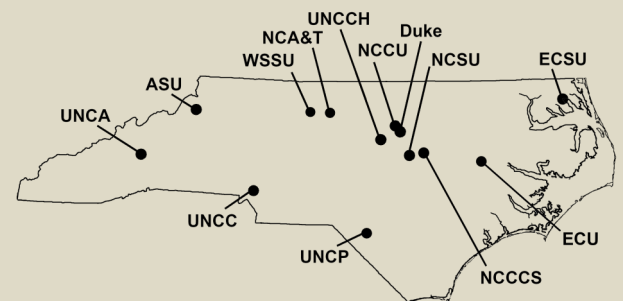
# NORTH CAROLINA space grant

Promoting, developing and supporting aeronautics and space-related science, engineering and technology training and programs in North Carolina

NC Space Grant, established in 1991, is an active member in a national network of university-based consortia. Established by Congress and implemented by NASA, the National Space Grant College and Fellowship Program contributes to the nation's science enterprise by funding research, education, and public service projects through a national network of 52 Space Grant consortia.

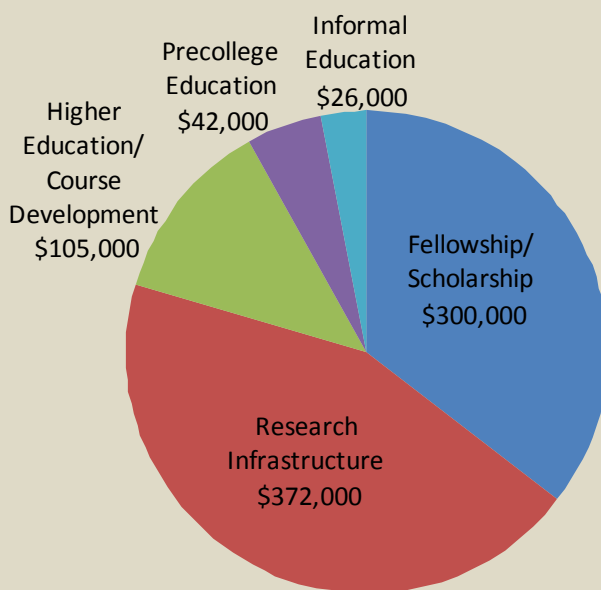
NC Space Grant has thirteen academic Affiliate institutions and partners with industry, non-profit and state government agencies to support science, technology, engineering and math (STEM) education in North Carolina. Since 1991, NC Space Grant has managed and provided over \$14 million in support to North Carolina citizens.

*NC Space Grant's thirteen academic Affiliates, which include twelve universities and the NC Community College System, enroll over 490,000 students. Four Affiliates are classified as Historically Black Colleges and Universities.*



In FY 2010, NC Space Grant used NASA funding (\$845,000) supplemented by resources from the NC General Assembly, industry and non-profit partners to support students and faculty throughout the state in five program areas: Fellowship/Scholarship, Research Infrastructure, Higher Education/Course Development, K-12 Professional Development, and Informal Education/Public Outreach. For every dollar that NC Space Grant receives from NASA, more than \$1.10 is matched from other sources. In 2010, each dollar awarded to faculty (\$372,000) resulted in more than seven dollars in external funding (\$2.67 M).

**NC Space Grant Investment by Program Area (FY 2010)**

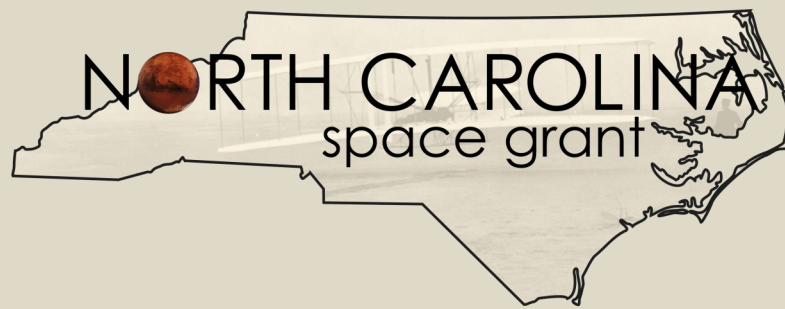


**NC Space Grant Program Outcomes (FY 2010)**

- Higher Education Student Participation (NASA Education Outcome 1)**
  - Competitively awarded 55 fellowships/scholarships to graduate, undergraduate and community college students
  - Engaged 151 students in NASA-related research and higher education activities under the supervision of a faculty mentor
  - Of 206 supported students, 32.5% were female and 29.1% were underrepresented minorities
- Higher Education Faculty Participation (NASA Education Outcome 1)**
  - 24 faculty awarded research seed funding
  - 51 faculty provided support to develop interdisciplinary courses and/or engage student groups in collaborative research activities
  - 14 courses developed with NC Space Grant funds (3 new, 11 revised)
- Precollege Education (NASA Education Outcome 2)**
  - 12 professional development workshops
  - 168 in-service/pre-service teacher participants
- Informal Education (NASA Education Outcome 3)**
  - 160 hands-on student/public programs
  - 4,432 precollege student participants
  - 1,604 public at large participants

*NC Space Grant provided me the support I needed to travel across the country and accept an unpaid internship with the Ad Astra Rocket Company (Houston, Texas). I proved my value to the company over the summer and was offered a full time position at the end of my internship. I look forward to a bright future with Ad Astra. (Maxwell Ballenger, 2009 NC Space Grant Industry Internship (UNC-Chapel Hill); Employed as a Staff Scientist at Ad Astra Rocket Company, Houston, TX)*





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### FY 2010 Program Highlights

Program Area	Purpose	Examples
<b>Fellowship/Scholarship Program</b>  <i>NASA and Industry Internships</i>  <i>Graduate Research Fellowships</i>  <i>Undergraduate Research Scholarships</i>  <i>Undergraduate/Community College Scholarships</i>	Engages graduate/undergraduate students in hands-on, aerospace-related research projects and fosters mentor relationships between students, faculty, NASA researchers and industry scientists.	<p>Ashley Roberts, graduate student at <b>Appalachian State University</b>, performed research at the Center for Electron Nanoscopy at Denmark Technical University in conjunction with two European Scientific Initiative Work Package projects.</p> <p>Andrew Badger, undergraduate student at <b>NC State University</b>, participated in the NASA Undergraduate Student Research Program at Marshall Space Flight Center. Mr. Badger worked with NASA scientists at the MSFC's Natural Environments Branch on the development of an autonomous aerobraking plan.</p> <p>The Community College STEM Scholarship program encourages students to pursue studies and careers in technical fields. Students enrolled at any of <b>NC's 58 Community Colleges</b> were eligible to apply for NCSG support. Six students were selected for the pilot year.</p>
<b>Research Infrastructure Program</b>	Provides startup funds for early career faculty who are conducting research aligned with NASA's priorities.	<p>Dr. Andrew Willis, Assistant Professor of Electrical Engineering at <b>UNC-Charlotte</b>, established expertise in stereoscopic 3D reconstruction as performed by the Mars Exploratory Rovers <i>Spirit</i> and <i>Opportunity</i>. This work was extended through a grant from the NASA Mars Data Acquisition Program to develop a data-mining tool for geological research on exposed surface rocks and rock outcroppings.</p>
<b>Higher Education/Course Development Program</b>	Funds projects to initiate interdisciplinary and/or distance learning courses increasing student's understanding of complex aerospace issues.	<p>Dr. Jeffrey Forbes, Associate Professor of Computer Science at <b>Duke University</b>, developed a new undergraduate course entitled <i>Teaching with Robots</i>, a project-based robotics course linked with mentoring in local schools. Students then delivered mobile robotics curricula for middle and high school students as part of the Duke/Durham Public Schools Robotics Program.</p>
<b>K-12 Professional Development Program</b>	Supports aerospace-related professional development for K-12 educators.	<p>Dr. Thomas Rossbach, Associate Professor of Geology at <b>Elizabeth City State University</b>, developed a workshop series on the geology of the solar system for pre/in-service teachers with a focus on earth processes and remote sensing.</p>
<b>Informal Education/Public Outreach Program</b>	Funds projects to increase the appreciation and knowledge of aerospace-related issues by the general population.	<p>NCSG provided leveraged support for the <b>Guilford County School System</b> to participate in the Student Spaceflight Experiment Program. 79 students from five area middle schools participated in developing scientific proposals. Mendenhall Middle School team's experiment, which compared the growth of brine shrimp in space and on earth, was selected to fly onboard Space Shuttle Endeavour (STS-134) in 2011.</p>

*This internship was one of the best experiences in applying the principles and theories I have learned in the classroom. During these past ten weeks, I tested my personal aptitudes, abilities, and interests in relation to my career choice and job demands.  
 (Yawo Amengonu, UNC-Charlotte undergraduate; 2010 LORD Corporation Internship; 2009 NASA Johnson Space Center Intern)*

