

Indiana Space Grant Consortium  
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INSGC.org

### **Affiliate Members**

Indiana Space Grant Consortium has 11 Academic Affiliates – Ball State University, Indiana State University, Indiana University – Bloomington, Indiana University - Purdue University – Ft. Wayne, Indiana University - Purdue University – Indianapolis, Purdue University – Calumet, Purdue University – West Lafayette, Taylor University, University of Evansville, University of Southern Indiana, and Valparaiso University; 8 Outreach Affiliates – Brownsburg Challenger Learning Center, Challenger Learning Center of NW Indiana, Imagination Station, IMAX Theater, Indiana State Museum, Indianapolis Challenger Learning Center of Decatur Township, Science Central, and Terre Haute Children’s Museum; and 3 Corporate Affiliates – Orbit Frontiers, LLC, StratoStar Systems, and TMGLabs.

### **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 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 Indiana Space Grant Consortium (INSGC) is a Designated Consortium funded at a level of \$590,000 for fiscal year 2007.

Space Grant consortia build human capital and research expertise to support NASA programs and missions, expand NASA's expertise and educational networks, and bring knowledge and awareness of space to a broad range of constituents in every state. INSGC contributes to Space Grant goals through scholarship and fellowship programs, research grants targeted to students and new faculty, support of interns at NASA installations, general public awareness through outreach affiliate programs, and workforce development through corporate affiliates and INSGC partners.

### **Program Benefits to the State**

Indiana Space Grant Consortium values the ability to provide excellent quality of service to the residents of the State of Indiana that extends beyond the bounds of academic related support. INSGC continues to seek out new ideas and concepts, and explore new ways in which we can expand the depth and breadth of our organization. Our vision for the Consortium is as follows:

*The Indiana Space Grant Consortium seeks to inspire Indiana residents to value and engage in NASA related formal and informal education, workforce development and research activities in science, technology, engineering and mathematics (STEM).*

INSGC work with the State Museum, Indiana InternNet, Science Central, and the several Challenger centers demonstrates this. These organizations all have creative programs, including many that are INSGC affiliate interrelated, that target large regions (ideally, all) of the state of Indiana. In addition, our efforts in workforce development emphasize increasing the number of Indiana residents and students who obtain internship experiences at NASA Centers and aerospace-related industry. We are proud to include three start-up companies (including an INSGC project spin-off) as INSGC affiliates.

### **Program Goals**

1. Promote science, mathematics, and technology from elementary through university levels.
2. Develop interdisciplinary training, research, and public service programs
3. Maintain and selectively enhance an effective network of universities, outreach centers, and industries in Indiana with interest and capabilities that support the NASA mission.

INSGC competes the majority of Scholarship, Fellowship and Grant funds. Most projects were originally proposed during the annual competition held in Winter 2007, while some are projects identified as INSGC priorities and/or selected as Director's discretionary priorities.

Discretionary funds are reserved to allow INSGC to respond to opportunities that arise outside of the normal competition cycle.

### **Program Accomplishments**

In FY 2007, INSGC continued to develop the operational and strategic "way forward" that was initiated at the April 2007 Affiliate Directors meeting. This initiative supports INSGC Goal 3 (Maintain and selectively enhance an effective network of universities, outreach centers, and industries in Indiana with interest and capabilities that support the NASA mission) In FY 2007 the Central Office was restructured, involving development of new job descriptions and resulting in new personnel that are committed to timely communication and accountability to both NASA and INSGC Affiliates. Central Office work performance in the past six months has resulted in favorable comments from both groups and the continued refinement of systems promises even greater efficiencies in the future.

In November 2007, the first-ever simultaneous launch of BalloonSats (High-altitude balloons carrying instruments and experiments) by seven colleges and universities around the Midwest was carried out by the Taylor University HALO program funded by INSGC, StratoStar Systems and Taylor (all INSGC Affiliates). The constellation of BalloonSats created a balloon-to-balloon mesh network. Following this successful launch, Taylor has been awarded a NSF CCLI Grant to train and facilitate universities to implement launches into undergraduate curriculum.

Successful INSGC programs such as FIRST Robotics and Space Day continued in FY2007 (see below) and efforts are underway to expand on these two programs' success. The first result of these efforts is the University of Evansville Spring Space Day which successfully ran in March 2008. Our work with Science Central included the production and airing of a 30-minute "Video Field Trip" by WFWA, the Ft. Wayne Public Television affiliate, and highlighted the Launch P.A.D. traveling exhibit now available for display across the state. Program development opportunities with the IMAX Theater and Indiana State Museum will help to emphasize Indiana's science and technology history and impact.

## **Student Accomplishments**

INSGC offers a variety of funding opportunities with the goal of involving students in research. Workforce development projects are proposed by faculty and have the stated goal of increasing the employability skills of the student. For FY2007 there were over one dozen projects funded—four reduced gravity; three design/build (Moonbuggy, BalloonSat and Autonomous Vehicle); seven undergraduate research projects and one summer bridge program. These projects support INSGC Goals 1 (Promote science, mathematics, and technology from elementary through university levels) and 2 (Develop interdisciplinary training, research, and public service programs)

*Through the balloon program here at Taylor University, we have witnessed first-hand the excitement of discovery as students plan, build, launch and analyze data from their own high-altitude experiments.* Professor Hank Voss, Ph.D. Taylor University in the September 11, 2007 press release by Jim Garringer.

The INSGC Scholarship/Fellowship Program has three award categories—scholarships, fellowships and internships. Scholarships are awarded to undergraduate students based on academic merit (transcript) and career choice/direction (essay). Fellowship applicants are required to submit a proposal for a research project; the applicants can be either Master's or Doctoral level students. Both Scholarship and Fellowship awardees are chosen through statewide competition. The internship program is not competed internally. The awardees in this category are students selected to participate in NASA center activities or as industry interns.

For FY 2007 there were 31 scholarships and fellowships awarded including 9 summer interns. The percentage of awards to females (29%) greatly exceeded the Indiana college population of females in STEM disciplines and the percentage of awards to minority students (10%) roughly matched the Indiana population of underrepresented minorities.

An evaluation plan is currently being developed to enable longitudinal tracking of six to eight undergraduate students, over an eight year period, as they continue with their education and move toward employment. The study will look at factors that influenced their educational and career decisions and the roles of INSGC and NASA.

INSGC has a long history of funding service learning activity for university students. We feel that this is a program activity with substantial benefits for both university and K-12 students. The university students learn project management, time management and how to give back to the community. The K-12 students are given the opportunity to participate in hands-on NASA STEM based activities; learn about possible careers, and a chance to interact with nascent adults, usually through a fun filled learning activity. Four projects were funded in this area—two at the University of Evansville (Spring Space Day and OPTIONS for High School Girls) and two at Purdue University (Space Day and FIRST Programs). These programs engage students who have an interest in science and engineering by providing a fun hands-on STEM related environment. Hundreds of K-12 and university students participated in FY 2007 and thousands more have participated in these events in the past 12 years.