Special Programs

B.I.G. B.L.U.E. IV
Balloon-Launched Experiment
www.engr.uky.edu/bigblue

The goal of the BIG BLUE Mars Airplane project for 2005-2006 was to combine the two successful projects of the previous year: the Vectran inflatable wings, successfully deployed at 95,000 ft on April 30, 2005, and the AIRCAT I and AIRCAT II aircraft, designed, built, and successfully flight tested at low altitude May-June 2005. Along with this, a new commercial autopilot system was to be used. Integration of these technologies was not straightforward, but the students developed new wing mounting designs, new wing-shaping designs, autopilot-activated inflation actuation, new camera systems, a new automatic mount/release for low-altitude flight testing, among others, and then conducted extensive laboratory testing, full-system laboratory simulations, preliminary flight testing and, ultimately, the first flight of the AIRCAT with inflatable wings on May 31, 2006. Flight testing continued with the help of Ed King of the Lexington Model Airplane Club as test pilot. On June 21, 2006, the inflatable-wing AIRCAT was flying touch-and-goes and other maneuvers. A design review was held in March, 2006, at NASA Ames Research Center with NASA Mars Airplane program researchers offering advice. Students toured NASA Ames, which includes unique wind tunnel facilities, and spent a day in San Francisco. Plans for BIG BLUE in 2006-2007 include final “stepping stone” verification flight experiments toward a high-altitude flight demonstration of inflatable wings for Mars exploration.
Wildcat Pulling Team  
**www.bae.uky.edu/qscale/tractor/htm.**

The 2005–2006 Wildcat Pulling Team is very proud to report that we finished fifth place nationally in this year’s competition out of a total of 28 entries. UK also received the Craftsmanship Award and placed third overall in pull performance. In what is quickly becoming a tradition, UK also brought home top honors (for the seventh year in a row) in the Cook-Off competition. For more information about the event and the final scores from this year, please go to www.asae.org/students/tractor or www.bae.uky.edu/qscale. The 1/4 Scale Student Tractor Design Competition is sponsored by the American Society of Agricultural and Biological Engineers along with a number of corporate sponsors. Each student team must design and build a 1/4 scale tractor capable of pulling a weight transfer sled. All designs must conform to a rigorous set of rules including many safety features. The design competition consists of performance assessment (tractor pull and maneuverability course), a formal design presentation, a formal written design report, and design judging in which teams of engineers assess features of the tractor that include safety, serviceability, and manufacturability. More than 80 professional engineers from industry donate their time to judge and score the competition.

We have already begun preparations for next year’s competition in which our goal will be a top-two overall finish. Next year we plan to transport all eight of our pulling tractors to Minneapolis, Minnesota where the 1/4 Scale Student Tractor Design Competition will be held in conjunction with 100th year anniversary of the American Society of Agricultural and Biological Engineers, and their International Meeting.

We are optimistic about the upcoming year and look forward to once again representing all of our team sponsors and the University of Kentucky in this competition. Feel free to contact one of our advisors, Tim Smith (tsmith@bae.uky.edu), Scott Shearer (shearer@bae.uky.edu), Larry Wells (lwells@bae.uky.edu), or Tim Stombaugh (tstomb@bae.uky.edu), or call (859) 257-3000 if you have additional questions.

Solar Car Team  
**www.engr.uky.edu/solarcar**

The team worked hard during the 2005-06 school year to work out the kinks which inhibited The Gato Del Sol II from racing in the summer of 2005. Many of the parts were stripped from the car to be remodeled and perfected. The electrical system proved to be the largest barrier to the team, but through the work of many talented Electrical Engineering students, such hurdles are being jumped. The team is currently putting the final touches on the essentials of the car. The car will be driving off the sun’s power by mid-October. The car will be touring the Lexington area this winter to promote UK and solar energy. The race scheduled for summer, 2006, was cancelled nationally due to inadequate funding, but plans are being made for the car to attend the Formula Sun Grand Prix 2007 this summer.

Named for the 1982 KY Derby Winner, The Gato Del Sol II took 3 years and more than $100,000 to build. Its nick name is the “Blue Bomb” and it has shocks from a mountain bike and a steering wheel from a kid’s dragster, as well as an aluminum chassis, an electric motor, 8 square meters of solar paneling on it fiberglass shell, and a top speed of approximately 60 miles per hour. It looks like something out of “Flash Gordon.”

The project started as a student-run engineering project with support from the College of Engineering. The team consists of multi-disciplines that require the best and most determined students. The team has individuals from electrical, computer, and mechanical engineering disciplines, as well computer science, business, and chemistry majors. Solar car racing is very competitive and most of the schools that race have been doing it since 1991. This will be The Gato Del Sol’s third year in competition.
Upcoming Undergraduate Scholarship Events and Deadlines

Kaleidoscope, Volume 5
The University of Kentucky Journal of Undergraduate Scholarship is published once each year, at the beginning of the fall semester. All contributions to the journal are refereed by a standing editorial board and guest referees and editors. Articles, reports, and other creative works may be submitted by any undergraduate student at the University of Kentucky. All submissions must be accompanied by an endorsement by a University faculty member who has agreed to attest to the scholarly quality of the work and to serve as faculty mentor for editing and final submission of the work. Detailed guidelines for submission are available at <www.uky.edu/kaleidoscope>.

Deadlines for Volume 6, Fall, 2007:
February 24, 2006: Electronic letter of intent to submit, including a brief description of the nature and contents of the proposed submission sent to the editor. (rst@uky.edu) (optional)
March 30, 2007: Complete submission prepared according to the guidelines delivered electronically to the editor. (rst@uky.edu)
May 4, 2007: Notification of acceptance/rejection and instructions for suggested/required revisions.
June 15, 2007: Final, revised submission delivered electronically to the editor.

National Conference on Undergraduate Research
“The mission of the National Conferences on Undergraduate Research (NCUR®) is to promote undergraduate research, scholarship and creative activity done in partnership with faculty or other mentors as a vital component of higher education.”
The 2006 NCUR conference will be held April 12-14, 2007, at Dominican University of California. Visit the NCUR Web site at http://ncur.org/basics/index.htm for general information on NCUR; visit <http://ncur20@unca.edu> or http://ncur.unca.edu for details and deadlines for the conference.

Oswald Research and Creativity Awards
All current UK undergraduate students are eligible to submit a paper or other creative work to be considered for an Oswald Research and Creativity award. The competition categories in which papers and projects may be submitted include: (1) Biological Sciences; (2) Design (architecture, landscape architecture, interior design, etc.); (3) Fine Arts (film, music, painting, sculpture, videotape, etc.); (4) Humanities: Creative; (5) Humanities: Critical Research; (6) Physical and Engineering Sciences; and (7) Social Sciences. The deadline for submission is March 9, 2007. Visit the eUreKa! website at: www.uky.edu/eureka for details, application forms, and official rules. See pages 110-112 for winning submissions from last year’s Oswald Awards program.

Office of Undergraduate Studies Research and Creativity Awards
As a means of promoting educational experiences for students, the Office of Undergraduate Studies offers Research and Creativity Grants during the summer term. The grants are intended to take advantage of the rich resources available through the libraries, the laboratories and, most especially, the academic personnel at the University of Kentucky. Undergraduates in all areas of intellectual inquiry are eligible, and students at many different levels of matriculation have received support. The deadline to submit applications is February 9, 2007. For details regarding eligibility, and application forms visit the eUreKa! website at: www.uky.edu/eureka. See pages 90-99.

UK Undergraduate Research Program
The University of Kentucky Undergraduate Research Program (UKURP) creates research partnerships between first- and second-year students and faculty researchers. The program offers students the opportunity to work and learn alongside a research faculty member. Undergraduate students are given the real-life experiences of working in laboratories and other scholarly settings; developing a research abstract; presenting their projects at symposiums and professional conferences; publishing their findings; and meeting others in the international community of scholars. In other words, students are given a jump-start on their career. For more details and deadlines for applications, visit www.uky.edu/eureka/ukurp. See pages 100-101.

Additional Information
Additional information regarding undergraduate scholarship and creativity programs, conferences, competitions, and opportunities is posted on the Web site of the Office of Experiences in Undergraduate Research and Creative Activities, eUreKa! at www.uky.edu/eureka.

Cast iron workshops. Walter Early. See page 103.
Kaleidoscope
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