A. Linwood Holton Governor's School

Students Dominate NASA Competition

Students in Dr. Steve Rapp's Physics and Robotics classed have slam dunked the NASA Environmentally Responsible Aviation Essay Contest. The competition was international in scope with more students from Europe and India entering than U.S. students. LHGS students received 5 of the 6 available awards. The winning research papers can be viewed at https://www.box.com/s/70ae9e4285173824737c.

The students could enter the completion as a team or as an individual. Listed below are the titles and winning authors. NASA is awarding the students an engraved trophy and a monetary award.
First: Ultra-High By-Pass Engines- S. Emily Beauchamp, Austin Patrick, Cameron Haskins ($1500)
Second: Advance Composite Structural Concepts for Weight Reduction- Sana Sekkarie, Rehan Razzaq, Misbah Muzaffer ($750)
Third: Drag Reduction through Laminar Flow- Ben Pruitt, Kathryn Irwin ($500)
Second: Structural Concepts for Weight Reduction- Ryan Williams ($500)
Third: How is Laminar Flow used in Modern Engineering? Tyler Cook ($250).

"I am so proud of these students; they worked hard to complete their research papers and did an excellent job," said Dr. Rapp. "For me they provide hope for the future of science and engineering."

About the Competition: As the Next Generation Air Transportation System (NextGen) evolves to meet the projected growth in demand for air transportation, the environmental impacts of noise and emissions are a growing concern and could limit the ability of the system to accommodate growth. Science and pre-engineering students (grades 9 - 12) were invited to submit a well-documented research paper of no more than 12 pages to demonstrate their understanding of one of the following possible solutions to the environmental impacts of aircraft noise and emissions:

- ✓ Drag reduction through laminar flow, or
- ✓ Advanced composite structural concepts for weight reduction, or
- ✓ Low NOx, fuel-flexible combustors, or
- ✓ Integration of advanced ultra-high by-pass engines for noise reduction and fuel burn improvements.

Criteria for Evaluation:
Each project was judged on its own merit by a group of NASA engineers. Award level entries were to be well written, thorough, and concise. Entries were judged on how well students focused their essay and how well they addressed four basic criteria: Informed Content, Creativity and imagination, Organization, and Writing.

Scores were determined using the following guidelines:

- ✓ Informed Content, 30 points
- ✓ Creativity and imagination, 30 points
- ✓ Organization of the essay, 20 points
- ✓ Writing, including documentation, 10 points
- ✓ References 10 points

Dr. Elizabeth Ward, Director of Student Programs, at NASA Langley Research Center made these comments in an email to Dr. Rapp, "Thank you again for your diligence to get your students interested in something STEM related that is outside their class work. The kids you have in your class are very blessed to have you as their teacher."

Team Winners:

First Place $1,500 ($500/student):

S. Emily Beauchamp (J.I. Burton High of Norton City)
Austin Patrick (Gate City High of Scott County)
Cameron Hankins (Bland High of Bland County)

Second $750 ($250/student):

Rehan Razzaq (Graham High of Tazewell County)
Misbah Muzaffer (Graham High of Tazewell County)
Sana Sekkarie (Graham High of Tazewell County)

Third $500 ($250/student):

Ben Pruitt (Rocky Gap High of Bland County)
Kathryn Irwin (Rocky Gap High of Bland County)

Individual Winners:

Second ($500): Ryan Williams (Galax City High of Galax City)

Third ($250): Tyler Cook (Abingdon High of Washington County)

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Scott County

First Place in Team Winners

Award	Title	Student	School
Engraved Trophy $500 Check	Ultra-High By-Pass Engines	Austin Patrick	Gate City High