TITLE: **LEWIS EDUCATIONAL RESEARCH AND COLLABORATIVE INTERNSHIP PROGRAM**

LOCATION: **NASA GLENN RESEARCH CENTER CLEVELAND, OHIO**

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PROGRAM DESCRIPTION:
LERCIP is an educational program that provides a summer internship opportunity for students interested in careers in science, technology, engineering, and mathematics. Internships are of 10-week duration and students are assigned to work under the guidance of a GRC scientist or engineer who serves as their mentor. Participants gain first hand experience working in a research and development environment and about NASA. Students receive a stipend payment based on their academic level and if eligible travel reimbursement.

PROGRAM RELEVANCE TO NASA:
The LERCIP program contributes directly to NASA's major education goal of strengthening NASA and the Nation's future workforce. Further, LERCIP contributes directly to NASA's strategic educational outcomes 1 and 2. By engaging students at levels from high school through graduate school in meaningful work experiences in scientific research, engineering and allied disciplines, LERCIP contributes to development of the STEM workforce in disciplines needed to achieve NASA's strategic goals through a portfolio of investments. By retaining students from year to year in the LERCIP program, we contribute to attracting and retaining students in STEM disciplines through the developmental opportunity to be exposed to a variety of STEM disciplines and applications early in their college careers, with the opportunity to make greater contributions at a more specialized level as the students progress through successive assignments.

PROGRAM BENEFITS TO SOCIETY:
Our nation is facing a coming crisis in our ability to grow the science and technology workforce we will need to retain our national pre-eminence in innovation. This has been recognized in reports such as the "Rising Above the Gathering Storm" study carried out by the National Academies. It is essential that as diverse a student pool as possible be attracted to science, technology, engineering, and mathematics careers. The opportunity to work for the National Aeronautics and Space Administration – even if the student's experience is limited to internship rather than permanent employment - is a powerful

incentive to consider, choose, and stay with the pursuit of undergraduate and graduate degrees in STEM disciplines. Thus, the program contributes to creating a better educated, technologically sophisticated, innovative workforce and society that is essential if our economic strength as a nation is to be maintained.

The LERCIP program also places special emphasis on diversity of student participation. We do so because we believe it is essential to draw from all segments of our nation's population if we are to have an adequate supply of scientists and engineers. We do so also because participating students gain important benefits from working with peers from diverse backgrounds. This prepares all students to be better prepared to collaborate with and learn from colleagues who are different from themselves – an essential skill for the 21st Century and a value that is essential for a healthy society.

Finally, the LERCIP program provides long-term economic opportunity to students, many of whom receive their first exposure to professional possibilities for themselves that go beyond entry level positions requiring minimal skill and education (and consequently offering minimal compensation) through this program. Students are encouraged to pursue professional objectives that, if attained, will position them for significant economic opportunities that will benefit themselves, their families, and ultimately their own children.

PROGRAM GOALS:

Internships will provide students with introductory professional experience to complement their academic programs and research interest. Students are given the opportunity to develop their skills in one of the following areas: assignments in research and development, technical, and administrative projects under the guidance of a NASA staff member. The program provides experiences in a research and development environment to expand the student's understanding of possible career choices that are available at NASA. Program activities include oral presentations, and a variety of enrichment activities.

PROGRAM ACCOMPLISHMENTS:

The program has increased the application pool by 56% from the previous year, going from 212 applicants to 330 applicants. The female application pool was increased by 62% from the previous year, going from 79 female applicants to 128 female applicants. The minority applicants were increased by 91% from the previous year, going from 45 minority applicants to 86 minority applicants. These increases resulted from participation in job fairs, with a focus on minority conferences and job fairs.

Program participation increased by 38% from the previous year, going from 100 participants to 138 participants. The program has also increased participation by female students by 23% from the previous year, going from 48 female participants to 59 female participants.

STUDENT ACCOMPLISHMENTS:

- Co-author of the AIAA paper: “Characteristics of Elastomer Seals Exposed to Space Environments”
- Participated in the FIRST Leadership Program
- Poster presentation at joint symposium between Akron, Kent and CWRU on “Styrene Crosslinked Silica Aerogels”
- Testing contributed to a report at the 2007 Cryogenic Engineering Conference
- Helped to teach an Excel training course for other division members
- Several students will be co-authors with Dr. Patricia Parson.
- Worked with Google Sketchup and AutoCAD to develop concepts of potential buildings, such as the future Space Flight Collaboration Office Buildings and the new Guerin House. Also worked with developing concept signage for new entrance of GRC.
- Created animations for mentor’s data to be shown at the Joint Propulsion Conference in Cincinnati, OH
- Co-author and submission of AIAA conference paper
- Attended the Esperanza Luncheon to represent NASA GRC and recruit for summer internships and future GRC Co-ops
- Optimized a Thermo-Acoustic Stirling Heat Engine designed for use on the surface of Venus
- Helped to design a parking lot plan for a new layout behind building 21.
- NASA TM on student research results “Optimizing the Cold-Test Characteristics of a Terahertz Traveling-Wave Tube Amplifier with Dielectric Enhancements”
- All Students participated in the LERCIP Student Research Symposium, presenting their projects to NASA Glenn Research Center Mentors and fellow students.