

GRANT #: 80NSSC23M0090 REPORT NAME: ANNUAL PERFORMANCE REPORT

REPORTING PERIOD: 3/28/2023 -1/28/2024

2023 HAWKS MUREP PSI ANNUAL REPORT

SCHEDULE OF ACTIVITIES

Sunday, July 16, 2023			
Participants Arrive on UMES Campus and checked into University Terrace from 5:00 p.m.			
Week 1			
Monday, July 17, 2023			
	Activity	Location	Assigned to
6:00 AM – 7:30 AM	Wake-Up & Personal Grooming	University Terrace	Residence Assistant
8:00 AM – 9:00 AM	Breakfast	SSC	Resident Assistant
9:30 AM – 11:00 AM	UMES Campus Tour, Facilities & Laboratories	UMES	Dr. Dabipi & Dr. Zhang
11:00 AM – 1:00 PM	Lunch	SSC***	Student Assistant
1:30 PM – 4:00 PM	Wind Tunnel Design & Testing	EASC**	Drs. Dabipi, Brown & Zhang
4:30 PM – 6:00 PM	Dinner	SSC***	Student Assistance
6:30 PM – 9:00 PM	Reflection on day's activities and briefing for next day's activities.	ATC* 1162	Dr. Dabipi
9:30 PM – 6:00 AM	Retire to Rooms for the Night.	University Terrace	Residence Assistant

Week 1			
Tuesday, July 18, 2023			
	Activity	Location	Assigned To
6:00 AM – 7:30 AM	Wake-Up & Personal Grooming	University Terrace	Residence Assistant
8:00 AM – 9:00 AM	Breakfast	SSC***	Residence Assistant
9:30 AM – 10:30 AM	SAT Preparation - English Session	ATC* 1162	TBD
10:30 AM - 11:30 AM	SAT Preparation - Mathematics Session	ATC* 1162	Mohammed Salih
11:30 AM – 1:00 PM	Lunch	SSC***	Student Assistant
1:30 PM – 4:00 PM	Wind Tunnel Design & Testing	EASC***	Drs. Brown & Zhang
4:30 PM - 6:00 PM	Dinner	SSC***	Student Assistant
6:30 PM – 9:00 PM	STEM Mentoring	EASC***	Drs. Dabipi, Zhang & Dodoo
9:30 PM- 6:00 AM	Retire to Rooms for the Night	University Terrace	Resident Assistant

Week 1			
Wednesday, July 19, 2023			
	Activity	Location	Assigned To
6:00 AM - 8:00 AM	Wake-Up & Personal Grooming	University Terrace	Residence Assistant
8:00 AM – 9:00 AM	Breakfast	SSC***	Residence Assistant
9:00 AM – 10:00 AM	NASA Wallops Flight Facility Tour	NASA WFF*****	Ms. Benner
10:15 AM – 11:00 AM	NASA WFF Internship/Student Employment Opportunities Session	NASA WFF*****	Ms. Benner
11:00 AM – 11:30 AM	STEM Mentoring by NASA WFF Scientists & Engineers	NASA WFF*****	NASA WFF
11:30 AM – 1:00 PM	Lunch	TBD	Dr. Dabipi
1:30 PM – 4:00 PM	Job Shadowing with NASA WFF Scientists & Engineers	NASA WFF*****	NASA WFF
4:00 PM – 6:00 PM	Dinner	SSC***	Student Assistant
6:00 PM – 9:00 PM	Reflection on day's activities and briefing for next day's activities.	EASC**	Drs. Dabipi, Zhang & Dodoo
9:30 PM – 6:00 AM	Retire to Rooms for the Night	University Terrace	Residence Assistant

Week 1			
Thursday, July 20, 2023			
	Activity	Location	Assigned To
6:00 AM – 7:30 AM	Wake-Up & Personal Grooming	University Terrace	Resident Assistant
8:00 AM – 9:00 AM	Breakfast	SSC***	Resident Assistant
9:00 AM – 4:00 PM	Field Trip to Smithsonian Air & Space Museum	Washington DC	Drs. Dabipi & Zhang
4:30 PM - 6:00 PM	Dinner	SSC***	Student Assistant
6:30 PM – 9:00 PM	Virtual Reality Laboratory & Development Training	EASC**	Dr. Zhang
9:30 PM- 6:00 AM	Retire to Rooms for the Night	University Terrace	Resident Assistant

Week 1			
Friday, July 21, 2023			
	Activity	Location	Assigned To
6:00 AM – 7:30 AM	Wake-Up & Personal Grooming	University Terrace	Resident Assistant
8:00 AM – 9:00 AM	Breakfast	SSC***	Resident Assistant
9:30 AM – 10:30 AM	SAT Preparation - English Session	ATC* 1162	Ms. Carroll
10:30 AM - 11:30 AM	SAT Preparation - Mathematics Session	ATC* 1162	TBD
11:30 AM – 1:00 PM	Lunch	SSC***	Student Resident
1:30 PM – 4:00 PM	Virtual Reality Laboratory & Development Training	EASC**	Dr. Zhang
4:30 PM - 6:00 PM	Dinner	SSC***	Resident Assistant
6:30 PM – 9:00 PM	Beginners Guide to Aerodynamics	EASC**	Drs. Dabipi,& Dodoo
9:30 PM- 6:00 AM	Retire to Rooms for the Night	University Terrace	Resident Assistant

SATURDAY, JULY 22, 2023 (8:00 – 4.00 PM)		
BUILDING A BETTER LIFE – CONCETE STEPS TO SUCCESS WORKSHOP	ATC**	1162

Week 2			
Monday, July 24, 2023			
	Activity	Location	Assigned To
6:00 AM – 7:30 AM	Wake-Up & Personal Grooming	University Terrace	Resident Assistant
8:00 AM – 9:00 AM	Breakfast	SSC***	Resident Assistant
9:30 AM – 10:30 AM	SAT Preparation - English Session	ATC** 1162	TBD
10:30 AM - 11:30 AM	SAT Preparation - Mathematics Session	ATC** 1162	Mohammed Salih
11:30 AM – 1:00 PM	Lunch	SSC***	Student Assistant
1:30 PM – 4:00 PM	The Basic Concepts of the Physics of Electricity and Magnetism	Hazel Hall, UMES	Dr. Das
4:30 PM - 6:00 PM	Dinner	SSC***	Resident Assistant
6:30 PM – 9:00 PM	Reflection on day's activities and briefing for next day's activities.	EASC**	Drs. Dabipi, Zhang & Dadoo
9:30 PM- 6:00 AM	Retire to Rooms for the Night	University Terrace	Resident Assistant

Week 2			
Tuesday, July 25, 2023			
	Activity	Location	Assigned To
6:00 AM – 7:30 AM	Wake-Up & Personal Grooming	University Terrace	Resident Assistant
8:00 AM – 9:00 AM	Breakfast	SSC****	Resident Assistant
9:30 AM – 10:30 AM	SAT Preparation – English Session	EASC** Auditorium	Ms. Carroll
10:30 AM – 11:30 AM	Hands-on Robotics Activities	EASC** Auditorium	Dr. Mei
11:30 AM – 1:00 PM	Lunch	SSC****	Student Assistant
1:30 PM – 4:00 PM	Hands-on Robotics Activities	EASC**	Dr. Mei
4:30 PM - 6:00 PM	Dinner	SSC****	Student Assistant
6:30 PM – 9:00 PM	Reflection on day's activities and briefing for next day's activities.	EASC**	Drs. Mei, Zhang & Dodoo
9:30 PM- 6:00 AM	Retire to Rooms for the Night	University Terrace	Resident Assistant

Week 2			
Wednesday, July 26, 2023			
	Activity	Location	Assigned To
6:00 AM – 7:30 AM	Wake-Up & Personal Grooming	University Terrace	Resident Assistant
8:00 AM – 9:00 AM	Breakfast	SSC***	Resident Assistant
9:30 AM – 10:30 AM	SAT Preparation - English	ATC 1162*	TBD
10:30 AM - 11:30 AM	SAT Preparation - Mathematics	ATC 1162*	Mohammed Salih
11:30 AM – 1:00 PM	Lunch	SSC***	Student Assistant
1:30 PM – 4:30 PM	The Basic Concepts of the Physics of Electricity and Magnetism	Hazel Hall, UMES	Dr. Das
4:30 PM – 6:00 PM	Dinner	SSC***	Student Assistant
6:30 PM – 9:00 PM	Reflection on day's activities and briefing for next day's activities/STEM Mentoring.	EASC**	Drs. Dabipi, Zhang & Dodoo
9:30 PM- 6:00 AM	Retire to Rooms for the Night	University Terrace	Resident Assistant

Week 2			
Thursday, July 27, 2023			
	Activity	Location	Assigned To
6:00 AM – 7:30 AM	Wake-Up & Personal Grooming	University Terrace	Resident Assistant
8:00 AM – 9:00 AM	Breakfast	SSC***	Resident Assistant
9:30 A.M. - 10:30 A.M.	SAT Preparation – English Session	ATC* 1162	TBD
10:30 AM - 11:30 AM	STEM College Programs & STEM Careers	ATC* 1162	Dr. Dabipi
11:30 AM – 1:00 PM	Lunch	SSC***	Student Assistant
1:30 PM – 4:00 PM	Job & Career Counselling	EASC**	Dr. Queenan
4:30 PM - 6:00 PM	Dinner	SSC***	Resident Assistant
6:30 PM – 9:00 PM	Reflection on day's activities and briefing for next day's activities.	EASC**	Drs. Dabipi, Zhang & Dodoo
9:30 PM- 6:00 AM	Retire to Rooms for the Night	University Terrace	Resident Assistant

Week 2			
Friday, July 28, 2023			
	Activity	Location	Assigned To
6:00 AM – 7:30 AM	Wake-Up & Personal Grooming	University Terrace	Resident Assistant
8:00 AM – 9:00 AM	Breakfast	SSC***	Resident Assistant
9:30 AM – 4:00 PM	Visit to NASA Goddard Space Flight Center	Greenbelt, MD	Brian Ash
4:30 PM – 5:30 PM	Dinner	SSC***	Resident Assistant
6:00 PM – 7:00 PM	Student Presentations	ATC* 1162	Ms. Carroll
7:30 PM - 8:30 PM	Closing Ceremony	ATC* 1162	TBD
9:00 PM –	PARTICIPANTS DEPART FOR HOME		
OR			
9:30 PM- 6:00 AM	Retire to Rooms for the Night	University Terrace	Resident Assistants

*ATC – Arts and Technologies Center

** EASC - Engineering and Aviation Science Complex

***SSC – Students Services Center

****NASA WFF – NASA Wallops Flight Facility

AUTHENTIC STEM ACTIVITIES		
	ACTIVITY	HOURS
1	Wind Tunnel Design and Testing	5
2	NASA WALLOPS FLIGHT FACILITY	6
3	Virtual Reality and Development Training	5
4	Beginners Guide to Aerodynamics	5
5	The Basic Concepts of the Physics of Electricity and Magnetism	5
6	Hands-on Robotics Activities	5
	TOTAL	31

ENGAGEMENT OPPORTUNITIES WITH STEM PROFESSIONALS		
	ACTIVITY	HOURS
1	Field Trip to NASA Goddard Space Center	5
2	STEM Mentoring	5
3	Field Trip to the Smithsonian Air and Space Museum	3
	TOTAL	13

COLLEGE AND CAREER READINESS DEVELOPMENT		
	ACTIVITY	HOURS
1	SAT Preparation - Mathematics	3
2	SAT Preparation - English	3
3	Internship/Job Opportunity Session	2
4	Job and Career Counselling	2
5	Building a Better Life – Concrete Steps for Success Workshop	8
	TOTAL	18

- **Summary of Summer Residential Experiences**

- 1. Highlights of achievements/successes;**

- Participants were from Maryland, North Carolina and New York High Schools
- Total Number of Applications: 35
- Number Accepted: 16 (8 Male, 8 Female)
- One of the Participants was Home-Schooled.
- The HAWKS MUREP PSI Team will make a presentation at the NASA STEM BETTER TOGETHER 2023 Conference with the title: **STEM Recruitment and Retention Strategies for Minority Student**

Lessons Learned

- Recruit Undergraduate Students and secure their acceptance of the positions before the Summer Holidays. Although we received Applications before the end of the Spring Semester, by the time we sent Acceptance Letters during the Summer, we did not hear from the Students.
 - Networking among students was not spontaneous. We had to engage them in some activities that encouraged them to learn each other names and exchange personal information like names and phone numbers.
 - Communication with other colleagues in the Team was not seamless. This affected their effectiveness. Pre- and Post- Planning Meetings and Discussions would have helped.
 - A designated Photographer will have helped in a more efficient collection data and photographs.
- **Final performance metrics for high school student participants and actual STEM contact hours;**

BREAKDOWN OF NUMBER OF YEARLY CONTACT HOURS

ACTIVITY	Description	Proposed Contact Hours
I	Wind Tunnel Design and Testing	5
II	HAWKS MUREP & NASA WFF	6
III	Field trip to NASA Goddard Space Facility	5
IV	Field Trip to Smithsonian National Air and Space Museum	3
V	The Basic Concepts of the Physics of Electricity and Magnetism	5
VI	Beginners Guide to Aerodynamics	5
VII	Hands-on Robotics Activities	5
VIII	Virtual Reality Laboratory and Development Training	5
IX	Job Shadowing	5
X	STEM Mentoring	5
XI	Building a Better Life – Concrete Steps to Success Weekend Workshop	8
XII	SAT English and Mathematics Preparation	5
	Total Proposed Contact Hours	62

- **List and summary of partner/collaborator support;**

Partnership/Collaboration with NASA Wallops Flight Facility

- Tour of the Fabrication and Testing Lab
- Tour of the Rocket Lab
- Intern Career Panel Discussion
- Range Control Center
- Internship Information Session

- Facilitation of Field Trip to NASA Goddard Space Flight Center

- **Testimonials or feedback from high school student participants and program staff**

Some of the Testimonials are included below.

Alexis Affum

- I learned a lot about college life. I did not know much about it and overall, I am glad to have the experience because it is going to help me in the future. I still plan to major in Health Sciences/start a pre physician assistant track. I also learned about biomedical engineering. In addition, with biomedical engineering people can design prosthetics or even other tools or robots to help in the operating room. Therefore, that's another path I would also take. This program also allows me to open my eyes to the stem field and engineering to let me know that medicine is not my only option. Something else I liked is that there are many careers in NASA, and they offer many internships to kids that are even in high school. I also learned just today that UMES has a PA track, so I am considering coming here.

Megan Iwuoha

- I learned social skills that I can use in the future, how to properly save money and build a better future. I enjoyed this SAT prep and skills and techniques I got to take away. This experience really emphasized how important it is to start early, I noticed that I have been pushing away my responsibility because they seemed too overwhelming, but I was only letting it accumulate so I am truly grateful for this college readiness program, in some ways I believe I now have a leg up.

Nneka Chigbu

- One thing I learned at this camp was the evolution of airplanes! One thing I liked at this camp was the creation of the wind tunnel because I enjoyed designing and building things and I love being in a group. One thing I disliked at this camp was the lack of flexibility between activities, making our schedules packed every day without an option to not go with the group, for example lunch. The lack of flexibility also made it difficult to interact with others better, outside the jam-packed day, making it harder to get closer to people I didn't already know.

Batoul Saleh

- I have learned more about stem and engineering. This program opened my eyes to a plethora of opportunities and information that has opened my interest to biomedical engineering as a possible major and career path. Going into this program, I did not really know what to expect, as I have focused my career path on medicine, but this program has allowed me to see many various opportunities in stem that fall into my interests. The college that my experience was also very eye opening and exciting.

Michelle Gere

- I learned more about stem because of the project. I learned a lot about because of the wind tunnel, I saw the process and since it was hands on, and team based I was able to build it based off the process. I really enjoyed having this college experience because it will prepare me for it in the future.

De’kerra Marshall

- I learned that there are many different opportunities that NASA has available for high school students. This program really doubled down on my choice of aerospace engineering. It has also taught me that dorm life is fun when you have friends. I learned about how wind tunnels work and how engineers and scientists use them to test the aerodynamics of an object.

- **Images with media releases of high school students participating in the summer residential experiences with captions describing the activities taking place**



Students Building a Wind Turbine

- **Description of the Culminating Event including the Student Project Showcase**
 - Student/Participant Presentations
 - Closing Ceremony
 - Motivational Presentation
 - Award of Certificates of Attendance

PHOTO GALLERY



(a)



(b)

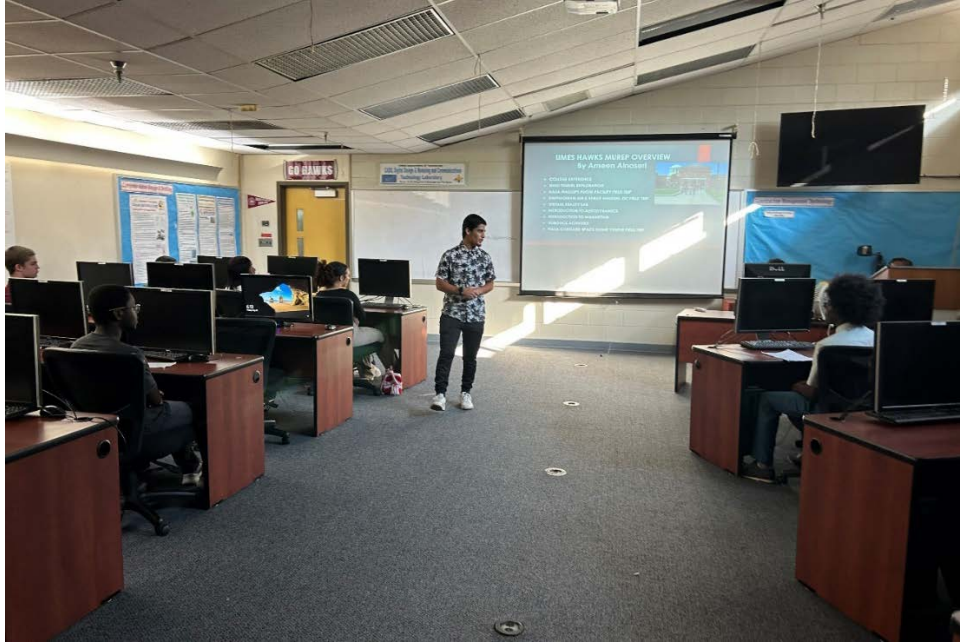
Fig 1 Manufacturing Lab NASA WFF



Figure 2 Aircraft Workshop WFF



Figure 3 BUILDING A BETTER LIFE WORKSHOP with Mr. Oppenheimer



(a)



(b)

Figure 4 Student Presentations



Figure 5 Group Photo with Parents, Guardians and Program Staff



(a)



(b)

Figure 6 Wind Turbine Construction



Figure 7 Virtual Laboratory



Figure 8 Air and Space Museum Washington DC



MINORITY UNIVERSITY RESEARCH

Figure 9 Air and Space Museum Washington DC



Figure 10 Air and Space Museum Washington DC



Figure 11 Air and Space Museum Washington DC



Figure 12 Air and Space Museum Washington DC



Figure 13 Air and Space Museum Washington DC



Figure 14 The 2023 Particioants



(a)



(b)

Figure 15 Presentation of Certificates of Participation

TELL US ABOUT YOURSELF

PLEASE PRINT CLEARLY

Standardized Test Score: _____

Grade Point Average: _____

During the next academic school year I will be in the:
(check one)

☐ 9th Grade ☐ 10th Grade ☐ 11th Grade ☐ 12th Grade

List your Math and Science class (most recent)

Math: _____

Science: _____

Career Interest (Check One)

- | | |
|---|--|
| ☐ Accounting | ☐ Law |
| ☐ Architecture | ☐ Marketing |
| ☐ Business | ☐ Scientific Research |
| ☐ Criminal Justice | ☐ Engineering |
| ☐ Computer Science | ☐ Technology |
| ☐ Environment | ☐ Construction |

Awards/Achievements/Organizations:

Attach a list of awards, achievements, and organization memberships

Required Essay:

Describe your career objective(s), your interest in STEM programs and how the HAWKS MUREP (PSI) program can assist you in reaching your goals. Your essay must be typed and can not be more than one (1) page.

Additional Information:

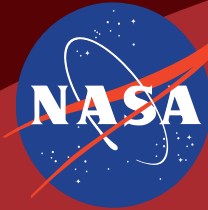
Please include at least one letter of recommendation and your academic transcript. Application will not be processed with incomplete information.

Signature & Date (Parent / Guardian)

Signature & Date (Student)

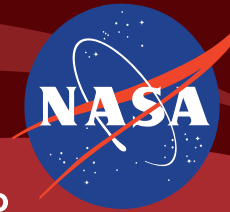
*The HAWKS MUREP PSI program is funded by the
National Aeronautics and Space Agency (NASA)*

HAWKS MUREP PRE-COLLEGE SUMMER INSTITUTE (PSI)



Partner

UNIVERSITY OF MARYLAND
EASTERN SHORE



Partner

For more information contact:

Dr. Joseph Arumala
Director

University of Maryland Eastern Shore

HAWKS MUREP
Pre-College Summer Institute (UMES PSI)

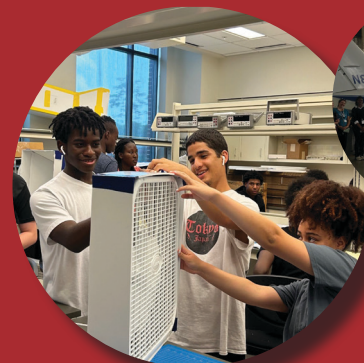
Department of The Built Environment
11931 Art Shell Plaza
Princess Anne, Maryland 21853

Phone: (410) 651-6472

Email: joarumala@umes.edu

Or visit:

<https://wwwcp.umes.edu/mureppsi/>



PURPOSE OF HAWKS MUREP PSI

The HAWKS MUREP Precollege Summer Institute (PSI) is a STEM focused career initiative designed to introduce minorities to NASA Missions and career opportunities in NASA. A Team of UMES and NASA Scientists and Engineers is committed to the PSI to assist the Sixteen (16) High School Participants that will be selected in the Program in preparing them to enter STEM Workforce, careers in NASA and prepare them for College.

The HAWKS MUREP Precollege Summer Institute has specifically been designed to increase participation and retention of female and historically under-served and underrepresented high school students in STEM areas and equip them for success in college STEM degree programs and eventually STEM careers.

NASA Wallops is partnering with UMES in this project whereby the high school student participants will have access to Wallops Engineers, Scientists and Facilities for mentoring, job shadowing and involvement in real-life STEM Projects, Research and Activities. They will also have access to UMES Facilities. The Residential Component of the program will be on the UMES Campus with Participants staying on Campus Housing. The PSI is for 2-weeks and will run in late July of every year.

PROGRAM OBJECTIVES

Students participating in the program will be involved in educational enhancement activities, field trips, and participate in STEM hands-on Activities that will expose them to careers, academic programs, and professionals in NASA Missions and STEM Careers. Each student will:

- » Explore safety, innovative trends, and career opportunities that exist in NASA Missions
- » Become knowledgeable of NASA Missions, NASA Careers and STEM Careers.
- » Develop understanding of importance of positive attitudes in learning Mathematics and English and the opportunities for advanced studies;
- » Exposure to college campus and opportunity to meet NASA Scientists and Engineers, UMES Faculty Members and College Students involved in academic programs that lead to STEM Internships and Careers;
- » Development of computer, professional, and communication skills needed for successful study.
- » Be involved in College and Career Readiness Development Activities

INTERESTED?

Students interested in participating in the HAWKS MUREP PSI should:

- » Contact their school guidance counselor or science and mathematics teachers, or the Program Director (information listed below) for applications;
- » Discuss the Institute with your parents or guardians making sure that they support your decision; and
- » Submit application materials and supportive documents on or before the deadline of mid- June of every year.

Applicants must be:

Be enrolled in high school in the Fall semester of the current academic year.



UMES HAWKS MUREP Pre-College Summer Institute Application

PLEASE PRINT CLEARLY

Name: _____

Date of Birth: _____

Address: _____

County: _____

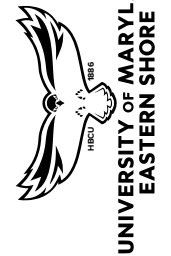
School attending Fall of current academic year: _____

Parents/Guardians: _____

Address (if different): _____

Telephone: (Home) _____ (Work) _____

Please fill out both sides of this form and mail to:

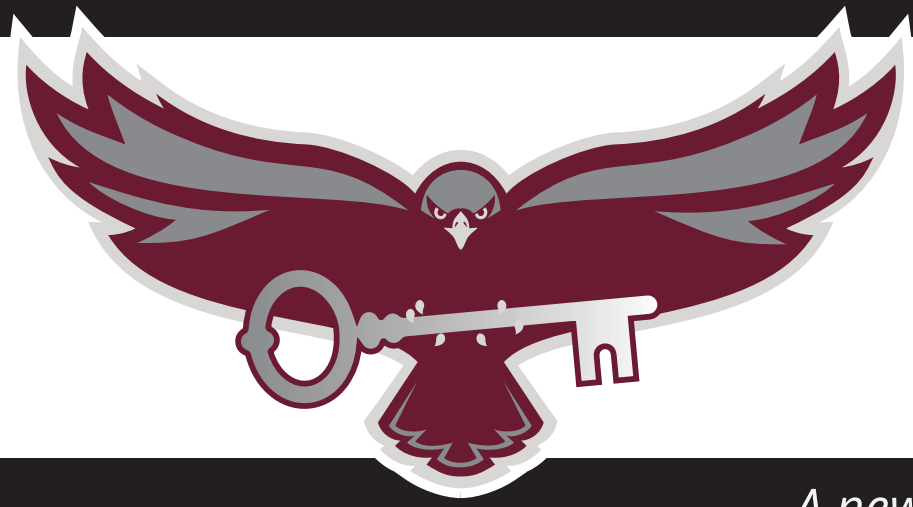


Dr. Joseph Arumala
Director

University of Maryland Eastern Shore

HAWKS MUREP
Pre-College Summer Institute (UMES PSI)

Department of The Built Environment
11931 Art Shell Plaza
Princess Anne, Maryland 21853



THE KEY

A newsletter for students, faculty, staff, alumni, and friends

APRIL 2023

‘That is how you measure impact’

UMES receives \$425,000 in NASA grants for STEM summer program funding



The University of Maryland Eastern Shore was the recipient of \$425,000 in NASA grants aimed toward serving historically underserved and underrepresented high school students in STEM. In all, NASA gave \$3 million in grants to seven Historically Black Colleges and Universities and one predominantly black institution.

The funding - \$85,000 annually for five years - will be utilized for UMES’ HAWKS Minority University Research and Education Project (MUREP) Precollege Summer Institute (PSI), a two-week residential program that will feature learning activities that are aligned to NASA’s themes of space exploration, aeronautics, and earth science.

“As we all know, the demographic has changed in this country, so NASA has realized that for several years,” said Dr. **Joseph Arumala**, professor of technology at UMES. “This is an attempt to diversify the workforce in NASA. So, really this program is mainly geared towards females and underrepresented students.”

This year’s program will run from July 16 to July 28 and will be open to 15 students in grades nine through 12 that have an interest in STEM fields.

During the summer program, students will participate in a number of learning and hands-on activities ranging from wind tunnel design and testing, robotics activities, a virtual reality laboratory as well as tours of the NASA Wallops Flight Facility where they will have a chance to interact with NASA scientists and engineers who will also act as mentors and advisors to the students.

Program participants will also interact with and visit scientists and engineers at the NASA Goddard Space Flight Center in Greenbelt, Maryland.



Dr. Joseph Arumala

“This project gives students an opportunity to experience what it’s like to live on a college campus, attend classes, and build relationships with professors and like-minded peers,” said Torry Johnson, NASA MUREP project manager said in a statement. “What makes this program special is that it’s tied to NASA research. Students will be participating in engineering design challenges and research related to NASA missions with support from NASA subject matter experts.”

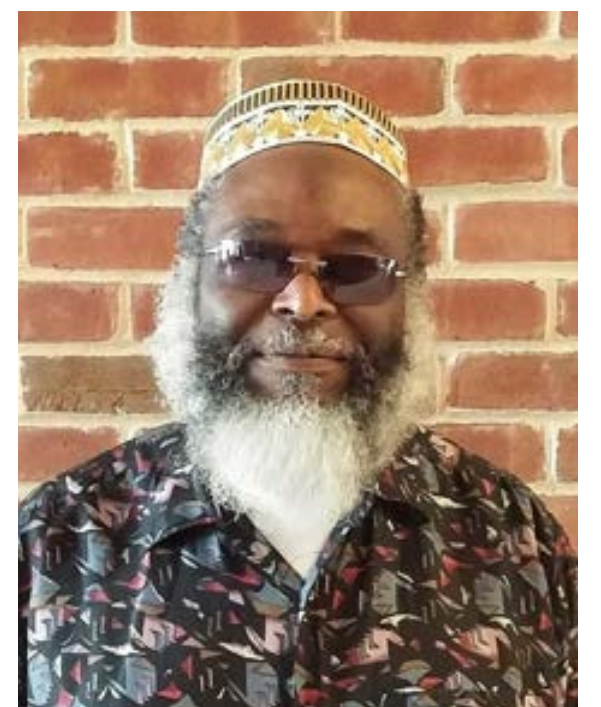
In addition to the mentoring provided by NASA staff, the selected applicants will receive college and SAT preparatory courses in classes such as English and mathematics as well as career development activities from UMES faculty and staff.

Dr. **Ibibia Dabipi**, a professor in the Department of Engineering and Aviation Sciences, said giving students the experience of living on a college campus will be an impactful one.

“The fact that the program is designed distinctly to bring students on campus is to advance their ability to understand how [college] is going to be different from high school,” he added. “They’ll be finding a routine and enhancing their understanding of their fields of choice while also making them understand the simple fact that, from that point on, responsibility is on them. We want to optimize their ability to succeed in college.”

With the potential of having 75 different students participating in the PSI over the next five years, not only will the program prepare them for pursuing STEM-centered majors but it will allow them to become ambassadors and mentors in their own right.

“What we want to do is advance those students whether they attend UMES or not,” Dabipi said. “They should be in a STEM field somewhere that educates them to advance because that is how you measure impact.”



Dr. Ibibia Dabipi

Partnerships

Education Solutions – Making a World of Difference

Educational Solutions Company is a premier charter management organization that has served the Central Ohio community for nearly 20 years. Educational Solutions Company manages and serves a diverse student population with respect to student academic growth and to utilize evidence-based educational practices. Education Solutions Company has served well in bridging language and cultural barriers for its diverse student population. It is their vision to prepare students academically, socially and morally to become effective contributors to society with a focus on Real World Learning and career exploration.

In support to NASA Space Act Agreement with the University of Maryland Eastern Shore, the NASA MUREP Pre-College Program had hosted twelve students from the Education Solutions Charter School out of Columbus, Ohio in which they toured Balloons, Sounding Rockets, SmallSats, Launch Range operations and the island launch pads. At the end of the visit, Dr. Robert Stephens, executive director of Educational Solutions Charter School, remarked, “Our young people’s eyes were widely opened to see firsthand science and aviation technology as WFF professionals shared insight on space atmospheric test operation and various missions across WFF and NASA.” Thanks to the NASA MUREP Pre-College Program for the gracious support and leaving a lasting impression on the students from the Education Solutions Charter School.

Contact Information:

Dr. Estella Stephens, CEO/Superintendent

Dr. Robert Stephens, Executive Director

2740 Airport Dr Suite 300

Columbus, OH 43219

Phone: (614) 299-1007

Fax: (614) 299-3684

APPENDIX

PROJECT EVALUATION & REFLECTION

ANNUAL EVALUATION REPORT

The proposed Activities shown in the Schedule of Activities were well executed. The SAT (Mathematics and English) sessions were well received. In the first week, evaluation tests were given and in the last week tests were administered to the Participants. The comparison of the grades the students received showed a marked improvement in students' performances. Similar trend were also noticed in the hands-on activities. The students were quite motivated and keen in all the classroom and laboratory activities.

At the beginning, the students hardly interacted with each other. Some of them did not even know the names of their roommates. However, after several mentoring sessions, this situation changed. In fact, by the time the summer ended, all of them have exchanged contact information and were sending data and photographs to each other!

The Field Trips were very interesting and informative for the Participants. During Daily Reflection sessions at the close of each day, they talked about (reflected) on the day's activities. They learnt a lot about NASA and its Missions and College STEM Programs and Careers. Some of them indicated that they would like to take STEM Programs in college.

The Faculty met at the end of the summer and reflected on the activities. The issues raised that were raised that will improve the program were;

1. Needed equipment and project materials should be acquired early. Because of internal Budget issues, we did not have access to the grant funds early. We hope that subsequent years will be better.
2. All Activities should be designed in such a way that students can be divided into Teams and could compete against each other. In addition, it was discussed that each Activity should achieve measurable results.

Commented [AJ01]:

We are trusting that each year our performance will be better and our aim is to provide solid background to the Participants.

REFLECTION REPORT

The program started on Sunday July 16, 2023 and ended on July 28, 2023. The participants admitted into the program arrived on campus on July 16th and were housed in the University Terrace hall for the duration of the program. For the first week starting on Monday the 17th, the program started with the tour of UMES facilities and laboratories which was guided by Drs. Zhang and Dabipi to familiarize the participants with the safety requirements in the areas they were expected to engage in for their program. At the end of each day, a reflection period was set aside to examine what the participants perspective was for the day's activities and to brief the participants on the next days activities. The reflection period was used to adjust the schedule based on the experiences of the participants as well as to gauge the participants' level of interest in the day's activities.

The program was also shadowed by a team of students from the Education Solutions – Making a world of Difference from Ohio. As a result of the students' experiences, UMES is partnering with the Education Solutions – Making a Difference organization to pursue an initiative - the creation of a Middle College program. The vision for this program focuses on enhancing access to college,

promoting college completion, and advancing career and technical education (CTE). The Middle College program will be designed to:

1. **Ensure Access to College:** UMES recognizes that access to higher education is a fundamental prerequisite for personal and professional growth. Through the Middle College program, we intend to provide a seamless transition from high school to college for students, particularly those from underserved backgrounds.
2. **Foster College Completion:** Our program will prioritize strategies that facilitate college completion. This includes comprehensive academic support, mentorship programs, and career guidance, all geared towards empowering students to persist and graduate with valuable credentials.
3. **Advance Career and Technical Education:** UMES is committed to equipping students with the skills and knowledge needed for successful careers in the modern workforce. The Middle College program will integrate CTE into its curriculum, ensuring that students are prepared for the demands of their chosen career pathways.

The true value of the shadowing experience is reflected in the Education Solution's proposing to bring another set of students to shadow the program this year. The programs as delineated in the program schedule provided a wholesome experience to the participants as reflected in the comments.

The major change to the program this year will be on the closing ceremony as the parents were not given the opportunity to see the result of their children's growth and experience from the program as a result of the last field trip schedule.