



A. JAMES CLARK  
SCHOOL OF ENGINEERING

## 2019 MdSGC Balloon Payload & WIE Outreach at College Park Summer Exchange

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## “M”-Power Tools

- The M-Power Tools Summer Program is focused on enhancing self-efficacy as well as teamwork skills by teaching girls to use power tools safely and effectively to accomplish a project goal alongside current students and professionals in the field, specifically women, who can serve as role models and mentors.
- Week long commuter program for 7<sup>th</sup> and 8<sup>th</sup> graders
- Project goal was introduced with an individual picture frame leading into the final group project of the free little library

# “M”-Power Tools

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“M”-Power Tools

“Construction”



Final Product

# S.P.I.C.E. (Students with Potential and Interest, Considering Engineering)

- S.P.I.C.E. Summer Program's mission is to strengthen confidence and foster community among women who have aspirations in engineering. Throughout the week, students are introduced to the field of engineering and its different disciplines through projects, tours, and guest speakers. Each activity is intended to highlight the relevance of engineering in daily life and showcase societal impacts. All activities were supervised by current engineering students and conducted on campus
- week-long commuter program designed for rising 9th and 10th graders

# S.P.I.C.E



Left to right:  
Visit from General Electric (left)

Activity given by General Electric  
(right)

Left to right:  
Visit to Brighton Dam at Triadelphia  
Reservoir  
(left)  
Tour of Patuxent Water Filtration Plant





# S.P.I.C.E

Panelist: (Top Left to right)  
Congresswoman Suzanne Bonamici, Dr. Ellen  
Stofan, Dr. Njema J. Frazier, Aisha Bolwe

Rep. Suzan DelBene (D-WA)(bottom left)

# E2@UMD

## Exploring Engineering at the University of Maryland

- E2@UMD is a summer program intended to expose participants to the world of engineering through activities, lab experiments, informative workshops, team challenges and seminars with professional engineers.
- A one-week residential program geared towards rising 11th and 12th graders who are considering engineering as a possible major and career.
- The mission of the program is to provide a positive learning experience in a collegiate environment
- Increase knowledge of specific engineering disciplines and potential engineering careers
- Build community among women who have similar aspirations
- Focuses on mentoring relationships between high school women, college students, and engineering professionals to help strengthen their self-confidence

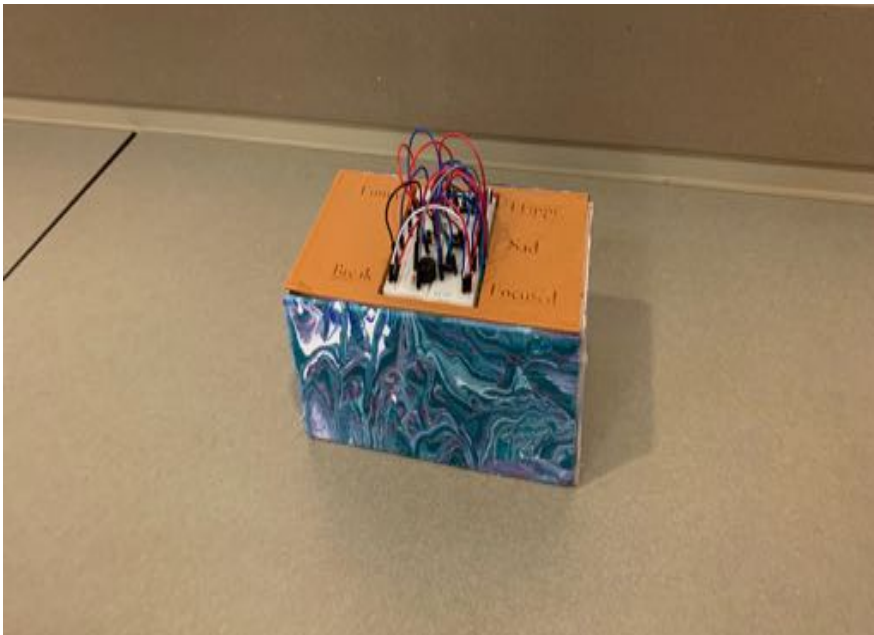
# E2@UMD

- Participants attend engineering lectures conducted by faculty and guest lecturers, observe and conduct laboratory experiments, participate in tours of campus labs and facilities, and meet with professional engineers in specific disciplines while giving them that hands on experience
- The program focuses on introducing participants to the fundamental principles and concepts as well as the influences of engineering on society

# E2@UMD

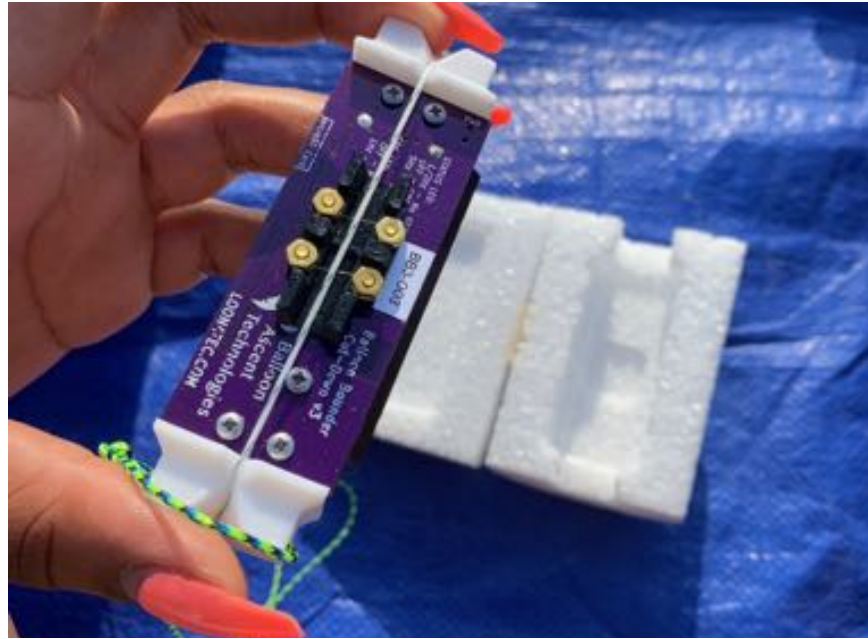
Sample of Engineering Disciplines Covered:

- Aerospace Engineering
- Bioengineering
- Chemical and Biomolecular Engineering
- Civil and Environmental Engineering
- Electrical and Computer Engineering
- Fire Protection Engineering
- Materials Science and Engineering
- Mechanical Engineering



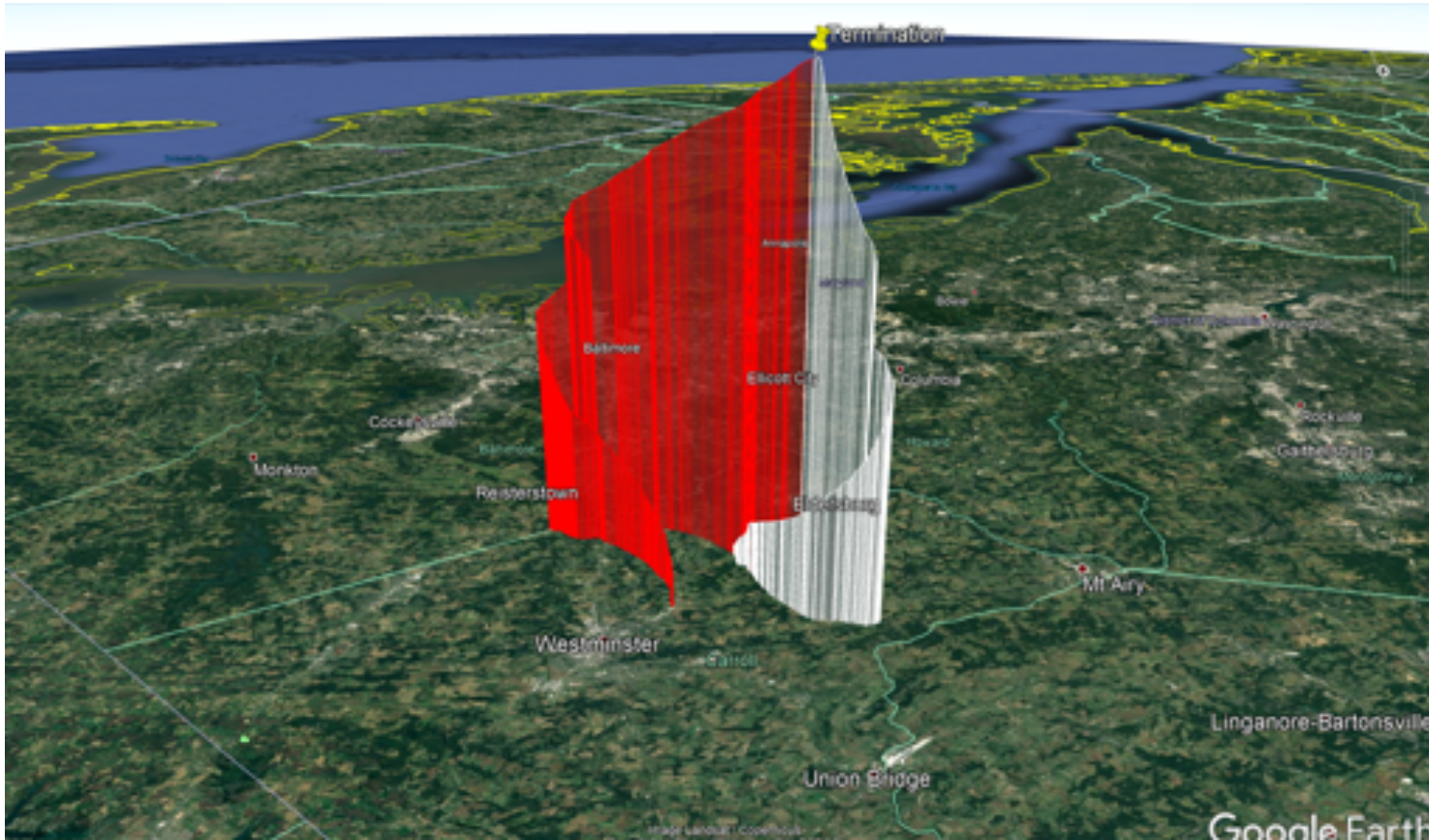
## E2 Exploring Engineering

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# Balloon Payload Project

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# Balloon Payload Project

- Cut down-device (CHOPPY) was set to trigger at  $p = 18\text{mbar}$  or Altitude = 27,000m, and to keep temperature at  $-10^{\circ}\text{C}$
- The cut down device actuated at exactly 27,001 m and successfully separated at 27,081m

# Future Work

- Create a log in excel to analyze all existing launches with the BPP and gather statistics on the data such as how many payloads landed in trees, ect.
- Assist with CHOPPY in the upcoming launch
- Extend my experience with WIE by creating a school chapter at my home college institution

# Acknowledgments

- Abhijit Nagchaudhuri, Ph.D., UMES Professor
- Dr. Mary Bowden, acting director of WIE at UMD, mentor
- Becky Kenemuth, assistant director at UMD– Outreach
- Julia Anderson, program coordinator at UMD – retention
- Sama Sabihi, graduate coordinator at UMD - outreach & recruitment



**Questions**