

Public Schools STEM and Robotics Program Task Force - Establishment (HB531)
SUPPORT - Mount Hebron High School (MHHS) Ragnarok Robotics Team 3748

Dear Chair Wilkins, Vice Chair Feldmark, and Members of the Ways and Means Committee,

The students and mentors of the Mt. Hebron High School Robotics Team in Ellicott City, MD, ask for your SUPPORT of Delegate Wu's proposed HB531 that would help establish competitive robotics programs as varsity sports in every public high school in the State.

Participating in Robotics has helped students in our community connect with others and develop skills that greatly improve college and career readiness, giving us both the technical expertise and confidence to pursue higher education and careers in STEM (science, technology, engineering, math) fields. This is especially helpful and important for young women and other underrepresented groups. According to the [FIRST Longitudinal Study](#) from [FIRST Robotics](#) (the robotics program that our team competes under), STEM skills "are critical for a society to advance, and STEM careers are among the highest paying in the workforce." A "nearly 11% increase in STEM occupations between 2022 and 2032" was projected by the U.S. Bureau of Labor Statistics in 2023, but there are "low levels of math and science achievement among U.S. students" and "decline[s] in the numbers of young people moving into STEM careers," according to the study. Thus far, "a relatively small proportion of the work on STEM education has focused on the role that after-school programs can play to reinforce STEM learning and help engage young people in educational pathways leading to STEM careers." The establishment of a STEM and Robotics Program Task Force is vital to ensure that Maryland public school students are ready for the high-paying STEM careers our economy will need in the future.

The Robotics Task Force would significantly improve accessibility to robotics education by creating more opportunities and reducing the barriers that keep students out of existing programs. Reducing the need for private sponsors would allow more robotics teams to flourish. Additionally, there are many teams without the support of private sponsors who rely on exorbitant yearly dues from members, creating unjust barriers for lower-income students. Reducing the need for students to pay dues by supporting robotics teams statewide would ensure equal access to low-income students and other underrepresented groups. Until this year, all the funding to support our team came from private donors that we accessed through the volunteered time and expertise of our mentors. For the first time, our team earned a \$15,000 grant from the [MSDE Robotics Grant](#) program for 2025-2026. This grant has enabled us to conduct outreach efforts at a local middle school to encourage girls and underrepresented groups to pursue STEM by working with them to start their own FIRST® LEGO League Challenge team for ages 9-14.

The FIRST Robotics organization that many Maryland robotics programs affiliate with hosts international robotics competitions of a variety of levels for elementary to high school age students, which encourage STEM interest, builds technical and life skills, and connects students to career opportunities, exclusive scholarships, and employers. Young women who participate in FIRST Robotics have shown to be 2.5x more likely to major in engineering and 3.7x more likely to major in computer science than their peers, according to the FIRST Longitudinal Study and [FIRST Inspires Report](#). The study states that "Compared to a matched group of national young adults, female FIRST participants are more likely to work in STEM and earn significantly more" and "underrepresented racial and ethnic groups in FIRST are significantly and substantially more likely to major in [STEM]." These benefits remain true for economically disadvantaged groups, who proved to be 19.3% more likely to major in STEM in the study.

All of these statistics are supported by more than just FIRST's study. Our Mount Hebron community is full of first-hand accounts by students who have benefited from local robotics programs. Lily Tang, a freshman member of the MHHS robotics team, says, "the Robotics community connected me with older high schoolers who have shared interests, allowing me to transition into high school by connecting with...other girls who are into tech. Robotics gives me opportunities to use my current coding skills and develop new ones, like object-oriented programming skills." In my own personal experience, by my second year on the team, I became the only female member and felt the discomfort that a male-dominated environment creates. Although it taught me how to collaborate with guys and prepared me for my future in a predominantly male field, the importance of having women in STEM environments cannot be overstated. Since receiving the MSDE Robotics grant, we've been working to improve the representation of women and other underrepresented groups on our team, as we promised to do on our application. I revived a Society of Women Engineers (SWE) club at our school, and we've brought the percentage of female robotics members from ~5% to 15% since last year. This partnership between Ragnarok Robotics and the SWE club, with the help of our grant money, has transformed with these demographic changes, becoming more welcoming, more balanced, and more active in the community.

In addition to learning how to advocate, lead, and manage, I've learned practical and technical skills like how to use a bandsaw or 3D model a design. Students who participate in FIRST are familiarized with industry terms and systems that will help them succeed in internships, college, and beyond. FIRST participation significantly strengthens the college applications of participants, as colleges are well aware of all that students benefit from participating.

Guru Ramu participated in robotics in high school and learned to use Computer Assisted Design (CAD) tools and CNC machines, meeting close friends while learning real skills better than any classroom could teach. He has spent 12 years mentoring robotics teams to offer students the same experiences. Many of our other mentors offer similar sentiments, describing how robotics involves the engineering process, iterative testing methods, teamwork, and management skills. Students learn to present ideas, problem solve, and overcome challenges, abilities that are invaluable in STEM work environments. We hope you will include teacher advisors, mentors, and students currently participating in robotics clubs as part of your task force. We have valuable experience you can use to expand access to STEM education and make it more equitable. It takes a lot of work to establish competitive robotics teams, and it will take all of us to establish programs in every public high school statewide.

Maryland is committed to increasing equitable access to STEM education, as stated by Lt. Gov. Miller in her meeting with the [Goddard Space Flight Center and MEDCO](#) when she says, "By bringing together government, industry, and education, we have what it takes to prepare for the workforce needs of our time, making our state more competitive in the process. An investment in STEM is an investment in Maryland's future." Students across Maryland deserve equal access to the incredible opportunities, skills, and communities built by robotics teams like Mount Hebron's, and improving accessibility starts with the establishment of this Robotics Program Task Force. By supporting HB531, you will be investing in robotics clubs in public schools across Maryland; you will help improve equitable access to the benefits of being a robotics team member, aligning with Governor Moore's priorities to increase STEM opportunities for students. Thank you all for your time and consideration. We hope that you will issue a FAVORABLE committee report for HB531.

Sincerely,
Josephine Mansour, Project Manager, MHHS Ragnarok Robotics Team 3748 and
President, Society of Women Engineers Club