

# TechBrick Robotics: A Program That Builds Young Engineers



**Please take a few minutes to review this document. It is a story of 13 years, 700 students, 40 college students, multiple awards, more than 30 schools in Harford and surrounding counties, 100's of mentors, and programs that are part of a global community of more than 400,000 students.**

**TechBrick is a program that is helping build the next generation of technical professionals.**

<http://www.techbrick.com> \* TechBrick Robotics LLC, 1603 Belvue Drive, Forest Hill, MD 21050 / 410-838-8264 / Meeting on APG  
**Want to Register? Go to: <http://form.techbrick.com>**

Page 2 of 4



2014-2015 Super Amazing Young Engineers

## Your Student Should Consider Participating in this Program

TechBrick, formed in early 2003, is an independent robotics and STEM education club for home-schooled, public, and private school students, K-12, in Harford, Baltimore, and Cecil counties.

**We are looking for students who love technology:** TechBrick is a robotics club formed initially for home school students in Harford and Baltimore County. It now reaches students from the full spectrum of public and private schools in our region. Since 2003 we have had hundreds of young engineers participate in our program.

**There are no prerequisites:** We are looking for students, grades K-12 who are eager to learn engineering at all levels, are willing to focus on a very complex task, and to engage in building a world-class robot and team. Our facility now features 3D printers, computer aided design machines, and range of related tools and technology. No previous skills or training are required.

**Why this program is critical to our community:** The club runs under a program called *FIRST*, founded 20 years ago by Dean Kamen (of Segway Scooter fame). His goal was to create a program in which young students with a strong interest in technology and engineering could get the same type of encouragement that students get in organized sports. The public schools typically cannot host the high school programs due to scheduling and safety issues. We fill that gap.

**The Program Has National Support and Value:** *FIRST* now has more than 400,000 global participants in over 60 countries with programs serving children ages 5-18. Hundreds of colleges offer scholarships to students who have participated in a *FIRST* program. Many of the participants who started at the beginning are now employed by these corporations. Learn more at <http://www.firstinspires.org>

**The FIRST program and competitions provide one of the best platforms for young people to get excited about the challenges and rewards of engineering:** They are pushed to the limit on every level: project management, design, research, testing, strategic planning, and more. In four or five years many of our early participants will be in the workplace providing the innovative solutions we need to maintain our competitive edge.

Browse around our [www.TechBrick.com](http://www.TechBrick.com), <http://www.firstinspires.org> and [www.mdfirst.org](http://www.mdfirst.org). You'll catch a glimpse of the excitement that is FIRST and TechBrick Robotics.

I look forward to hearing from you. Please call me with any questions you may have.

Marco Ciavolino, Executive Director / 410-838-8264 / [marco@techbrick.com](mailto:marco@techbrick.com)

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These types of programs will provide our future talented, engineers, researchers, and scientists.

Primary Sponsors  
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...and dozens  
of local  
corporations.

And more than 200  
amazing parents!



2014-2015 Super Amazing Young Engineers

## TechBrick at Glance

Since 2003 we have served more than 650 students from more than 30 regional schools and home school groups. We have delivered more than 60,000 instruction hours.

### This Year We have Six Teams K-12

1 JrFLL Team, 2 FLL Teams, 2 FTC Teams, 1 FRC Team.

### This Year's Students and Mentors

- Total of 57 students and 35 mentors.
- More than 50 employers (private and government)
- 20 schools and co-ops including: Aberdeen High School SMA, Bakerfield Elementary School, Bel Air High School, Bel Air Middle School, Bryn Mawr School, Chapel Hill Elementary, Fountain Green Elementary, Harford Day School, Homeschool, Homestead Wakefield Elementary, Kennard-Dale High School, Kingsville Elementary, Meadowvale Elementary, Mount View Middle School, North Harford High School, Roye-Williams Elementary, Southwest Academy Magnet Middle, St. Joan of Arc, Trinity Lutheran School, William S James

### Outcomes Count...

Alumni in Top Engineers Schools: Drexel, Messiah College, Franklin & Marshall College, Indiana University, Towson University, Washington College, University of Virginia, University of Delaware, University of Kentucky, University of Maryland Baltimore County (UMBC), Harford Community College, Grove City College, Rochester Institute of Technology, Virginia Tech or University of Virginia, Virginia Western Community College, University of Maryland (College Park), Massachusetts Institute of Technology, University of Minnesota and more.

### This Year's Seniors all Headed to STEM Careers

## Where We Meet

Building 3556 on APG off of Rodman Road



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Page 4 of 4

## TechBrick Programs/Courses

### Challenges through *US FIRST* offered by TechBrick Robotics

For more information about these programs visit <http://www.firstinspires.org>

PROGRAM	FRC FIRST Robotics Competition	FTC FIRST Tech Challenge	FLL FIRST LEGO League	JrFLL Junior FIRST LEGO League
Grades/Ages	High School (grades 9-12)	Jr High through High School (grades 7-12)	Ages 9-14	Ages 5-8
Meetings	All Tuesday nights at APG. Additional nights during season.	All Tuesday nights at APG. Additional nights during season.	All Tuesday nights at APG during the season. Some teams may meet offsite. Additional nights may be scheduled pre-event.	Day to be determined. Teams may meet offsite.
TIME COMMITMENT	Season runs year-round. Key commitment time is Jan-April with multiple meetings per week.	Season runs year-round. Key commitment time is August-March with one to three meetings per week.	Season runs from September-January with one meeting per week and some additional meetings near tournaments and optional field trips.	Season runs from September-January with 4-6 meetings as needed and optional field trips.
TASKS	A sophisticated materials-handling challenge that requires teams to corral, manipulate, score in cooperation with other teams. FRC teams use advanced robotics and building techniques to design and construct large, complex robots using a wide array of industrial tools and resource. FRC includes a substantial outreach and communications effort that includes publications, speaking, and photography/video.	A sophisticated materials-handling challenge that requires teams to corral, manipulate, score in cooperation with other teams. FTC Teams use a new TETRIX robotics system and advanced robotics and building techniques to design and construct smaller, complex robots using a wide array of industrial tools and resource.	A comprehensive challenge that teaches children engineering and invites them to invent the solutions of the future. The task involves research, robotics engineering, technical reviews, and teamwork interviews. Teams use the LEGO NXT robotics system.	A project-based research and building program in which young engineers learn to research and present their findings through posters and models using LEGO parts and the WeDo system.
ANNUAL TUITION	\$300 per student	\$250 per student	\$200 per student	\$75 per student
EST ANNUAL COSTS PER PROGRAM	\$25,000-\$40,000	\$2000-\$3000 per team	\$800-1200 per team	\$150-200 per team
Annual fees cover general administration, local travel, small capital purchases (parts and supplies), annual team registrations with US FIRST, and event registration fees. There may be scholarship money for special needs. Please ask us if you have a need.				
ADDITIONAL COSTS	State tournaments may have a per tournament fee assessed for travel, accommodations, and food. Regional tournaments and trips to Worlds (if the team qualifies) will be funded directly by families and special fundraising with fees to be determined.	State tournaments may have a per tournament fee assessed for travel, accommodations, and food. Regional tournaments and trips to Worlds (if the team qualifies) will be funded directly by families and special fundraising with fees to be determined.	There are no additional seasonal costs. Trips to Worlds (if the team qualifies) will be funded directly by families and special fundraising.	None. If JrFLL accompanies our other teams to Worlds there will be travel and accommodation costs to be determined.

### Off-Season Programs

PROGRAM	Sea Perch Underwater Robotics	Other STEM Focused Courses (TBD)
Grades/Ages	K-12. Enrollment open to anyone in the area.	During the year we will be offering a number of STEM focused seminars and short courses.
Meetings	April-June with a practice and tournament end of April or early June.	
Task	Build an underwater robot that completes a number of task on a course. For more information see: <a href="http://www.seaperch.org">http://www.seaperch.org</a>	
Time Commitment	3-5 Meetings to build the robot plus the practice day and tournament.	
Costs	Kits are provided through a grant. You will spend a small amount on your display/project board.	