

## Chairman's Award - Team 4122

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2018 - Team 4122

**Team Number**

4122

**Team Name, Corporate/University Sponsors**

IBM/Ossining Matters/Truckin' Foundation/Ossining Community Businesses & Ossining High School

**Briefly describe the impact of the *FIRST* program on team participants with special emphasis on the 2017/2018 year and the preceding two to five years**

Since our team's establishment in 2012, we've accomplished accessibility through our open door policy, meaning any and all students are welcome to join us in *FIRST* participation. Our team has taught STEM to over 600 students, spanning a diverse population including several non-native English speakers and over 15 special education students. Due to this growth, we have established a secondary FRC team (7004) to ensure all students have a presence.

**Describe the impact of the *FIRST* program on your community with special emphasis on the 2017/2018 year and the preceding two to five years**

52% of our students qualify for free or reduced lunch, recognition of our economic disparity allows us to focus on giving back. We've petitioned our district and obtained two engineering classes, an AP Computer Science class, a *FIRST* robotics class, a special education FLL workshop, and MakerSpaces. Outside of our high school, we annually coordinate 30 days of Hour of Code, refurbish and donate laptops to underprivileged students, and accumulate hundreds of hours volunteering locally.

**Team's innovative or creative method to spread the *FIRST* message**

In 2014, we began to advocate for the Hudson Valley Regional's establishment, working with *FIRST* administrators, scouting venues, and mapping floor plans. As of this year, for the second year in a row, we are proud to have four members serving on the Regional Planning Committee. In addition, we are working with Senator David Carlucci to make robotics a NY sport by campaigning for the passing of NYS Senate Bill S375.

**Describe examples of how your team members act as role models and inspire other *FIRST* team members to emulate**

Focusing on student leadership, our teams structure allows members to act as role models in numerous ways; all members volunteer monthly at local community service events, such as wrapping toys or running a food drive. Our team has two student members serving on the Hudson Valley Regional planning committee. Additionally, our students, volunteer overseas; students and alumni went to Jamaica to teach STEM classes, while others have gone to Uruguay assisting the Uruguayan FLL team (30373).

**Describe the team's initiatives to help start or form other FRC teams**

When our team was established we realized the underrepresentation of FRC in our region, and actualized the need for growth by starting teams in nearby schools. This entailed inviting over 15 districts to an Open House for creating a FIRST team, helping create the Hudson Valley Regional, and showcasing our robot at local events. Our efforts resulted in an increase of 11 teams, and we have been involved by inspiring or mentoring 8 of those teams (5123, 5202, 5943, 6401, 6911, 6969, 7004, 7318).

**Describe the team's initiatives to help start or form other *FIRST* teams (including Jr.FLL, FLL, & FTC)**

Our presentations for the past six years at the Lower Hudson Valley Engineering Expo have directly resulted in the creation of five FLL teams. In 2014, we presented at the World Science Festival and were also featured on American Graduate Day with Dean Kamen and Woodie Flowers to millions of viewers via PBS. This year, we started a FIRST robotics class in which four FTC robots were built.

**Describe the team's initiatives on assisting other *FIRST* teams (including Jr.FLL, FLL, FTC, & FRC) with progressing through the *FIRST* program**

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**Describe how your team works with other *FIRST* teams to serve as mentors to younger or less experienced *FIRST* teams (includes Jr.FLL, FLL, FTC, & FRC teams)**

We have hosted FLL teams (OWCA, AMD Robotics, Light Switches) at OHS to practice their presentations and skits. We sponsor the FLL team in our middle school and provide them with guidance and support. In 2013, we co-hosted a rookie team seminar along with FRC Team 2830 (Riverside Robotics) that was attended by three rookie FRC teams, two of which won Rookie Inspiration and Rookie All Star at the NYC Regional that year.

**Describe your Corporate/University Sponsors**

Our corporate sponsors are major partners in the success of our program, our larger corporate sponsors, Siemens Healthcare Diagnostics and IBM Watson, provide mentors who not only teach students about constructing a professional-grade robot but encourage them to pursue a career in STEM. Our monetary support comes from family sponsors, 25 small businesses that are excited about STEM in our community, as well as 5 various larger corporations in our community.

**Describe the strength of your partnership with your sponsors with special emphasis on the 2017/2018 year and the preceding two to five years**

Our partnership with sponsors has always been strong. We often display our robot in local businesses because they love having us! Our relationship with our corporate sponsors has provided us a unique perspective - each build season we present our design to Siemens mentors, and each spring at the end of the school year we present our final robot to engineers at IBM Watson. The experience of presenting to professionals provides us role models and teaches us how to work as a professional team.

**Describe how your team would explain what *FIRST* is to someone who has never heard of it**

FIRST is the varsity sport of robotics, offering competition for all ages. While building robots is interesting, FIRST takes it to the next level, a level that cannot truly be fathomed until you walk into a competition and feel the electricity in the air! The culture surrounding FIRST is so immersive—students get hooked on robotics and engineering, they get inspired to build something, to get something done. It's more than just building robots—it's building character.

**Briefly describe other matters of interest to the *FIRST* judges, if any**

Ossining Engineering was founded as a community for science and engineering. While some high school programs are selective, Ossining Engineering believes in making STEM accessible for all through our open door policy. This entails having students from all backgrounds, despite our differences we come together as a family, finding unity within our diversity. Ossining Engineering encourages students to go to college and pursue STEM fields, and reminds every student that STEM is for everyone.

**Team Captain/Student Representative that has double-checked this submission.**

Jillian McGuckin

## Essay

Ossining Engineering is the story of a family of students who used their voices and passion for FIRST to become extraordinary. We started out as a small engineering club in 2007, working on bottle rockets and an electric car out of the back of a physics classroom. It wasn't until 2012 when a few dedicated students realized the impact we could have once we began participating in the FIRST Robotics Competition. Since then we've created a community that is excited about STEM, in which every high school student can get involved in designing and building a robot. We have inspired students to pursue higher education in STEM fields, parents to support engineering programs, administrators to expand technical resources within our district, and local representatives to understand the importance of STEM by helping expand FIRST programs in our county. In a community where 52% of students receive free or reduced-priced lunch, we are proud to be fostering opportunities and inspiring students to get involved in not only FIRST, but ensuring a lifelong passion for STEM.

### Supporting Locally:

Within seven years, Team 4122 has flourished. During our rookie year, winning all three rookie awards and traveling to the World Championships in St. Louis, we became the buzz of the community. The Westchester County Legislature issued a proclamation naming June 4th "O-Bots Day". Our success in 2012 contributed to Ossining High School being recognized as Intel's School of Distinction for having one of the best science programs in the nation. NY Governor Andrew Cuomo commended the program, saying, "Ossining's hands-on learning program has empowered countless young men and women with the tools they need to achieve future success." However, awards like these aren't about hanging a shiny plaque on the wall, they are about helping students recognize the importance of STEM. We show students that by pursuing STEM, they can and will make a difference in the world.

The most important part of our mission is to bring STEM to all communities because it's a universal language anyone can understand. As a result, we spread STEM to students of all ages. Reaching out to our elementary and middle schools is one of the most rewarding parts of being on the O-Bots. In 2014, we started the Summer Innovation Academy, in which members of our team operated full-day STEM workshops with elementary school students, teaching them about coding, design, and the principles of robotics. Over the past three years, team members taught students in preschool, kindergarten, first, and second-grade to code as part of our 30 day Hour of Code initiative. Additionally, we take our completed robot to the elementary schools and local Girl Scout troops, and let the students drive the robot every spring. Seeing kids' faces light up as they put their hands on the joysticks, we know that we have helped kick off a lifetime of excitement for engineering. Our outreach has helped create five FLL teams, three of which we actively mentor. We also sponsor and mentor our middle school's engineering program with the hopes that more kids pursue engineering.

We have seen unprecedented growth in STEM as a result of our participation in FIRST. Ossining High School's administrators have implemented a two-year engineering curriculum, in which students are introduced to the principles of engineering and given ambitious projects, such as building two person boats out of only cardboard, and then are taught more specific technical skills, such as Computer Aided Design (CAD) and analyzing strengths of materials. The Engineering 1 and 2 classes enable students with the skills they need for a successful engineering career. Our district has also implemented an AP Computer Science class, a full year FIRST Robotics class which creates four FTC robots, and FLL classes for special education students. Students who take these higher-level STEM classes over the course of their high school career are acknowledged with STEM certificates which our team has created and advocated for. Our school's library has purchased a Makerbot 3D printer that all the students of Ossining High School are allowed to use—part of a "Makerspace". Our district administration has seen the positive impact that Ossining Engineering has made and has embraced application-based learning. Within our own team we have grown so much that we've started a second FRC team to ensure all students have a role. Our previous principal, Mr. Joshua Mandel, has praised our work that has "given our students a tremendous opportunity to take what they've learned and apply it in a real-life situation". We're proud that in our school, Ossining Engineering has become synonymous with those who are builders, doers, thinkers and leaders.

### Advocating Regionally:

When our team began in 2012 we were the only FRC team between Yonkers and Albany. We have started more FIRST teams, but we know the Hudson Valley still has room to grow, we believe the Hudson Valley is brimming with potential for FIRST robotics. This has inspired our team to pursue the creation of a Hudson Valley Regional event. In 2014 our mentor sent out the initial email to Pat Daly that initiated the creation of the Hudson Valley Regional. We believed it was important to have a regional because it would both ease the load on the growing NYC Regional, and inspire new teams in the Hudson Valley. Students, mentors, and parents from our team have worked with both local representatives and FIRST officials to make the Hudson Valley Regional a reality, touring venues, sketching floor plans, working on the planning committee to organizing weekend events, acting as student liaisons and writing press releases. At the inaugural event last year we hoped that our efforts would encourage dozens of high schools in the surrounding regions to start their own FRC program, and it soon became a reality.

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In addition to this outreach outside of our local community, we start new FIRST teams every year and encourage students to pursue engineering from a young age. We present at the Lower Hudson Valley Engineering Expo annually, displaying our FIRST robot and an electric car we built for the Connecticut Electrathon. Volunteers from Ossining Engineering run activities for younger kids and brain teasers for adults. Our participation in the Engineering Expo has inspired the creation of five FLL teams, an FRC team, and countless students to pursue engineering. In addition, we continue to host events for schools, in our area to discuss creating a FIRST team, participating in the creation of the Hudson Valley Regional, holding seminars for new and old FRC teams, and presenting to teams at our local kickoff. As a result of our in-house efforts we've started over 8 teams (5123, 5202, 5943, 6401, 6911, 6969, 7004, 7318) who we continue to mentor. Similarly, on PBS's American Graduate Day, students from Ossining Engineering met Dean Kamen and Woodie Flowers and shared the message of FIRST on national television to 48 states and two territories. In 2014, the O-Bots presented at NYU's World Science Festival, showing our FIRST robot to thousands of visitors and demonstrating how high school students can work as a team to achieve something great. Our outreach beyond Ossining is something that every member of our team is proud of, reminding us that engineering is an outlet for improving people's lives around the world, beyond our school and our community.

**Going Beyond Globally:**

We've always worked out of the back of classrooms, and the setting of our meetings has always been informal. While our core group is around 20 students, word of mouth spreads, and curiosity leads at least 40 other students to wander into the room, lend a hand, share their ideas, and get involved. We rely heavily on our student leadership, and for all members to exemplify the values of Ossining Engineering and FIRST, as a result members have gone overseas to lend a hand. One of our members went to Uruguay, to help support the Uruguayan FLL team 30373. She spent the duration of her spring break helping with their championship presentation, and offered guidance when asked question about starting an FRC team. Similarly, this past summer two students volunteered a portion of their summer to teach STEM classes in Jamaica at an underprivileged school. Within our school a member of ours recognized the need for literacy in Senegal and helped created a book driving for a developing library. Through our book drive our team was able to collect enough books to fill their entire library. As a team, we hope to continue and grow our global outreach efforts because, we believe that STEM should be spread to every corner of the globe.

We're proud of what we have accomplished as a team. We're proud that Ossining has become a community of STEM, that we can show a robot to a wide-eyed elementary school students who will go home and draw robots and computers, that our local businesses want to show off our robot, that our town officials organized a parade to celebrate science and engineering at our school, that our local representatives would like to make robotics a sport, that we are able to travel the world and spread our passion for STEM. FIRST has spread enthusiasm for engineering throughout our team, it's our goal to take that enthusiasm and spread it throughout our community, our region, and our world until the day our team number is retired.