

## Chairman's Award - Team 5006

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2022 - Team 5006

**Team Number**

5006

**Team Nickname**

Apophis

**Team Location**

Fayetteville, Arkansas - USA

**Describe the impact of the *FIRST* program on team participants within the last 3 years. This can include but is not limited to percentages of those graduating high school, attending college, in STEM careers, and in *FIRST* programs as mentors/sponsors.**

FIRST encourages students to push themselves to the limits, learning from their mistakes to create a better future. Kids have come to the team not even knowing how to hold a drill straight and left with the knowledge that they can design and build anything they put in the work for. By learning how to build a robot, students gain unexpected skills like technical writing and how to communicate ideas. With the support of our team, over 95% of members pursue STEM degrees after high school.

**Describe your community along with how your team addresses its unique opportunities and circumstances.**

On Team 5006, we seek out new ways to challenge ourselves. When we were faced with a global pandemic, we saw it as an opportunity to help others by sewing over 250 masks for homeless shelters. Some of our members even taught themselves how to sew in order to help. We continually handed out necessities at a local food pantry, and made solar charging units for the VA hospital, providing homeless veterans with much-needed access to electricity.

**Describe the team's methods, with emphasis on the past 3 years, for spreading the *FIRST* message in ways that are effective, scalable, sustainable, and creative. How does your team measure results?**

FIRST isn't about winning or having the best robot but, instead, being unconditionally friendly and bringing the fun into robotics. We create eye-catching designs like our giant stargate and a BB-8 demo robot. We're known as the outgoing team with the crazy pit. We embody gracious professionalism by striving to help as many people as possible and educating our community about robotics with memorable innovation. Through media and outreach, we've reached over 200,000 individuals.

**Please provide specific examples of how your team members act as role models within the *FIRST* community with emphasis on the past 3 years.**

Members from our team encourage *FIRST* values and positivity through constant efforts to help other teams. Our team has produced 5 *FIRST* parodies which have been viewed by hundreds of thousands of people and shows how fun *FIRST* really is. We consistently reach out to both teams we've known for years and those we've just met to continue teaching Gracious Professionalism and teamwork. Because we meet at a community workspace, we share advice and ideas with two FLL teams and five FTC teams.

**Describe your team's initiatives to Assist, Mentor, and/or Start other *FIRST* teams with emphasis on activities within the past 3 years.**

We've mentored countless teams such as 7263, 7878, and 7842 by meeting with them regularly. Our build team dedicates the first day of each competition to getting rookie robots ready for the field. Our Reaching Arkansas initiative provides resources and instructional videos for rookies while connecting teams. In 2019, we started FTC team 16590 and spent over 250 hours mentoring them. The next year, we spent hundreds of hours helping FTC team 8373 after most of their members had graduated.

**Beyond starting teams, what initiatives have you done to help inspire young people to be science and technology leaders and innovators? What results have you seen from your efforts in the past 3 years?**

Our team has organized and assisted multiple STEM camps aimed towards middle school students and host countless demonstrations each year. Although COVID-19 made it more difficult to come together, we continued to create virtual content which expanded our influence and aimed to make STEM accessible for all. Many of our most dedicated members fell in love with STEM through camps and FLL teams.

**Describe the partnerships you've created with other organizations (teams, sponsors, educational institutions, philanthropic entities, etc.) and what you have accomplished together with emphasis on the past 3 years**

RCAL Products has allowed our team members direct access to knowledgeable engineers as well as the tools and equipment in their facility. Everyone on our team was taught how to design and manufacture circuit boards which we use for various initiatives such as our solar charging circuits. Dedicated members are granted internships with our sponsor RCAL Products, where they gain additional experience.

**Describe your team's efforts in the past 3 years to promote equity, diversity, and inclusion within your team, *FIRST*, and your communities.**

Our team has started/helped start 7 FLL teams. One team is an all-girls team meant to encourage women's participation in STEM. We work to recruit women in our community to be mentors in order to inspire young girls interested in STEM. Our program has proven successful, with our teams consistently advancing to state and many going on to join our FRC team. After these initiatives, our demographics quickly increased to 50/50, with an influx of minority groups being represented as well.

**Explain how you ensure your team and the initiatives you have created will continue to run effectively for the foreseeable future**

We maintain hard drives containing all of past documents and media. We also have google drive folders with past year's documents, guides on the *FIRST* portal, guides on various software, awards submission, branding standards, and anything else our team needs to maintain consistent quality in our outreach and designs. Veteran members share their knowledge with new students by involving them in complex projects to give them experience with realistic problems they'll need to solve in the future.

**Describe your team's innovative strategies to recruit, retain, and engage your sponsors within the past 3 years**

Many sponsors also mentor and teach us concepts from their industry. We maintain these relationships with annual demonstrations and by collaborating on outreach initiatives. RCAL, a circuit board design and manufacturing firm, taught us how to design and build the boards used in our Designs4Hope and other future initiatives. We see sponsorship as a relationship that extends far beyond monetary support. Sponsors enable us to grow into STEM professionals who go on to advance their industries.

**Highlight one area in which your team needs to improve and describe the steps actively being taken to make those improvements.**

Communication is a fundamental part of a successful team, but it's often the easiest to overlook. With so many members working on different projects, we've had to work on creating streamlined modes of communication to encourage collaboration. Using Slack, virtual meeting options to increase inclusion, and by encouraging active discussions with all of our members we have seen great improvements this season. We value growth, knowing that by working together, we become better individuals.

**Describe your team's goals to fulfill the mission of *FIRST* and the progress you have made towards those goals.**

Using fun pit designs and bold mechanisms, we excite people using versatile applications of STEM. In *FIRST*, you can pursue any passion whether it's mechanical engineering or cinematography. We involve students in every aspect of our team from programming to presentations, so they leave with the hard and soft skills essential to make impossible dreams a reality. Throughout our history, we've become known for our diverse backgrounds, using each members' unique skills to help others along the way.

**Briefly describe other matters of interest to the *FIRST* Judges, including items that may not fit into the above topics. The judges are interested in learning about aspects of your team that may be unique or particularly noteworthy.**

In the 2019 off-season, we started an initiative called Scouting w/o Borders. We created our own scouting forms to compile the data, but instead of collecting it for ourselves, we collaborated with other teams to get as much as possible

and share results. It has been a success ever since, and rookie teams who don't have many members to scout found it incredibly useful. We believe everyone should have a fair chance to succeed, and that's why we created Scouting w/o Borders.

## Essay

Our mentors founded Team 5006 Apophis on the premise that anyone, despite their circumstances, has the potential to change the world and inspire others through hard work and perseverance. Although many things have changed since our inception, we still hold these ideals in the same regard. Our team doesn't believe in competing against others, but, instead, working with them to increase the availability of STEM programs in our area and around the globe. We recognize that everyone has their own individual strengths and that it is essential to share our knowledge and skills in order to inspire those same talents in others. Our mentors teach us, and, in turn, we teach incoming FLL, FTC, and FRC students the same vital engineering and moral principles that our mentors did, creating a sustainable cycle of mentors teaching students how to mentor other students.

Since our inception in 2013, Team Apophis has recruited members from all over Northwest Arkansas, no matter the school. We hold annual demonstrations at local schools and events to raise STEM awareness in Northwest Arkansas, recruit members for our team, and expose younger generations to STEM early. We have also performed multiple robot demonstrations at festivals, Girl Scout events, churches, mosques, local parades, and even back to school vaccination events to reach children from even more areas. We expand our reach by showcasing FIRST at events such as GirlsFest, an exposition dedicated to educating young girls about STEM and instilling an interest in pursuing STEM careers. In 2019, we even participated in Fayetteville's entrepreneurship conference, exposing the FIRST program to thousands of STEM leaders. This event was so successful that we inspired some attendees to look into starting and supporting additional FIRST teams.

At the beginning of 2020, we helped start and student mentor an FTC team, and fell in love with helping the program. At the end of the year, we moved into a local FIRST teams makerspace. There, we teamed up with another FTC team that was extremely low on members to use our knowledge and experience to help them for a year. By joining forces, we could not only help them design and build but we could also make a bigger impact with our local outreach. With them, we've volunteered at FLL and FTC competitions, shared resources and knowledge to help each other grow, and hosted a Technology camp for elementary and middle school students. At this week-long day camp, we helped kids ages 5-12 develop their STEM skills using FLL and even FTC kits of parts with fun mazes and activities to show the engineering process.

We believe that exposing people to STEM at a young age allows for more time to grow and develop their skills within FIRST. We counseled local STEM camps, dedicating weeks out of our summer volunteering at two local elementary schools, spending 240 volunteer hours total. We helped the camp members learn about STEM, teamwork, problem solving, and innovation. But, in order to help children learn, we need to provide a safe environment for that learning. By partnering with the Children's Safety Center and Hug & Heal, two organizations which aim to bring comfort to young victims of domestic abuse and tragic illnesses, we have helped over three hundred children. Because of our numerous events which support minorities and youth in an effort to create more diversity in STEM fields, our many fundraisers which collected hundreds of dollars to donate to victims of natural disasters, and countless other initiatives, our team has impacted thousands of lives both locally and overseas.

Over the past six years, we have built over 450 solar charging modules in partnership with Designs for Hope, a non-profit organization. In 2020, they reached out to us again asking for 250 boards, and this time we built the boards from ground up and assembled them in their enclosures. We built another 500 this season.

Through a partnership with the Department of Veteran Affairs, we made those same solar charging units that homeless veterans can now use to charge necessary devices which is vital when the VA calls with housing opportunities. Veterans of this country have risked their lives for the safety of everyone at home and students on Apophis realize this; it is time that we give back.

We also support rookie FTC teams, sharing our custom circuit boards with them, opening up our shop to them, and mentoring their members. We are currently helping out FRC teams 7263, 7878, and 7842 and met with them immediately following kickoff to help them come up with ideas.

Our team members have designed, built, and programmed 10 of our own custom circuit boards. We created an MXP daughter board, analog breakout board, and digital breakout board for our 2015 control system. Our module is one of only six designs that have been approved for use on FRC robots. We have also made an image processor that analyzes color, light, and aspect ratio to identify objects to send back the results to the driver's station. We designed an e-commerce website to sell these products to other FRC teams as a fundraiser for our team. Currently, we're working on an eleventh circuit board to check our robot batteries' charges quickly and effectively, since most aren't that precise or take too long if they are. All of our custom circuits are available to buy online through our sponsor RCAL Products.

We have also designed and created our own rendition of a swerve drive. This allows us to have a drivetrain with four independently-turning drive wheels that allow the robot to move at any angle. We designed it to be built from affordable materials that don't require a machine shop, to enable virtually any team to make it even if they are working with limited facilities or a restricted budget. Our designs, CAD files, and bill of materials are on our website for any team to view and use, alongside a YouTube tutorial on how to assemble the drive system. We have a link to our team email so that teams can contact us with any further questions that they may have. This year, when a rookie team contacted us asking for help with their drivetrain, we eagerly agreed to not only let them use all of our CAD files but also agreed to donate any parts they may need to build it.

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Even since our very first year as a team, we recognized our privileges and used them to better the community around us. Whether it's by helping a rookie team reach their full potential or giving the gift of electricity and clean water to communities across the globe, our team believes that changing the life of even just one person has the potential to change the world. Through our constant dedication to our founding principles, Team 5006 has made an enormous impact on our local community, the FIRST community, and the world.