

Southside High School Robotics Team Request for Sponsorship

What does the Southside Robotics Team need from its primary sponsor?

1. **Funding:** The entry fee for a FIRST competition is \$5,000. Additional expenses for building the robot, attending a competition, etc. range from \$5,000 to as high as \$15,000. A primary sponsor would pay a significant part of these expenses.
2. **Mentors:** The team needs a few good mentors including engineers and craftsmen who will work as partners with the team's existing core group of teachers. Mentors need to be flexible individuals with a lot of patience who have a strong desire to positively influence students.

What is a FIRST robotics competition?

Teams receive 2 trunks filled with unrelated parts such as drill motors, springs, wheelchair wheels, etc. and are given six weeks to design and build a robot. The robot then competes in a complex game which is not announced until the competition begins.



<http://www.sfirs.org/>

What should the primary sponsor expect in return?

(See The ASME Guide to Starting A FIRST Team, <http://www.asme.org/education/precollege/first/tmgguide.htm>)

1. **A Positive Community Image:** Robotics teams are highly visible. They are a natural for news stories, have a significant web site presence (see <http://www.greenville.k12.sc.us/southside/Robotics.htm>), and make appearances at numerous school and community events.
2. **New Employee Leadership/Project Management Training:** FIRST competitions have been used successfully by companies for new employee leadership and project management training.
3. **Creativity Enhancement:** A FIRST competition encourages experienced employees to think outside the box and strengthen their creativity.
4. **Workforce Development:** Team sponsorship helps build the kind of school system and community which produces and attracts high quality employees.
5. **The Opportunity for Family Involvement:** The team will be located at Southside but will be open to any area student. Mentors and their children can work side-by-side on the team even if the student does not attend Southside.

Does a company or business have to be the primary sponsor to participate?

No, a company can participate at any level. This could include donating money, materials, equipment, or providing mentors.

Robotics Program Outline

Rationale/Background

A few Southside IB students have enthusiastically participated on the Entech Robotics Team for the last four years and have filled most of its student leadership positions. One Southside student received a \$40,000 scholarship thanks to his participation. All have gained a deeper understanding of engineering, teamwork, and the entrepreneurial spirit.

Unfortunately, the activities have been performed off campus with no connection to Southside's culture. Subsequently, they have had limited impact on the school. Starting a Southside team, oriented towards the classroom and the Southside culture could significantly boost the school's image and effectiveness.

The team would provide both an after-school program and the FIRST competition. Team members would be exposed to CAD, C computer programming, and basic engineering. They would learn technical vocabulary, make calculations, and have a hands-on opportunity to see how computer programming, physics, and math concepts are applied in real life.

The after-school program would be an extension of the classroom. Students would receive a great deal of tutoring in classroom-related subjects without even knowing that it's happening.

During the FIRST competitions, students would work side-by-side with experienced engineers and adult mentors. They would learn to work as a team under demanding circumstances.

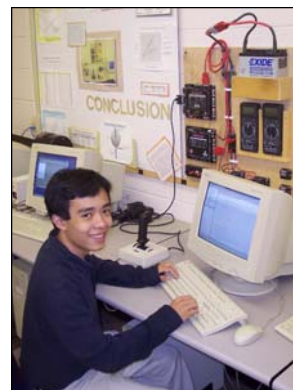
In FIRST competitions, the team would be guided by the design precept: **produce the simplest, least expensive, easiest to make robot that works.** Simplicity would be emphasized in order to make best use of limited resources and time.

The Southside team would enable

1. Campus-based after-school robotics activities.
2. A larger and more diverse team membership.
3. Integration of robotics activities and equipment into the classroom to provide new and enhanced learning experiences for computer science, physics, physical science, and math classes.
4. Increased student awareness of technical career opportunities by making robotics part of the Southside culture.
5. Greater community involvement in the school by businesses, engineers, and other adult mentors.
6. Direct Southside participation in FIRST competitions.
7. Robotics outreach opportunities to middle schools and other community organizations.

Robotics Facilities

There will be two robotics activities areas: a fabrication shop with common woodworking tools in the ISS area and a robotics design and programming area in the Computer Science Lab (see picture at right).



Team Membership

Membership will be open to Southside and students from other high schools. This along with the fact that Southside is a magnet school will insure that the team represents the community as well as the school. The team will include:

1. **Student Members** who will be required to have teacher recommendations, a minimum grade average, and a clean discipline record. (See engineering club members at right with SAM the robot.)
2. **Student Leaders** who will lead student activities.
3. **Adult Booster Group** similar to the forensics support group.
4. **Adult Advisors** including 2-3 engineers, an electrician, a machinist, and a bookkeeper to mentor the students and oversee the program.
5. **Teachers** who will oversee the integration of robotics activities into the classroom and students activities as well as assist the Adult Advisors.



Program Costs

Equipment for both the robotics fabrication and programming areas has already been purchased.

Costs for FIRST participation would be \$5,000 per year for registration and \$5,000 to \$10,000 yearly for robot materials and travel expenses. The school would gain at least \$5,000 a year worth of classroom usable software and equipment.

The after-school program would cost about \$1,000 to \$2,000 per year for building smaller classroom oriented robotics projects. Again, most of these resources would end up in the classroom.

Southside Robotics Team FAQ

What qualities are needed in a mentor?

1. **Ability to work with a diverse group of individuals.** These include the core team of teachers, students and other mentors.
2. **Flexibility and open mindedness.** In many cases mentors will have to set aside well tested procedures and consider ideas from unproven sources.
3. **Patience and ability to handle stress.** The competition is stressful, but it does reward those who are patient.
4. **A Strong desire to positively influence students.** Helping students learn and grow is the bottom line of the competition.

How big is the commitment for a mentor?

The competition lasts six weeks. During that time mentors will typically put in around 60 or more hours (about 10+ hours a week). The robotics team will be meeting once a week after

school for three hours during the school year. While mentors are encouraged to participate in at least some of these meetings, attendance is not required.

What makes Southside's team unique?

1. **Diversity:** Southside is a minority rich school with a magnet program for academically gifted students. It is one of the most diverse schools in Greenville County.
2. **Classroom Impact:** Southside is committed to using robotics in math and science classrooms to help achieve educational goals wherever possible. (See picture at right of physics students conducting a traction experiment using a small scale robot.)
3. **Experience and Infrastructure:** While Southside has not had its own FIRST team, students and teachers from Southside have been involved in robotics for years. Southside is the home of SAM, a seven foot tall radio controlled robot with video vision and two-way sound. He is a former FIRST competitor who was rebuilt by Southsiders to act as the school's ambassador. Southside also has a newly acquired robotics fabrication area along with a robotics programming facility in the computer lab.



What other activities will the team do in addition to the FIRST competition?

1. **Training:** Team members will be exposed to every aspect of the robotics design and fabrication process in after-school training sessions. The emphasis will be on using classroom learning in a real world setting.
2. **Fabricating classroom equipment:** Part of the training will consist of designing and fabricating equipment to be used for experiments in science and math classrooms.
3. **Outreach:** Team members will be responsible for maintaining and operating SAM the robot and any as yet to be built cousins. These will be used for science and math outreach in grade and middle schools as well as other community organizations.
4. **Research:** Student research projects will be pursued as needed to gain the understanding needed for optimizing various aspects of the robot. Some of these will undoubtedly be used as science fair projects.
5. **Inventing:** Students will be encouraged to create new inventions using robotics. We have already applied for an MIT inventor's grant.

Does the team have funding available other than that provided by sponsors?

The team does have a modest amount of funding available through the school, IB Program, and various parent support organizations. This is enough to enable the after school program at a modest level of activity but is insufficient to cover the costs of a FIRST competition. We have already submitted at least two grants and expect to submit others. Hopefully we will be able to keep students focused on robotics activities rather than on fund-raising.

Will the team be open for students who do not attend Southside?

Southside is a magnet school that draws students from the entire county. However, it will not be necessary for a high school student to attend Southside in order to participate in the robotics program. The program will be open to all interested students who meet membership requirements.

Robotics Team Faculty Advisors/Leaders

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Teacher	Background
<p>Tom Rogers Home Phone: 864-268-4672 Cell Phone: 915-5651 e-mail: tkrogers@greenville.k12.sc.us</p>	<p>Mr. Rogers has a bachelor's degree in mechanical engineering and worked as an engineer in industry for about 18 years. He is a U.S. patent holder and has been teaching math and science for 11 years. He helped start the initial FIRST team in SC and was the key figure in outfitting SAM the robot.</p>
<p>Dr. Mohamed Yaktieen e-mail: myaktie@greenville.k12.sc.us</p>	<p>Dr. Yaktieen has a PhD. in physics and has taught in both college and high school. His teaching background has included physics, computer science, and electronics.</p>
<p>Mike Vanzura e-mail: mvanzura@greenville.k12.sc.us</p>	<p>Mr. Vanzura currently teaches biology, chemistry and physical science at Southside. He is the head of the science department.</p>
<p>Major Joseph E. Windley e-mail: SC-955@afrotc.net</p>	<p>Major Windley is the Senior Aerospace Science Instructor and the head of the Air Force JROTC Program at Southside. He was previously the pilot on a KC-135 Tanker Aircraft.</p>



To Prospective Sponsors:

We are very excited about expanding robotics activities at Southside and starting our very own FIRST team. It has the potential to motivate and enrich students at all levels of ability.

We look forward to making the Robotics team an integral part of our school culture. Thank you in advance for your help in making this happen.

Paulette Payne
Principal

Deborah Carrero
IB Coordinator