

10/30/08

From: Darryl Newhouse, Mathematics Teacher/Robotic Engineering Teacher

To: ECNANDC Funding Proposal/Committee

Subject: Foshay Learning Center High School Robotics Engineering Academy-  
Curriculum Grant Proposal

I. Our school's program official title is Foshay High School Robotics Team 597.

II. Foshay High School Robotics Team 597 has been a participant in the FIRST (For Inspiration and Recognition of Science and Technology) Robotic Competitions since 2001. FIRST Robotics is a national/international organization sanctioned by NASA (National Aeronautics & Space Administration), and sponsored by corporations such as Raytheon, Northrop-Grumman, Lockheed-Martin, Boeing, Motorola, Microsoft, Hewlett-Packard, Toyota, Bristol-Squibb, Johnson & Johnson, Diamond-Chrysler, General Motors and other major corporations. In addition, professional organizations such as NSBE (National Society of Black Engineers), SHPE (Society of Hispanic Professional Engineers), ASME (American Society of Mechanical Engineers), SWE (Society of Women Engineers) and other technology oriented association provide support to the 1500 robotic teams world-wide. Each year teams design, manufacture, build, program, test, fine-tune a robot ( 6 feet tall and weighing approximately 130 lbs) and enter the robot in one of the 43 regional competition and qualify for the national/international championship held each year in Atlanta, Georgia.

III. The FIRST message is very clear: **To change the culture in which Scientist, Engineers, and Technologist are celebrated as Heroes and to inspire young people to take on the challenges of becoming the next generation of Scientist, Engineers, Technologist, and Mathematicians- especially those who come from disadvantage backgrounds who have been traditionally underrepresented in the Science, and Engineering fields such as African Americans, Hispanics, American Indians and Women.** For more information about FIRST Robotics please visit [.usfirst.org](http://usfirst.org) and to learn more about the history and successes of Foshay Robotics Team 597 please visit our award winning website at [.team597.net](http://team597.net).

#### IV.

- a. Our goals at Foshay High School Robotics Team 597 are to encourage, motivate, and inspire students of color to reach their full potential through the use of hands-on activities such as robotics, computer programming, computer aided design (CAD), computer animation and other technological venues. We will provide a positive, humanistic and multicultural experience for our Latino and African American students that foster team work, responsibility, teamwork, and commitment to all stakeholders involved to include not only students but teachers, mentors, parents and our community.
- b. The benefits of supporting our program include but are not limited to the following: Kids who are willing to take on the challenges of math, science and technology are more likely to graduate from high school, go on to study math, science and engineering at four-year universities. These students tend to have excellent school-attendance and seem to excel more in their high school math and science courses. Students involved in our robotic program tend to take rigorous high school Advance Placement courses such as AP Calculus, AP Chemistry, AP Computer Science and other AP or Honor courses. These students involved with robotic technology tend to pass the California High School Exit Exam (CAHSEE), and tend to meet or exceed the CST (California Standards Test) requirements. Students learn to be proactive in their own education and are less likely to become involved in high-risk activities such as gangs, drugs and other temptations.
- c. Our method to execute the proposed project has been in place for several years. For the last three years we offer our high school students a robotic class which services about 40-50 students. The robotic team/class meets 2-3 times a week after school. Students learn the ins and outs about drive systems, chassis design, manipulators, motors, electronic circuit boarding, wiring, programming and some limited fabrication of machined parts. Students also learn the intangibles such as commitment, responsibility, teamwork, helping others, respect, honor and gracious professionalism.
- d. Staff/Administration needs include: Lead-Teacher Robotic Engineering Academy Leader ( Mr. Darryl Newhouse), School Administrator responsible to ensure curriculum and all funding source requirements are being followed per guidelines set forth (Assistant Principal Regina Boutte). We also have a Parent component made of 5-6 dedicated parent volunteers and we have 100% support from our Principal (Veronique Wills). Several former students have comeback from college to help mentor our team and provide valuable information and experience to current team members.

- V. Available Resources: Funding-As of October 5, 2008 current have about \$3600 in a trust fund.

Equipment:

- We currently have three Pentium III PCs for programming and website design (we need to seriously upgrade these computers-in fact we need 10 new computers to help keep up with the changes in technology and software needed to run a successful robotic team).
- 1 Lap Top notebook (DEL)
- 2 tool kits (screw drivers, drills, drill bits, ratchets ect.)
- Various electronic components to include speed controllers, spike relays, wire and wiring tools
- Pneumatics: to include various parts such as cylinders, actuators, and compressors
- Various scrap metal and aluminum tubing.
- 1 printer ( we need 2-3 printers and at least one should print in color)
- Miscellaneous parts: various motors, wheelchair wheels, #35 roller chain ect.

VI. Needed Resources:

- a. Personnel: need one machinist, and welder (should be able to weld aluminum)
- b. Facilities: Need a facility such as a machine shop to build robot, and carpet area to test robot drive system-also need storage facilities to store robots and equipment.
- c. Equipment:
  - Labview National Instrument Software
  - Auto CAD Software
  - 3D Studio Max Software
  - General purpose tool kits
  - Need power drill with accessories
  - Need 2-3 printers (at least one printer must print in color)
  - Need 2 long work tables to build and assemble robot on
  - Need Tool Chest to house nuts, bolts, screws and tools
  - Need Table Drill Press
  - Need 5 VEX Robotic Kits to continue training new robotic high school members

- Need 5 Lego Robotic Kits to be used to help provide Middle School and Elementary teachers with training in order to support 3 robotic classes at our middle school and elementary school
- Need to purchase curriculum, books, and software from Intelitik

d. Budget: see attachment #1 for 2008 budget allocations

## VII. Evaluation Plan

- a. We have in place various bench marks and goals to measure the success of our project. Each student involved with our robotic engineering curriculum is required to complete 75 semester hours in the fall and 75 semester hours in the spring each year with a grade of “C” or better. During the year long course students learn the design process, building phase, testing phase, the C-programming language, sensors, and other robotic and engineering concepts. While working through the course students are required to complete several projects and actually enter their projects in local, city and regional competitions. In addition, each child is required to keep a journal of his or her learning experiences, write essays about their projects, and give power point presentations to parents, teachers, community leaders as well as their peers. We will also be looking at their grade point averages, the number of African American and Latino students who are accepted to four year universities and who decide to major in math, engineering, science or technology fields. Students will be surveyed at the beginning and the end of the school year to check their attitudes towards math, science and engineering.
- b. We will service 40-50 students of color. Many of the goals we have set for ourselves were accomplished during the 2007-2008 school year. These include providing positive role models and mentorship. Students involved with Foshay Robotics Team 597 also provided math tutoring and reading assistance to middle school and elementary students in our community. The Robotic team has mentored Crenshaw High School for two years and has provided assistance (parts and expertise) to Manuel High School. Several of our goals need support such as finding a machine shop so students can learn to use CNC machines and make parts for our robots. Storage has been a huge issue. Finding up-to-date computers that can handle the latest robotic/engineering software is another goal we fell short. Finding more sponsors and supporters is always a big challenge every year to keep this program up and running.

## VIII. Resume of Project Coordinator

- a. The Project Coordinator for Foshay Robotics Team 597 is Darryl Newhouse. Mr. Newhouse has been teaching mathematics at Foshay Learning Center since 1992 and currently teaches Geometry, Algebra II, Math Analysis, AP Calculus AB, AP Calculus BC and the Robotics Engineering Curriculum. Mr. Newhouse has been the lead mentor for our robotic team since 2003 and has helped bring robotic classes not just to Foshay High School but also has helped start several middle school LEGO robotic classes. He has guided the team to numerous awards and recognition and in 2006 he won the prestigious “Woodie Flowers Robotic Award” as one of the top robotic mentors in the United States.
- b. Our Time Line is as follows:
  1. Our school year starts July 1, 2008. During the month of July we recruit students for the robotic class and for our after school robotic activities.
  2. We fund raise from July08-June09 by selling healthy snacks to our high school and middle school students ( we have to fundraise \$3600)
  3. August 08-November 08 we will give about 6 robotic demonstrations at USC home football games, enter one or two Robotic scrimmages.
  4. August 08-October 08 we will register to enter two FIRST Robotic Competitions held in 43 major U.S. cities around the country.
  5. By December 1, 2008 all payments are due to FIRST ( \$15000)
  6. January 3, 2009 is the official kick off of the FIRST Robotic competition.
  7. January 09-March 09 the building and competition season continue
  8. April 15-19 2009 National/International Robotic Championship in Atlanta, Georgia.
- c. see attachment # 1
- d. Personal Statement
- e. Those individuals responsible for the control of assets, budget and dispensing of funds are Darryl Newhouse, (project lead teacher) and Assistant Principal Regina Boutte (Administrator in charge of all after school activities)

Respectfully Submitted

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