

PIRATES

FIRST ROBOTICS TEAM 5992



BUSINESS PLAN

REVISED 2017-2018



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1.0 Executive Summary

Team Mission Statement

Seton Hall Preparatory School's motto is *Hazard Zet Forward*, which translates to "despite hazards, move forward." As a team, Pirates 5992 embodies this motto in the construction of a robot, which competes in the FIRST Robotics Competition. Although setbacks may occur in designing, prototyping, fabricating, and operating the robot, the team strives to solve and overcome these problems by building the best possible robot. The example of the team promotes the ideals of FIRST and STEM (Science, Technology, Engineering, and Math) within the school and in the community beyond.

Team Summary

Pirates 5992 was founded in 2016 at Seton Hall Preparatory School. It started with a small team of seven students interested in STEM education and prepared to extend their horizons. After the team's rookie year, it has more than tripled in size. Today, the team consists of 31 members and 2 mentors.

FIRST Mission Statement

The mission of **FIRST** (For Inspiration and Recognition of Science and Technology) is to inspire young people to be science and technology leaders and innovators, by engaging them in exciting Mentor-based programs that build science, engineering, and technology skills, that inspire innovation, and that foster well-rounded life capabilities including self-confidence, communication, and leadership.

FIRST Robotics Competition (FRC) League

Every year FIRST holds a world-wide competition and devises a new game for teams around the world to participate in. It compels the participants to go beyond their limits and work as a team to design and build the best robot possible.

Sponsors

ASCO Numatics, the Charles Edison Foundation, Air Group, and the Seton Hall Preparatory School administration have been vital resources throughout the existence of this team. We appreciate their support and hope to continue this strong relationship moving forward.

Future Growth

Pirates 5992 continues to recruit new students in order to expand the team and inspire STEM learning. We work towards teaching younger members about the skills and techniques used in the designing, fabricating, assembling, and programming processes to ensure continued success as older members graduate. We also look for ways to become more financially stable and sustainable. We continue to keep strong relationship with our sponsors and parents to maintain support for the team while also searching for more sponsors interested in aiding our team. In the future we also hope to do more public outreach and mentor younger members of the community interested in STEM and robotics.



2.0 Team Information

2.1 Basic Team Facts

Rookie Year	2016
Location	West Orange, NJ
School Affiliation	Seton Hall Preparatory School
Team Demographics	2 Mentors 31 members from all grade levels (9-12)
Sponsors	ASCO Numatics Charles Edison Foundation Air Group
Website	In development

2.2 Team History

Based at Seton Hall Preparatory School, Pirates 5992 began in 2016 with a small team of seven students. After the team's rookie year, in which we received a Rookie All-Star Award, it has more than tripled in size. In 2017 the team had the opportunity to compete in the playoffs as alliance captains for the first time at the Mt. Olive district event. In 2018, the team had its best year since its beginning, resulting in its first blue banner by winning the Montgomery district event and the team's first appearance in a regional event.

2.3 Core Values

Students and mentors alike learn to apply values defined by FIRST which we believe are key to our success, sustainability, and allow us to be a respectable team. We also strive to apply these values not only to robotics but also to everyday life.

Gracious Professionalism®

Gracious Professionalism is defined by FIRST as “a way of doing things that encourages high-quality work, emphasizes the value of others, and respects individuals and the community.” Members of Pirates 5992 use *Gracious Professionalism* by competing while treating everyone with respect and encouraging others. *Gracious Professionalism* allows for fierce competition, self improvement, and encouragement to be blended in one process.

Coopertition®

Coopertition is defined by FIRST as “displaying unqualified kindness and respect in the face of fierce competition.” The term *Coopertition* is based on the concept that teams should help and cooperate even as they compete. Members of Pirates 5992 follow this concept by



always competing but also learning and assisting others when we can. This mentality always ensures everyone is competing to the best of their ability.

2.4 Member Benefits

For Students:

- Become a part of a community and collaborate through teamwork
- Learn proper usage of tools and safety precautions
- Develop confidence, communication, and leadership skills
- Learn principles of engineering by planning, designing, and fabricating a functioning robot
- Gain a strong foundation in a STEM related field
- Gain skills in 3D modeling, CAD software, and 3D printing
- Learn programming concepts and practices, specifically in Java
- Access to FIRST scholarship opportunities which total over 70 million dollars

For Mentors:

- Share knowledge and experience with students
- Become a part of a community and collaborate through teamwork
- Provide students with a hands-on learning experience
- Teach students about individuality and how to manage schedules

For School:

- Support a student development program
- Support and encourage STEM Education and interests in students
- Increase school recognition and attract potential students
- Help support students through scholarship opportunities

For Sponsors:

- Provide an opportunity to market their company or university
- Reach out to the community in a positive way
- Pass on their own resources towards future engineers and scientists
- Develop future employees or applicants
- Help inspire students to enter STEM and business fields
- All donations to our team are tax deductible



3.0 Organization Plan

3.1 Team Structure

The team is organized into seven sub-groups with their respective leaders and responsibilities:

- **Build** - responsible for design, fabrication, and assembly of the mechanical system of the robot
- **Business** - responsible for creation of the business plan, facilitating fundraising initiatives, and securing sponsorships
- **Design** - responsible for developing ideas and designs to construct the robot as well as designs for the apparel and imagery for the team
- **Drive** - responsible for operating the robot and creating relationships with other teams during competitions
- **Electrical** - responsible for design, fabrication, and assembly for electrical, electronic, and pneumatic systems of the robot
- **Public Relations** - responsible for managing, maintaining, and updating the website and social media accounts as well as keeping in contact with our sponsors.
- **Scouting and Strategy** - responsible for developing game strategy and providing scouting information to the drive team
- **Software** - responsible for designing the algorithm and programming the robot to function in autonomous and teleop.

While the team is split into sub-teams to ensure a more efficient workflow, members are allowed to and encouraged to be part of the whole process, meaning they will be exposed to every sub-team and gain skills and techniques that come with each one.

3.2 Human Resources

Recruitment Plan

At the beginning of each school year, we start our recruiting process by giving a demonstration of our robot in the gymnasium and giving anyone interested about robotics a chance to learn about its functions. We then hand out flyers, which give the time and place of our first meeting, to students around our school to promote the Robotics Team. This meeting gives an extensive overview of our team and what the robotics season entails. Students can then decide if they want to join. We also reach out to the alumni of our club to come and give our new recruits the guidance and advice they need to have a good season.

Training

In the fall before the season begins, veteran students and mentors hold weekly workshops to train students and introduce them to tools, safety and design concepts such as chassis, control systems,



CAD design, electronics, and programming. During the season much of the learning and training is done hands-on in the process of constructing that season's robot.

Safety

Safety of team members is critical and our number one priority. Students and mentors working with the robot at school or in the pit must wear safety glasses and gloves. Safety topics are covered in all of our fall training, and the use of power tools is supervised by experienced mentors. Members that are not trained to safely operate power tools will not be able to until they are trained by an experienced member. In order to prevent injury within the pit at competitions, we try to maintain the number of team members inside the pit area.

3.3 Location

Pirates 5992 has the privilege to work and build in one of the classrooms at Seton Hall Preparatory School. The classroom is equipped with the machinery, tools, and supplies our team needs as well as the space to work.

4.0 Operation Plan

4.1 Tasks

During the FIRST season, we are tasked to complete a new robot each year within a six-week time frame. Our team also completes many other important tasks. Below are the tasks we work to achieve each year as a FIRST team:

- Design robot with CAD software
- Prototype robot
- Build competition robot
- Program and set up controls for robot
- Build a mock field
- Test functionality of robot and make adjustments
- Design and purchase team apparel
- Set up scouting system to build strategy
- Update team business plan

4.2 Scheduling

The team meets at the beginning of the FIRST season, on the day after the game is announced, to conduct an initial strategy session and begin the design brainstorming process. Then during the FIRST season, we meet everyday to continue designing, building, and programming the robot. We



decide on a schedule which works best for both the students and mentors. The schedule typically consists of time afterschool five days a week and one weekend session during the six week build season. During the offseason, the team tries to meet once a week to discuss ways to improve the team as a whole.

4.3 Communication

Communication within the team is done through team meetings, email blasts, leader-to-member communication, and soon the website. Our mentors send emails and messages to all team members regarding events and meetings that involve the whole team.

5.0 Marketing Plan

5.1 Target Audience

Seton Hall Preparatory School Administration

In order to ensure their strong, continued support, we market ourselves to the administration and faculty through formal meetings and casual conversations. We also extend invitations to administration and faculty to attend all of our local competitions. The administration allows us to use a classroom for all our robotics activities and continues to support us financially so we can participate in the competitions each year.

Parents

Our robotics team would not be what it is without the dedication and sacrifices that the parents make to our team. The parents play a critical role in the team by giving encouragement to the members and through their contributions to the team. Parents help in a variety of ways by offering their time as mentors, providing transportation, and helping to feed the team during late nights and long weekends.

Partners (Sponsors)

Partners provide the largest support to the team. They provide the team with the financial support to obtain items that we would not be able to get without their help. We target current and potential partners through direct communication to ensure their continued support and to gain new partners. Specific students and/or mentors are assigned to keep partners up to date, and we have visited partners to thank them for their assistance.

Potential Team Members (Students and Mentors)

We market to and strive to recruit team members, both students and mentors, because our members are the most important component of our team. We use in-school and online marketing to get the word of our team out to students and to invite them to apply to join the team at the beginning of the year.



5.2 Marketing Medium

Robot Demonstration

We usually demonstrate the robot and talk about FIRST, the team, and Robotics during the school's activity fair to interest students in becoming new team members. We also demonstrate the robot during Pirates Academy to interest current seventh graders in STEM education and robotics.

Imagery

Team imagery is a vital component of our marketing because it allows us to express ourselves and become more recognizable in the FIRST community. We strive to be consistent in our apparel, documentation, website, and social media channels to make the team more recognizable.

Online Presence

Pirates 5992 is developing a team website which will soon function as a hub for all team resources and also a platform for us to display our sponsors. We are also beginning to operate and maintain social media accounts on Twitter and Instagram.



6.0 SWOT Analysis

Pirates 5992 has completed a SWOT analysis to identify the team's current strengths, weaknesses, opportunities, and potential threats. The SWOT analysis chart below highlights each of this categories.

SWOT Analysis for Pirates 5992	
Strengths	Weaknesses
<ol style="list-style-type: none">1. Members have strong interest in STEM2. Organizational structure3. Strong relationships with sponsors4. Business plan5. Veterans to teach new members6. Strong school support7. Strong relationships with other teams	<ol style="list-style-type: none">1. Workspace & Equipment2. Overlapping responsibilities3. Lack of financial resources4. Lack of members5. Drive Team selection/training6. Transportation of team and supplies
Opportunities	Threats
<ol style="list-style-type: none">1. New Sponsors2. Community Outreach3. Outreach with other high schools4. Growth of current team5. Social Media Presence6. Website7. Fall workshops to prepare new students	<ol style="list-style-type: none">1. Loss of financial support2. Loss of veteran members3. Loss of means to transport robot



7.0 Team Expenditure & Funding

Robotics is an expensive endeavor. The support of the school's administration and business sponsors allow us purchase materials and parts to construct the robot, purchase new tools and supplies to expand the abilities of our team, and compete in more events.

Below is an overview of team expenditures and income.

7.1 Team Budget

Current Funding:	Costs:
Sponsors	\$6159
Activities	\$6407
Fundraising Events (Semi Formal)	\$1500
Father's Club (offset cost of hotel for regionals)	\$1500
Total:	\$15,566
Expenditure:	Costs:
FIRST Registration for District Events	\$5,000
Robot Expenses	\$4,500
District Championship Registration	\$4,000
Misc. (Transportation, Hotel costs)	\$1,500
Total:	\$15,000
Wish List: (Prices are Approximate) - the equipment listed below will help to expand the abilities of the team.	Costs:
X-Carve CNC Router	\$1,500
Table Top Band Saw	\$300
Skill Saw	\$200
Right Angle Drill	\$200
Universal-Fit Ratcheting Combination Wrench Sets	\$200
Arbor Press	\$300
Mecanum Wheel Kit	\$1000
RoboRio and Power Distribution Panel	\$700
Total:	\$4400



7.2 Sponsorship Levels

Rank	Benefits
Sailor \$50 - \$150	<ul style="list-style-type: none">• Individual or company name on website• Thank you letter
Mate \$150 - \$500	<ul style="list-style-type: none">• Individual or company logo on website• Individual or company name on t-shirts• Thank you letter
Sailing Master \$500 - \$1500	<ul style="list-style-type: none">• Individual or company logo on website• Individual or company logo on t-shirts• Individual or company logo on robot• Social media thank you at end of competition• Thank you letter
Boatswain \$1500 - \$3000	<ul style="list-style-type: none">• Individual or company logo on website• Large individual or company logo on t-shirts• Large individual or company logo on robot• Individual or company logo on banner• Social media thank you at end of competition• Sponsorship recognition during team introduction at competitions• Thank you letter
Quartermaster \$3000 - \$5000	<ul style="list-style-type: none">• Individual or company logo on website• Large individual or company logo on t-shirts• Large individual or company logo on robot• Large individual or company logo on banner• Social media thank you at end of competition• Social media recognition in biography• Sponsorship recognition during team introduction at competitions• Thank you plaque
Captain \$5000+	<ul style="list-style-type: none">• Individual or company logo on website• Large individual or company logo on t-shirts• Large individual or company logo on robot• Large individual or company logo on banner• Social media thank you at end of competition• Social media recognition in biography• Sponsorship recognition during team introduction at competitions• Invitation to all team events• Thank you plaque



Sponsorship Information

120 Northfield Ave, West Orange, NJ 07052

setonhallrobotics@gmail.com

Business Name: _____

Contact Person: _____

Address: _____

City: _____ State: _____ Zip Code: _____

Phone: (_____) _____ Email: _____

Business Website: _____

(Please print or type so that we can accurately include your information)

Please make checks payable to "Seton Hall Prep" and write "SHP Robotics" in the For section.

Give checks to your student contact, or mail to:

Seton Hall Prep

Attn: SHP Robotics

120 Northfield Avenue, West Orange, NJ 07052

Thank you for your support!

Student Contact: _____

Amount Donated: \$_____ Check #_____ Cash_____

Material Donation:

Your generosity is truly appreciated and will be put to great use!

Contact

Lead Mentor

Minh Trinh
mtrinh@shp.org

Public Relations

Shawn Monel
shawn.monel@shp.org