For Inspiration and Recognition of Science and Technology

Team 358
Hauppauge Robotic Eagles

Team358.org

Student Handbook

Updated Summer-2011

Forward

This handbook is intended to be a reference rather than a novelization. You don't have to read this cover-to-cover, you might strain something. Go right to whatever you what to know more about – costs, schedule, etc. Want to know what a competition is like? It isn't even in here! That's in the Appendix.
Probably the sections of most interest are: Student Organization and Rules of Conduct. We have handbooks for each major type of team member: student, parent, mentor, officer, and advisor. These share some common material: Our mission/objectives, team management/background/organization/schedule, etc.

What we want are highly motivated students able to lead groups and work independently. We shoot for students working 50/50 with professional engineers. The concept is most like the industry outlook of a small engineering firm where freshmen are the "new hires" who need training and skill development, and seniors are the veteran workers supervising and training the new employees. Mentors act as facilitators by introducing and demonstrating new techniques that complement the student's design concepts.

- Good communication
- Respect at all times for your teammates, advisors, sponsors, mentors, parents, other teams, and volunteers (especially the volunteers wearing stripes!).

If there is a single point to take away from this Handbook it is FIRST's concept of Gracious Professionalism (GP). GP stands for sportsmanship above and beyond the normal. GP means being as supportive to the students on other teams as we are to our own. We want ALL students to be inspired by what we can do. GP does not demand that our kindness be returned before we decide to give ours, it is not a stick with which to bludgeon our competitors if we don't think they practice GP. The importance of GP is to better ourselves, rather than others, becoming responsible citizens and improving our society by example. Years from now our team alumni will remember a great play, some adversity overcome, helping out another team in need, but not so much the plastic trophies collecting dust in a school display case. We hope that alumni from other teams remember our kids as well for helping them get a robot running, as good sports, fun to be with.

Forward 1
Mission Statement 3
Team Objectives 3
Team Management 4
How to be Involved 4
Student Organization 5
Student Meetings 6
Code of Conduct & School Rules 7
Team Background 8
Team Organization 8
General Schedule 8
Team Communication 9
Team Contacts (2011-2012) 10
Handbooks in This Series 10
References 10
Find Out More 10

Mission Statement

Directly *involve* students in the professional field of engineering through collaboration with volunteer professional engineers and in partnership with local technical corporations. All work together as a team to invent technology and design and build a robot to meet the FIRST robotic competition challenge. The FIRST program builds self-confidence, knowledge, and life skills while motivating young people to pursue opportunities in science, technology, and engineering.

Team Objectives

FIRST is the brainchild of inventor Dean Kamen, who created, among other inventions, the portable dialysis machine and the Segway out of his concern for applying our talents for social good. It is an organization with the goal of generating interest among young people in science and engineering. Not only does FIRST support science, but it also hopes to create better people, therefore social conscious engineers, by teaching its creed of gracious professionalism. Although the FIRST Robotics Competition is about creating an innovative robot, it also calls for helping one another as much as possible. All of the FIRST Robotics teams are there for each other, whether they're helping each other with parts and materials, creating custom machined parts for each other, or simply offering advice and suggestions.

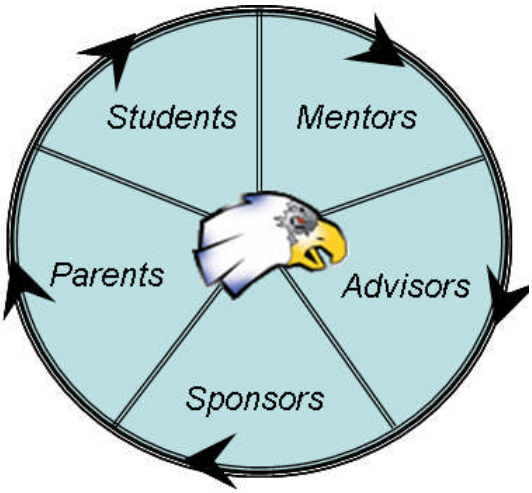
- Build character and citizenship through community service, sportsmanship, helping others: through Gracious Professionalism (GP) – We come together to compete, and compete hard, but we want every team to have an equal opportunity and experience. Our team motto is “It’s More Fun When Everyone’s Robot Works!” There is no “they,” only “us” - friendly, helpful, courteous, kind - don’t win at another’s expense. GP is a goal for individuals and teams to achieve, not a complaint to level against others. Those who find themselves accusing others of non-GP conduct are those who have failed to exhibit GP. The FIRST robotics competition is structured like a sporting event, however, we strive to emphasize sportsmanship rather than the sport. We want all the robots to compete at their best, so all students are equally inspired. For example, if an opponent breaks a chain, we help them fix it, so we can all be the best we can be. If our opposing alliance has no time-outs remaining, but a critical repair to make, then we take the timeout for them.
- Be competitive and play *hard* on the field, but it is much, much more than a game.
- Expose high school students to college- and professional-level applied technology.
- Develop skills in technology, leadership, teamwork, business.
- Dedicate ourselves to continuous improvement. Ours is not a static organization. We look for new challenges and constantly experiment with improvements and new methods of operating our team and engineering.
- Expect 100% from all participants – students, mentors, parents as a united organization, not an individual’s science fair project. Satisfy the needs of all participants: students for learning, mentors for personal growth, technical challenge for all.
- Strive for quality outreach primarily through mentoring, technical support, and sweat - Many teams lack mentors altogether or may lack in one specialty such as computer science or mechanical engineering.
- Contribute to quality growth and increased technical capabilities of teams on Long Island.
- Maintain a positive, supportive attitude for our team and others at all times.
- Attract a diverse team population so we can expand each others minds.
- Have fun.

We are concerned foremost with our Team's health and sustainability, but we also introduce the students to broader concerns of the FIRST community that affect us. Engineering ethics teaches that what we do has far reaching effects and we are concerned that those effects are positive. Invent with concern for others.
We support a growing vibrant FIRST community. We support our local Regional Director and Committee, and the School-Business Partnership of Long Island (SBPLI) to insure the growth of the FIRST program on Long Island, and we work cooperatively with other teams to support them and receive support in return. Our motto for many years has been "It's more fun when everyone's robot works." We don't lose sight of our goal to get more students interested in science and technology, whether those students attend Hauppauge or some other school. We have several team members (both students and mentors) from nearby districts that do not have teams or that are considering starting teams. We also mentor both rookie and veteran teams to smooth their entry into FIRST and help the number of teams on Long Island to grow.

A Student is self-motivated

Team Management

Our Team brings a unique experience to students. A different way of involving students by not just playing with robots in an after school club but working in a true engineering environment with and alongside of professional engineers. This is not your typical teacher/student relationship but is run as a small business firm, with freshmen students as the new interns, seniors as the group leaders/supervisors, and mentors as the old salts/managers.
FIRST allows for a wide-range of approaches to running a team, from after-school club style with no parent or mentor involvement to teams that build at a sponsor's facility with full engineering and machining support. From FIRST's perspective, all approaches are valid as long as they achieve the primary goal of inspiring youth. Team 358 has settled on a teamwork approach that involves ALL team participants equally – students, mentors, parents, advisors, and sponsors all give all they can and everyone has ownership. Students develop an appreciation for engineering by working hands-on side-by-side with professional engineers. All hands are on the robot together, and all ideas are heard and debated as a team. Because we are a co-curricular school organization, ultimate authority for the team lies with the advisors and school district administration; however, the team is an assembly of volunteers - students, mentors, parents - and the team will thrive if all are empowered to insure our success and achieve our goals.



Outreach, robot designs, construction practices, the competitions we choose to attend are all up for popular debate and discussion in our practice of shared leadership. During the brainstorming sessions after Kickoff, for example, students and mentors will split into sub-groups to develop, then defend before the team, alternative design approaches. Overriding concerns such as risk, cost, detailed design time, machining capabilities, labor, skill required, etc. will be given weight in coming to a final group decision. In the event of ties, conflicts, sudden changes in circumstances, etc., decisions will be reached by the advisors and student officers, with the lead advisor making final rulings as required and bearing the responsibility.

How to be Involved

Being involved is dependent on your self-motivation. We don't lead you through handing you assignment after assignment. We expect you will develop and pursue your own assignments. Yet we do not expect you to know everything either and you are encouraged to ask for help and guidance when needed.
When you start with the team in the Fall we will be working with older robots so you can learn the engineering systems we use. We will have tasks to accomplish as well as workshops on: Drive trains, gearboxes, structural

framing, pneumatics, electrical, control system, sensors & programming, carpentry for the playing field, public relations, fundraising, outreach, website, animation, CAD, spirit. When build season rolls around you need to already know the basics. It's only on-the-job learning under the crush of a deadline by that time.

- Be self-motivated.
- When you take up a job finish it. Don't just walk away when you get stuck or lose interest.
- If you cannot make a meeting, be sure your group has what it needs to do the job without you.
- Sample everything then gravitate to what you like best.
- Latch onto an experienced worker and learn by observing. Learn the names of tools and parts by fetching and handing them to someone else.
- Wait patiently by a worker's shoulder until they need a hand.
- When you are done with your task look for the next one. No one else will know you are idle.
- Be there when the work needs you. The work won't always be there when you need it. We avoid make-work, but there will not always be enough work to go around. Only so many hands can reach a robot at one time.
- Be willing to help out in any way you can.
- Develop your own role within the team.
- Insinuate yourself into working groups
- Take on tasks that no one else steps up to.
- Invent tasks that no one else has thought of.
- If there isn't immediate work to be done then learn the robot systems on older robots.
- Read through the team library.
- Teach yourself with all the spare parts we don't need. Ask when you need advice or a hand.
- Leave socializing for the end of the day.
- Mentors (both adults and senior team members) are waiting for students to step up. The tasks will get done even if a student doesn't step up, but when a student takes initiative mentors will work hand-in-hand and step back out of the way when they are no longer necessary.
- Become involved with the *FIRST* community at large through the popular Team forums at www.chiefdelphi.com. Remember that you represent our whole team when you post, so behave always with respect and concern for others. Please post responsibly.

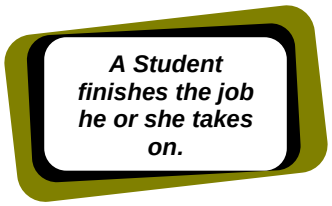
Student Organization

First and foremost comes the Team. We want the most dedicated and best self-motivated students representing us in positions of responsibility. Some positions require more dedication, time and effort than others. If you seek any of these positions be sure first that you will be able to fulfill the duties involved and are dedicated to the success of the Team. A secondary responsibility of each of these positions is to train your replacement!

- **Student officers** - These essential elected positions are responsibilities not popularity contests. It is the general student membership's duty to elect those who will do the best job for our team. The other officers and advisors will replace, by appointment, any unfilled position as well as any candidate unable to perform their duties. Elections are held in the spring.
  - *President* – Develop specific student rules in accordance with general Team and District rules. Assigns and coordinates student working groups, develops and implements plans to keep every one busy and productive. Plans, calls and runs meetings.
  - *VP* – Stands-in for President when he or she is not available and shares responsibilities as determined by President.

- *Head of Engineering* –Coordinates design, tracks estimated robot weight, parts list, tools required for robot maintenance in the event pits.
- *Head of Scouting* – Organizes scouting teams (all students serve as scouts), develops/refines the scouting program, creates scouting record sheets, trains scouts, prepares recommendations and alliance pick list.
- *Secretary* – Keeps everyone informed -communications specialist: website, email, phone.

❖ **Appointed positions** – Determined by student officers and advisors. Not all positions may be filled by a single person.



- Competition – one person cannot hold multiple competition positions.
  - Drive team – generally 4 people (coach, driver, manipulator operator, and human player) determined through tryouts and selected by advisors, mentors, and student officers. Knows and able to repair all robot systems. Attend every competition. Human players sometimes rotate, but NOT drivers.
  - Pit Chief – Must live and breathe tools, spares, batteries, and raw materials. Selects proper tools, etc. for event pit. Rules pit with an iron hand. Attends all competitions.
  - Lead Programmer – Sadly, most programming gets during the competitions.
  - Spirit – Preparation and plans are made before competitions, but is most "active" during competitions.
  - Safety Captain – Sets safety rules during the build season and enforces them at competitions.

- Non-competition
  - CAD Designer – learn to use Autodesk Inventor to layout robot designs.
  - Lead Animator – show an interest and talent and performs most of the work at home or during free time. Will do this to the exclusion of most robot build work, but will be free during competitions.
  - Field Construction Coordinator – gets the practice field built.
  - Outreach Director – stays abreast of rookie teams and their needs. Mentoring, tooling, materials, skills, etc. Initiates new, creative team outreach programs.
  - Webmaster – maintains and improves the Team website.
  - Team Awards – creates awards we can present to other teams at competition.
  - Photographer – records all team activities from recruitment to competitions.
  - Videographer – also records all team activities. Edits year-in-review slideshow.
  - Inter-team relationships – build contacts and friends on other teams to facilitate sharing of information and resources, and just to have fun.
  - Major sub-group leaders – Coordinates/teaches mechanics, electrical, pneumatic, programming.
  - Artists – crate, pit, and robotics room beautification.
  - Writers/editors for submitted awards, marketing brochures, presentations, publicity.

Student Meetings

An advisor must be present in the Robotics room at all times, otherwise meetings cannot take place. Members will not be able to make all team meetings especially during the build season, due to conflicting priorities with school work/events and family events. However, when the team travel size must be limited, priority will be given those students who hold critical positions (officer, drive team, critical scouts, pit chief/crew, safety captain, etc.) and to those demonstrating team dedication by being the most useful. Attendance will be recorded in a log by the robotics lab door, so each student should be sure to sign-in/out at meetings.

Most of the year is laid back, however, the 6 week January/February build period is intense and requires extra commitment. This does not mean neglecting your commitment to school work, but it usually preempts winter sports except in the few hours immediately after school. School is very important. Those who cannot maintain their school responsibilities may have team attendance and travel restricted based on the judgment of their parents and team advisors. On the upside we have quite a few knowledgeable people on the Team who can help if you are having trouble with almost any subject.

- Officer meetings
  - Summer preparation
  - Organizational
  - Advisor/mentor conferences
- General Membership
  - Fall workshops and projects
  - Off-season preparation
  - Competition season
  - Post-competition
  - Summer projects
- Other
  - Recruitment
  - Fundraising
  - Outreach

Code of Conduct & School Rules

The following general Team rule highlights help us to maintain a safe, productive environment. The full listing of all rules is contained in the Appendix and are also available on the website at http://www.team358.org/rules. In addition to these general rules all School District rules apply as with any school sponsored activity. We also have safety rules for the safe operation of equipment and each year after a couple of months of meetings, the officers will create revised rules addressing any particular repeat problem areas that seem to be cropping up. Any new rule revisions will be distributed and the problems they cover that have arisen will be discussed at regular team meetings. Non-district students are subject to the same district rules as other team members.

- One of the official Advisors must be present for the Robotics room to be used. No students may remain in the room without an Advisor present. The principal can close down the club for infractions.
- Please work and remain in the Robotics room and do not wander the school or form little parties isolating yourselves from the rest of the team.
- School rules apply.
- School advisors must know where students are at all times. Please let them know when you arrive and leave meetings. On trips their explicit permission is required to leave the group even with your parents or guardian.
- Permission to leave must be given by one of the school chaperones.
- Buddy system – never be alone, always be with another team member.
- Working in the school is a privilege that cannot be abused. The custodians and security staff all do favors for us, but we cannot abuse their trust and friendship by unruly actions.
- Atmosphere of respect and kindness
- Practical jokes are not tolerated. They are disrespectful of others, produce an unsafe or hostile environment, and are never practical. Leave your joy buzzers at home.
- No horseplay in the robotics room or anywhere around tools or robots.

Team Background

Team 358 was started in 1999 for the 2000 competition season in a collaboration between Hans Zobel of Festo Corp., and the Hauppauge School District Superintendent. Hans was also involved with helping SBPLI get the *FIRST* Long Island Regional and several other teams started that same year. We have earned numerous technical, Regional Champion, and Finalist awards, along with *FIRST*'s highest, the Regional Chairman's Award. Additionally, we have mentored many new teams and assisted numerous other teams with technical workshops, tools, parts, and expertise. A detailed, year-by-year history is available on our team website.

Team Organization

- Student Officers – outreach, publicity, recruitment, design/build/competition
- Advisors – school legalities/rules, supervision, mentors, advice
- Technical mentors - mechanical, electrical, pneumatics, programming, etc.
- Booster Club – fundraising, food, travel arrangements, chaperoning.
- Sponsors – financial, engineering, and material support.

General Schedule

The detailed team schedule is to be found on our team website (team358.org) and is updated frequently.

FALL – moderate schedule

- Team meeting one evening a week training new members by working on a common project
- Fundraising events, such as our Oldies Concert
- Outreach/demo. events, e.g., Safe Halloween and Homecoming
- Off-season competitions

WINTER – Busiest time for us

- January Saturday kickoff – game and rules are revealed via webcast, and we receive the motors & electronics we must use along with any specialized equipment required by the game.
- Jan/Feb: Intense 6 weeks of robot design and construction, generally 6pm – 10pm, but schoolwork comes first so students don't have to attend the full time or every meeting.
    - Rookie mentoring visits
    - Brainstorming game play, strategies, robot designs
    - Construction of practice field
    - Design/build/integrate sub-systems
    - Test and redesign/rebuild where necessary
    - Final programming integration
    - Driver testing
    - Robot ships and we rest

SPRING – heavy involvement only during events

- Fix-it Windows – one or two evenings a week to make replacement parts
- Two March three-day Regional events. A local competition at Hofstra and one away trip.
- Late April Championships are held in Atlanta, GA
- Outreach activities such as I-CON at Stony Brook and Special Olympics
- Team meeting one evening a week until the end of school organizing the robotics room, laying plans, and working on projects.
- Officer elections
- Year-end debrief reports from officers-what worked, what didn't, and recommendations.
- June end-of-year party and awards
    - Team awards (seniors, mentors, boosters, sponsors, members-at-large)
    - Season assessment

- Synopsis of the year
- What could have made this year more enjoyable and rewarding?
- Was everyone engaged and will they return?
- Did the veterans all teach something to at least one other person?
- Did everyone learn something from a mentor?
- Reflections

SUMMER – light effort

- ❖ Casual experimentation and special projects
- ❖ Self-taught Computer Aided Design and Animation tool training
- ❖ Fall preparations

Team Communication

team358.org – Our website is our *primary* source for schedules, news, history, photographs and videos, technical papers, organization, fundraising, as well as topical discussions. The student Secretary also commands all modern forms of communication (Facebook, Twitter, IM, email, phone, USPS). Provide an email address and you can expect periodic email from the Secretaries and advisors. Information may also come by flyer, mail, the regular morning high school PA announcements, or discussion at Team meetings.

Team Contacts (2011-2012)

Email and phone contact information is maintained separately and is available on the team contact list.

- Student Officers
  - President – Rob Jacoby
  - Vice President – Brandon Bozeat
  - Secretary – Will Carson
  - Treasurer – Alex Aldaba
  - Head of Engineering – Mike Bosi
  - Scouting – Tom Barry & Steven Rimoli
  - Public Relations – Luis Velazco & Anthony Ferris
- Advisors
  - Mr. Mark McLeod
  - Mr. Scott Kraft
  - Mr. Chris Dowd
- Booster Club
  - President – Mrs. Tina Bosi
  - Treasurer – Mrs. Dorothy Jacoby

Handbooks in This Series

These handbooks must be dynamic if we are to continue to succeed. Coming up with fresh ideas, trying new approaches, and revisiting lapsed practices all serve to keep our creative energies flowing and everyone fully involved. This is not the culmination of what we know, but always the beginning. The message in this series of team handbooks needs to be told verbally and visually as well as in print. These handbooks will be updated and revised yearly, to include new best-practices and fresh ideas.

- Student Handbook – Student roles on the team and in the FIRST program
- Officer Handbook – Student officer duties and concerns
- Parent Handbook – How parents contribute to the Team and FIRST program
- Mentor Handbook – Involvement of volunteer mentors
- Advisor Handbook – Behind the scenes administration required to operate the team.
- Handbook Appendices – Travel, what to expect at competitions, detailed rules of conduct, fundraising history.

References

- Student Officer Responsibilities
- Team Contact List
- FIRST Awards Summary
- FIRST Team Safety Manual: www.usfirst.org/robotics/2006/2006teamsafetymanual.pdf
- Publicity Manual/Publicity Tips
- Team Business Plan / 5-Year Strategic Plan

Find Out More

- team358.org – Our website
- www.usfirst.org – FIRST website
- www.chiefdelphi.com/forums – Team discussion forum