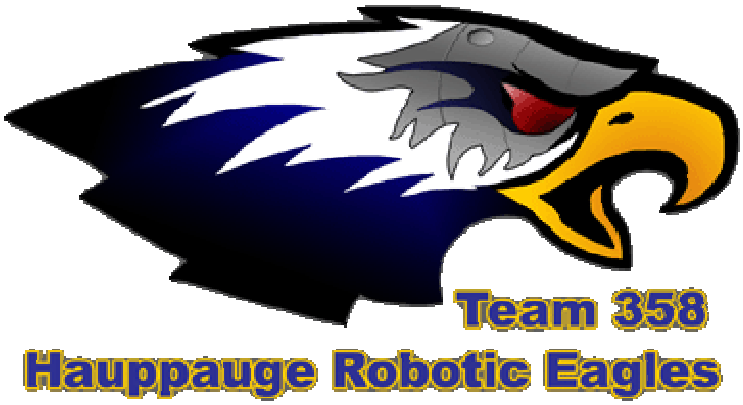
For Inspiration and Recognition of Science and Technology



Team358.org

Advisor 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, because extra information has been split off into the Appendix. Probably the sections of most interest are: Paperwork and Budget.
We have handbooks you can read for each major type of team member: student, parent, mentor, officer, and advisor. These share some common material: Our mission and objectives, team management/ background/ organization/ schedule, etc.

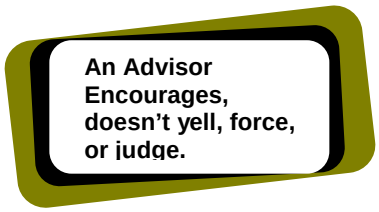
If there is a single point we'd like you to take away from this Handbook it is *FIRST*'s concept of Gracious Professionalism (GP). GP stands for sportsmanship above and beyond the norm. GP means being as supportive to the students on other teams as we are to those on our own. We want ALL students to 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 emphasis 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.

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.



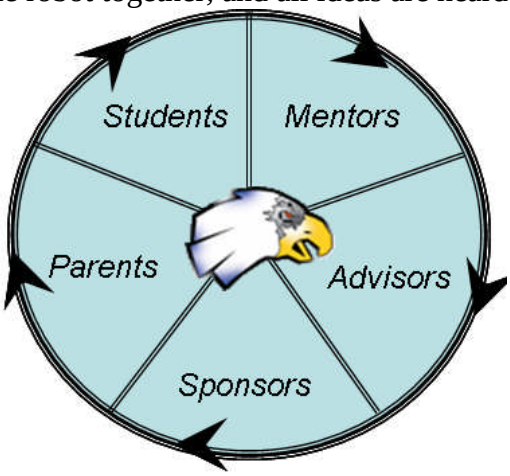
- Build character and citizenship through community service, sportsmanship, helping others: through Gracious Professionalism (GP) – We come together to compete, and compete hard, but we want every team to have an equal opportunity and experience. Our team motto is "It's More Fun When Everyone's Robot 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 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.

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.

Paperwork

This is a list of the paperwork we've got to do for District and *FIRST*.

- Hauppauge School District
  - Team plans for the year are submitted to the Principal for approval in the Fall.
  - Submit for Board of Ed approvals for all events and trips (MAKE SURE it gets on the agenda 2 months in advance and follow up to be sure it's been done. Many dropped balls on this one.)
  - Annual Co-Curricular Activity Report due in June.
  - Travel Expense Reports are due after the January Kickoff trip.
  - Materiel Receipts and Expense Reports are due monthly, but all must be completed by May at the latest.
  - Release forms
    - High School field trip permission slip
    - Transportation release form – for student release prior to the completion of a trip.
  - Purchase Orders through the business office setup for Advisors making purchases and local vendors, such as Airweld's welding gas and supplies.
  - Preferred vendor list paperwork for advisors making purchases.
- FIRST Team Information Management System (TIMS)
    - This online system on the *FIRST* website is where the team Main Contact registers in the Fall for events and conducts *FIRST* business. Various sections of TIMS open and close in a confusing variety of dates.
  - Pre-registration information required:
    - Main team contact w/ (2) addresses required
    - Alternate team contact
    - Contacts for shipping, travel, public relations, corporate/university, school, technical
    - Team Info
      - # students
      - Team motto
      - Robot name
      - Team website
      - Team nickname
  - Registration
      - Typically, event registration begins, always at noon, at the end of September and has been staggered ending the first week of December, for example only:

Pre-Registration Begins	~Sept 25
Initial Regional	~Oct 1
Championship (limited open slots, eligibility)	~Oct 21
Second Regional	~Oct 21
Unrestricted for Champs & Additional Events	~Nov 10
Registration Closes	~Dec 2

    - Event registration - staggered sign-up windows. Payments for individual events are sent to *FIRST* and may come from several sources- District, sponsor grants, and Booster Club. Some sponsor donations go directly to the District to hold and these are paid out of a different District account.
  - Robot Shipment Verification- on day of shipment:
    - Get receipt from drop-off or pickup: receiver, FedEx tracking number, or bill-of-lading from another delivery company.
    - If not using the official sponsor FedEx, then overnight to *FIRST* office in New Hampshire a copy of the receipt/bill-of-lading

- Miscellaneous Information Required
  - Manchester kickoff attendance – #tickets requested for Westwind reception are mailed
  - Manchester rookie workshop attendance.
  - SBPLI Kickoff attendance (if representatives are sent)
  - Choose Kit-of-Parts pickup location.
- Report KOP missing parts online by the Wednesday after Kickoff.
- Judge Info. (locked by ship date)
  - # years team has been in *FIRST* (since 2000)
  - Student leader
  - Team budget - gross number based on District, Booster, Sponsor, and Parent coverage of travel costs
  - Robot photo (exactly 240x180 pixels)
  - Demographics
    - Team locale: Suburban
    - # female/male students
    - # H.S. Freshmen/ Sophomores/ Juniors/ Seniors
    - % Black/ Caucasian / Hispanic / Native American/ Asian/ other students
    - # engineers & technicians/ teachers/ non-technical professionals/ university faculty& student mentors /parents (not already included above)
    - % of school (not team) receiving free/reduced lunch

- *FIRST* Competitions
  - *FIRST* release & consent from each student, mentor, advisor, and parent on the team roster. Online through STIMS/TIMS or paper copies. Submit them all at our first Regional even if the people aren't attending that one. *FIRST* just needs them on file for the season.
  - Event Registration on Thursday morning (need to turn-in roster and any paper release & consent forms).
  - Event inspection robot bill-of-materials, a sample is in the Appendices.
  - Robot shipping Bill-of-Lading copy sent to *FIRST* to arrive within 72 hours of ship.
- Miscellaneous
  - Regional Team Survey and Team Forum after the season, usually May conducted online. May also be a local team leader meeting called by the Regional Director.
- Students
  - Online award submittals are handled by the student officers for Chairman's, Woodie Flowers, Inventor, Safety animation, Visualization, Website.

Budget

The District and Booster Club budget details are itemized elsewhere. Budget expenditures must be tracked by the lead advisor in coordination with any cognizant school administrator. The Science Department Chairman, Mr. Wankmuller, helps with budget tracking concentrating on expense report submission, school bus transportation, and any school portion of the *FIRST* event registration fees.

Travel expenses for advisors are covered by the team budgets. Travel expenses for students and parents are covered partially by Booster Club fundraising and by parents.

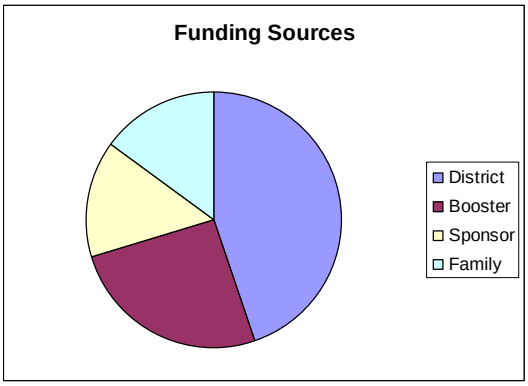
Major Expenses:

1. $5,000 - Registration includes 1st Regional
2. $4,000 – 2nd Regional
3. $5,000 – Championship
4. $4,500 – Robot construction – raw materials, purchased parts, tools and tooling.
5. $1,000 – playing field/shipping crate construction
6. $1,000 – Kickoff travel expenses, Manchester, NH
7. $1,800 - School transportation
8. $2,200 – tools/parts/pit display shipping to Atlanta (specifically donated by JP Express)
9. ~$10,000 – 2nd Regional (away) -coach bus/hotel/food for ~36.
10. ~$12,000 – Championship in Atlanta- airline, hotel, food for ~25.

Funding Sources:

Our Team budget derives from the District, Booster Club, parents, and sponsors.

- District budget covers advisor stipends, kickoff travel, bus transportation, practice field, robot construction, and some *FIRST* event fees, shipping. Make sure this budget is exhausted by the end of the year.
- Booster Club budget covers extra *FIRST* events and off-season events, the team website, and reduces travel expenses, excess shipping charges.
- Parents cover travel expenses.
- Sponsors provide funding through the District or Booster Club, as well as specific robot construction costs, and shipping.



Purchases

These are some of the guidelines we go by and rules imposed on us by the District business office to be sure we can be reimbursed, while others are to track our budget and avoid running out of money to complete the robot.

- Only a few people can buy supplies/materials for the Team. All purchases must be first cleared through the lead advisor to insure we have money, agree to spend it, and you can be reimbursed.
- Large ticket items will be discussed by the appropriate mix of advisors, mentors and students.
- All purchases are tracked to be sure be do not exceed our funds, so make sure the lead advisor gets receipts as quickly as possible so he or she can maintain the spreadsheet of expenses.
- All purchases require receipts to be reimbursed and if the receipts list the recipient they must be made out to the individual. They cannot be addressed to a third party company for example.
- Original receipts only. Either cash or charge is fine, but the receipt cannot be made out to a third-party.
- All outstanding receipts must be submitted for reimbursement monthly.
- If a charge card is used, then the business office may request a copy of the credit card monthly billing statement with the charges listed. You can black out your private data, such as, account # or other unrelated charges.

Collecting Team Statistics

Statistics can help enlist sponsors & new members, as well as justify the team to the District.

- How many seniors get offered *FIRST* scholarships
- How many seniors go on to college, what fields?
- How many seniors choose technical school?
- How many students intern for local companies?

Track student/advisor/mentor hours.

- Clubs must average a minimum of 15 students per meeting to continue funding.
- Companies are likely to support employee volunteer efforts based on commitment.
- Can be used as a discriminator for travel privileges.

Multi-Team/*FIRST* Communication

These are the regular channels of communication between teams in the Long Island region and beyond.

- Long Island Team Leader meetings organized periodically by the LI_FIRST Regional Director
- Email contacts among the team Leaders and LI-FIRST
- SBPLI LI-FIRST Development Council monthly meetings
- Team forums at www.chiefdelphi.com – encourage posting by students, mentors, parents, but monitor team member posts for appropriateness, and council when necessary.

Team General

- To get the Freshman Orientation date in August so the officers can arrange recruitment, call the District office mid-July.
- No official Team meetings prior to Fall BoE approval of club advisors. Students can recruit.
- Student officers run the club (top positions are elected, others appointed by the elected officers). Advisors make sure they stay on track. Occasionally advisors need to step in and take the heat for unpopular decisions based on the student declared objectives that the officers may be unable to make or put into action for themselves. For instance, disciplining unacceptable behavior or final rulings on who can travel. There are of course school/sponsor requirements that must be managed by the team advisors, but the students are kept in-the-loop.
- Revisit safety rules and institute training for safe operation of equipment.
- Keep students busy. Always keep those extra (special) projects in your back pocket so you don't have idle hands.
- Be aware of any student/mentor/parent medical conditions that could cause issues in the shop or while traveling. Too many parents forget to mention this.
- Strive to retain key people, but make sure mentors and students are passing their knowledge on to others. Don't become irretrievably dependent on any one person. If they relocate or graduate the team must continue to function smoothly.
- Recruit new advisors and mentors by talking up the program and successes.
- New officer elections in May for the coming year.
- Year-end party organized by the officers & Booster Club
  - Recognition for mentors, seniors, Booster parents, slideshow of the season
  - Introduction of new officers
- Deadlines are the most difficult problem we face as a team. Everyone's been guilty of being so focused on a sub-system that they lose sight of the bigger integration picture and the tight schedule we're all on. There comes a time to "shoot the engineer and put the thing into production."

Travel Notes

- Overnight or out of state trips need board approval.
- 15/1. Student / advisor ratio
- Prepare, distribute, and collect Student Permission slips. Check them and photo IDs prior to leaving the school.
- Satellite phone goes along on all off-island trips.
- Baggage check - students drop off luggage the morning of a trip for security search.
- Advisors may not drive students
- Third-party and charter buses must be inspected/approved by the district administration. Proper insurance papers are required.

Shipping

Shipping is a little different every year. Bag & Tag is taking over in many places (not Championship), where we seal our robot inside a very large bag and transport it to events ourselves. A step-by-step recounting of 2006's crate road show is in the Appendices. The robot crate must be packed with as little as possible to avoid expensive overage charges. When our 2006 crate arrived in Atlanta with just the 120lb robot, 14lb bumpers, and one 12lb battery (~146lbs), drayage weighed it in as 390 lbs. 10 lbs more would have cost $50.

Robot

If shipping, the robot must be out of our hands by 5pm on Ship Day in February. Proof of shipment must be provided to *FIRST* the same day the robot ships if not using FedEx. Otherwise, the tracking number of the shipper and other information must be entered online in TIMS to satisfy this requirement.
The Shipping Contact entered in the *FIRST* TIMS is the point of contact to receive information. Primarily, this person gets calls if the crate doesn't arrive and gets any special instructions required. FedEx donates shipping for one crate up to 400lbs from/to one (non-Bag & Tag) Regional and from/to Championship.

An Advisor provides direction to maintain focus on the tasks at hand

When we attend two or more Regionals, it gets more complicated as it can become difficult to engage cheaper third-party shippers and coordinating Bag & Tag vs. crate shipping. Getting out of Hauppauge H.S. and in/out of the SBPLI Regional at Hofstra where Festo donates the drayage, is easy, since those facilities have no restrictive transportation contracts to negotiate. However, at some commercial venues, e.g., Championship, we are limited to a single, specific drayage company that we have to pay to get anything in or out.
A big problem arises if we attend Regionals back-to-back that are not Bag & Tag events. There are only 3 shipping days between these events, so because FedEx shipping is donated (lower priority) it cannot be used to get the robot there in time. JP Express has come through for us as long as the venues allow third-party shippers to pick-up or drop-off.
Here are a couple of our standard ways to organize shipping:

Hauppauge to away Regional to SBPLI Regional to Championship to Home

1. Use JP Express or FedEx donated shipping to away Regional
2. Bag then FedEx from away Regional back to school
3. Uncrate and transport Bagged robot to/from SBPLI Regional
4. FedEx from school to Championship
5. FedEx back home to Hauppauge

Tools, Spare Parts, Pit Display, and Raw Materials

The equipment in the Robotics Room is owned by the Technology Dept., so any repairs, etc. must go through them and their budget.
The Championship poses an interesting shipping challenge. Not for the robot, but for our hundreds of pounds of tools, etc. Normally we take them with us by car or bus to the Regionals we attend within driving distance. We have not yet started driving our tools, but have tagged onto other local teams doing so. That is also an option worth considering if we can get a couple of our own volunteer drivers. Tools cannot be shipped in the robot crate without incurring exorbitant over-weight charges. Don't even think about it. Okay, okay we did pack everything into one crate in 2003, but that year the Superintendent charged it to his District account, rather than to the Robotics account.

Shipping out of the Convention Center must be via FedEx or the *FIRST* drayage contractor. An easy way to get our tools down there is through local sponsor donated shipping. We prepare a pallet in Hauppauge that JP Express picks up and delivers to a third-party location at the event. We send an advance party down early to secure the hotel rooms, etc. and they also pick up our tools with a rented mini-van.
Returning the tools is difficult. We can take them back out via mini-van and ship them separately with JP Express picking up the tab, or ship them directly from our pit via the *FIRST* drayage contractor if we can scrounge a pallet (~$1,100).

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

- Kickoff in Manchester – generally two team adults attend. Friday reception at Westwind-Dean Kamen's home, Saturday kickoff and KOP distribution.
- 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

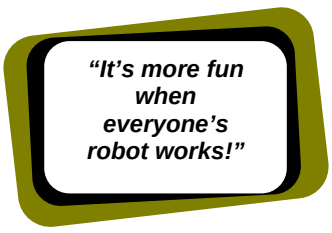
These handbooks must be living, dynamic documents if we are to continue to succeed. Coming up with fresh ideas, trying new approaches, and revisiting lapsed practices all serve to keep our creative energies flowing and everyone fully involved. These handbooks are not the culmination of what we know and how we operate, 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, usually during the summer downtime, to include new best-practices, schedule evolution, significant successes/failures, 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

- District Transportation Release Form – for students released at events
- Team Business Plan / 5-Year Strategic Plan – where are we going, how we plan to get there.
- Team District Budget and Booster Club Budget
- *FIRST* Team Safety Manual: http://www.usfirst.org/robotics/2006/2006teamsafetymanual.pdf

Find Out More



- team358.org – Our website
- www.usfirst.org – *FIRST* website
- www.chiefdelphi.com/forums – Team discussion forum
- www.firstnemo.org – NEMO (Non-Engineering Mentor Organization) is a support group and information exchange for those adult non-engineering mentors.