ENGINEERS OF TOMORROW 2783

FRC TEAM 2783

Team Handbook
2015-2016 Build Season

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Team Overview

Our team, the **Engineers of Tomorrow,** is part of the *FIRST* Robotics Competition (FRC), which is an organization that encourages high school-aged students to venture out of their comfort zones and learn valuable life skills. The skills that we learn include computer-aided design & machining, electrical & mechanical engineering, computer programming, web design, animation, marketing, problem solving, time management, organization, and communication.

Our mentors and parents have made it their goal to help us learn how to use our talents and resources to make our visions a reality. They teach us skills, through hands-on learning, and allowing us to do much of the work on the robot and much of the programming. This organization truly bridges the gap between school and real life applications of technology, and it is exciting to see applications of science and math when building and programming our robot.

Our team is unique because we are not affiliated with a particular school; we are a community team. Our students hail from six different counties in Kentucky including Oldham, Jefferson, Shelby, Spencer, Henry, and Bullitt.

Team Mission Statement

The mentors and parents of *FIRST* Robotics Competition (FRC) Team 2783, Engineers of Tomorrow, are dedicated foremost to offer practical applications of academic skills, and to encourage an appreciation for math, science and technology. Through cooperation with our students, we hope to inspire them to achieve high levels of excellence in education and in life. As a team, we will strive to compete at the highest caliber, while maintaining a mindset of gracious professionalism. We will share the *FIRST* experience and principles with those we come in contact with, and we will remain involved in our community, rally their support, and in turn share with them our victories in both competition and learning.

Registration

Applicant Requirements

- *Age Requirement* - The FIRST Robotics Competition (FRC) program is geared toward high school students. As outlined in the FRC Rules, students must be in high school to participate on the team, unless a special exemption is approved by the Steering Committee. Students must be aged 14-18 as of January 1, of the current year build season.
    - *8th Grade Students:* Students in the 8th grade can be considered as an "Apprentice Member" if they follow the following guidelines, and are approved using the normal Steering Selection process:
        - *Must be 13 years old on or before January 1st of the Competition year.*
        - Currently a sibling of one of our approved students.
        - Shop: Student agrees under no circumstanced enter the red taped off area where FAB and Build team uses machines.
        - Parents agree to accompany student all times at the shop.
        - Agree they will not have any scheduled time in the Pit area at any our competitions.

      The main focus of the Apprentice position is to give the youth an opportunity to participate in all the business, marketing, spirit, and team activities. This will be a great opportunity to build a solid foundation as you move into High School.

- *Registration Fee* - Any student interested in joining the Engineers of Tomorrow team must complete an annual team registration form and pay a $150.00 registration fee per student. Students/families are also responsible for hotels, travel expenses, team tee shirts, and possible other expenses.

- *Team Handbook* – All applicants must agree to follow all rules outlined in this handbook. This includes, but not limited to, codes of conduct, participation requirements, workshop rules, competition rules, and safety rules.

- *FIRST Rules* –All applicants must also meet or follow any other *FIRST* guidelines or requirements. These are outlined in the *FIRST* Robotics Competition Manual.

Application Process

- Any student wishing to join 2783, Engineers of Tomorrow must first complete the team application form and send in their $150.00 registration fee. This form is completely web-based and is used to get vital background information for all our students and families.

- Once an application has been submitted, the Steering Committee will review the application, and ensure the student meets all applicable team requirements and FIRST requirements.

- Once the Steering Committee approves the application, the student will be added to the team roster and will be expected to attend team functions as outlined in the

handbook.

- Applications received during the build season (normally between January and April) will be held until the season has ended, unless the Steering Committee decides otherwise. This is to keep everyone safe, as safety training can't be done during the very busy build season.
- Once the applicant has been notified their application has been approved and he/she has signed the handbook, the application fee is non-refundable.

Participation

By joining the Engineers of Tomorrow organization each student and his/her parent(s) are expected to participate in team activities. Participation is tracked by an online hours system. All participants (students and parents) are expected to sign-in any time they are present at team activities. Any time that is not at official team events must also be logged through this system but will require approval by the steering committee before being added to the official time count. The specific expectations for students and parents are outlined below.

General Participation

- *Team Communication:* The main form of communication for the team is email. All participants must routinely monitor their email and respond to emails as needed. Each student and at least one parent/guardian must also have an email registered with the team. This email address will be the primary contact and will be registered with the teams communication loop. Currently the team utilizes the Yahoo Groups service for our communication loop.

- *Commitment:* All participants (students and parents) are expected to make a time commitment to the team, be on time, and prepared to work at team activities. Specific time commitments are outlined below.

New Student Participation

Each student is responsible for attaining at least 75 credit hours during the year. At least 30 of the 75 hours must be attained during the build season (January-March). These hours can be attained through many activities. Some examples are outlined below.

- *Build Season Expectations:* (January-March) A team member should expect, during the build season, to perform work at the shop, or at a designated team build season work area. In addition, he/she is expected to be spent performing tasks at any outside location; including your home, on conference calls with the team, team activities, writing essays for the team, or computer work.

- *Non- Build Season Expectations:* (April-December) Each team member should expect at least 6 demonstrations during this time period. These activities are used to showcase the FIRST organization and not only gain additional members, but also gain additional exposure to all FIRST programs. Each member will be expected to attend the majority of these activities unless an applicably excused absence is approved by the Steering Committee.

- *Sponsorship Requirement:* All students are required to bring in at least one sponsor per year to help cover the costs of operation. Details are listed in the "Funding and Financial" section of this handbook.

Student Initials: _____

Parent Initials: _____

New Parent Participation

The life-blood of any volunteer organization is the people who donate their time and talents. The Engineers of Tomorrow Robotics team (EOT) is no different. Every year, each EOT family is required to help assist the program by serving where necessary. All parents/guardians are expected to attain at least 75 credit hours during the year. At least 30 of the 75 hours must be attained during the build season (January-March). These hours can be attained from many different activities. Some examples are outlined below.

- *Build Season Expectations:* (January-March) Parents are expected to support the team in many ways throughout the build season. One major area of support is acting as shop chaperons while students work on the robot.
- *Non-Build Season Expectations*: (April-December) Parents are expected to assist with demonstrations and other activities during the Non-Build Season. Parents are also required to work the annual FLL Regional Tournament the team hosts.

Parent Initials: _____

Returning Student and Parent Participation Hours:

Definition of <u>returning student</u>: Any student that has ever been previously approved by the Steering Committee to be a member of the EOT team.

130 hours (during full season for students) of which 30 hours are during build season. Returning Parents requirements will be 75 hours, with 30 hours being during build season. Parents need to be engaged in watching the students, or involved in some sort of team function while at the shop.

Student Initials: _____

Parent Initials: _____

Participation Credit Fees

Any participant (student or parent) who fails to meet the minimum participation requirements outlined in the handbook will not be elgible to participate in the competition team activities. Our aim is not to penalize families, but to encourage volunteerism. The Steering Committee will formally review ATS hours 2 weeks prior to the Competition activities start and will evaluate each family (Time, Talent, and treasure) to make a recommendation on status. Keep in mind, each member has the ability to see where their total hours are anytime by reviewing their ATS account on the EOT member's website.

If you have any questions, please discuss it with the Volunteer Coordinator, or any member of the KYEOT Steering Committee.

Parent Initials: _____

Volunteer Opportunities

Below are just a few of the volunteer positions for both students and parents that are eligible for time credit. There are experienced individuals on the team that will mentor or assist anyone in these areas if you have concerns about a position. All positions/volunteer opportunities will be first come first serve.

- *Mount Washington Regional Tournament (FIRST Lego League Regional)* – The Engineers of Tomorrow organization puts on an annual tournament for the Kentucky *FIRST* Lego League program. This event takes 50 volunteers for such a large event. Volunteer positions available include: competition director, judges, computer software operators, timers, event check-in coordinators, runners, hospitality workers, pizza/concession sales and others.

- *Community Demonstrations*- All demonstrations require at least one responsible adult to be present. Prior to each demonstration parents can volunteer to cover this position. This position consists of being sure the event runs smoothly, including making sure all equipment is returned to the shop and making sure everyone is safe at the event. A pre-determined value for time credit will be set by the Steering Committee for each event. For Example: Each State Fair demonstration/booth is normally 8 hours. 4 hours for Booth duty, Two hour set-up, and 2 hour take down and return equipment to the shop.

- *Build Season Chaperon:* For safety reasons one responsible adult must be present at the shop for any power tools to be used. Parents can sign up for specific days to gain time credit. A max of two parents (separate families) can receive credit for hours at any given time while chaperoning at the shop.

- *Chairman's Award Preparation* – The Chairman's award is *FIRST*'s most prestigious award in the *FIRST* Robotics Program. The Chairman's award team is continually working to develop the team's Chairman's essay and presentation. This team is always looking for people to help with editing, photography, video editing, interviewees, interviewers and many other positions.

- *Sponsorship Visits* – Sponsors are vital to the success of the team. Visits to these corporations and businesses are essential in acquiring new and retaining previous sponsors. All Sponsorship visits will be approved for credit, as long as the visit is pre-approved by the Steering Committee. Each visit will be awarded one hour of time. The parent who is designated as the parent in charge will also get credit for the visit.

- *Website Management* – The website is a very useful marketing and management tool for the team. Working on the website is a great way for students to get time credit. All projects require prior approval by the steering committee to be eligible for time credit.

Preliminary Calendar

All events are preliminary, and are subject to change.

July	- Team picnic
June - December	- Team meetings or sub-team training sessions: 1-2 per month - Team Training Projects – Programming, CAD, Fabrication/Design - Demonstrations – fundraising – camps
December	- Team sponsored FLL Regional Tournament in Mount Washington, KY (MWRT)
January (official date TBA)	- *FIRST* kick-off
January to mid - February (official date TBA)	- 2012 Build Season - Work schedule will be determined Dec. 2011.
March (official date TBA)	- 1st Regional Competition
March (official date TBA)	- 2nd Regional Competition
April	- National Competition in St. Louis at the Edward Jones Center (if team qualifies)
May	- Wrap-up of season
June - August	- Summer events may include training workshops, off- season competition, community outreach, and fundraisers

Code of Conduct

"Gracious professionalism" is essential to team participation. Disciplinary actions, to be determined by the steering committee, may include a verbal warning, suspension from team activities, or removal from the team. Please see the specific disciplinary policy. Students will display "gracious professionalism" – the motto of *FIRST* – at all times and promote the ideals of *FIRST*.

- Students are expected to behave in a courteous and cooperative manner.
- Students are expected to be respectful of others and behave in a way that protects the health and safety of themselves and others.
- Students shall be respectful of the facilities, tools, equipment and all things being used by the team.
- Students shall not use profane, obscene, or vulgar language in written, gestured, or verbal form.
- Students are expected to keep current with team activities and requirements by checking the website and his/her email frequently.
- Students are expected to read and understand all rules of competition, as well as, know our team's robot and competition strategy.
- Ask for help! If you don't know what is going on, or are unsure how to accomplish a task assigned to you, ask an adult to help.
- Students must sign in and out when they arrive and leave from any organized EOT Work area.
- Prior to leaving any team work area, students must:

    - ✓ Clean their work area and put tools back in their proper location.
    - ✓ Make sure all tools and other equipment are properly powered down, and locked up as directed.

Zero Tolerance Weapons Policy

The carrying, bringing, using, or possessing any weapon or dangerous instrument or instrument/object which may reasonably be perceived by another as a weapon or dangerous instrument, including knives, into the EOT shop or to an EOT sponsored activity is prohibited. Violation of this policy by students shall require that the weapon be confiscated from the student, the parents will be notified and a disciplinary write up will be done immediately.

Any student who uses a weapon in a manner that is considered threatening to another will be immediately removed from the team and law enforcement may be notified.

Disciplinary Policy

Any student who is:

(1) acting in a manner that is unsafe to self or others;
(2) not participating in work activities that he/she has been assigned;
(3) not responding to team communications;
(4) not respecting other team members, mentors and/or adults working with the team;
(5) behaving in a manner that would cause embarrassment or harm to Team 2783's reputation, will be subject to the following disciplinary action.

First offense will be a verbal warning. All verbal warnings need to be given to the student with at least one member of the Steering Committee present.

If the student does not correct the behavior that resulted in the verbal warning then an official written reprimand will be issued to the student. All written reprimands are to be signed off by the person issuing the reprimand, a Steering Committee member, the student and the student's parents. All written reprimands will be kept on file by the Steering Committee (please give written reprimands to Becky Rhodes) so the student's behavior can be monitored to make sure that they are progressing in a positive direction. If any student obtains three write written reprimands in a season then that student will be unable to attend the regional event with the team. If the behavior persists then expulsion from the team will be reviewed.

At the end of the season all reprimands will be forgiven and the student's record will be "forgiven." This policy is not to be taken lightly and write ups are not to be given for minor infractions.

Student Initials: _____

Parent Initials: _____

Work Areas

Rules

- At a minimum, there must be two team members (any combination of students/mentors) present for anything to be done at the work areas.
- For power tools to be used, there must be an adult, who is associated with the team (parent or mentor), present in the work area.
- Safety Glasses are required at all times while working in team work areas.
- Before a student can operate any tools or equipment, they must first complete all team requirements (safety training & medical release).
- Only team members are allowed to work in the designated team work areas. Guests should be approved by the Steering Committee before arrival.
- Please keep in mind, our work takes place in areas that are not owned by the team. Team members must follow any rules that the owner may apply.
- All tools and other equipment should be shutdown, put away, and locked up prior to leaving the work area.
- Cleaning the work area should not be left up to the last person leaving the shop
- Lock work areas before leaving

Competitions

Qualifications

- Students must fulfill all participation requirements outlined above.
- Students must follow the code of conduct.
- Students must complete and turn in paperwork in a timely manner.
- Students must arrange travel and lodging accommodations for the duration of the competition

Expectations at Competitions

- Team members traveling to competitions are expected to participate at all times with a positive manor while on the trip.

- Team members are expected to cheer for not only our team, but all others as well. In addition, members will gather data, spend time in the pits, and do whatever is necessary to help the team be successful.

- Note: The team is not responsible for lost or stolen items while traveling.

- All members of team 2783 are to keep in mind their actions are a direct reflection of themselves, their team, their sponsors, and family. "Good Sportsmanship" consists of respect for others and cooperation with coaches, parents, mentors, teammates, and officials.

Team Organization

General Position Hierarchy

Steering Committee – is a group of mentors who meet and discuss team issues. This group of mentors is responsible for doing things such as approving applications, approving budgets, approving purchase orders, tracking member participation, determining member eligibility, approving team events, managing finances, and etc. This group also handles any questions that may arise about decisions the team has made or about the direction the team is going. Steering Committee includes a minimum of six members, including one student, one Student alumni, and four others.

Technical Mentors – are adults with a background relating to the project at hand (mostly engineering or technical backgrounds). These adults provide professional guidance and teach students the tools of the trade. These mentors may or may not be a parent of a team member. Parents acting as mentors must fulfill the time credit requirements outlined in the "Participation "section of this handbook. Technical mentor positions require approval by the Steering Committee and upon approval will also receive recognition from *FIRST*.

Other Mentors – are adults who are highly involved, but lack a specific background relating to a project at hand. These adults provide professional expertise, guidance, supervision, and training of the students. Parents acting as mentors must fulfill the time credit requirements outlined in the "Participation" section of this handbook. Other Mentors will receive recognition on the local team level. "Other Mentor" recognition will be determined by not only the member's credited hours, but also his/her record of taking on responsibilities as needed and approved by the Steering Committee. Additionally the member's effectiveness when managing these responsibilities will also be analyzed.

Alumni Mentors: are adults with a background relating to the project at hand. These formal students have specific expertise in dealing with the stresses of build season. These former students provide professional guidance and teach students the tools of the trade. Alumni mentors will be recognized on the *FIRST* organization level. Alumni Mentors must be approved by the Steering Committee. Keep in mind, we always welcome our Alumni as important member of our team and really would like to make them feel welcome. The approval process is solely for limiting the formal recognition at the FIRST level.

All Parents – are adults who are responsible for supporting the team in one or more areas as outlined in the parent participation section of this handbook. All parents are required to follow the minimum participation requirements outlined in the "Participation" section of this handbook.

Sub-Team Leads - are students who lead sub-teams. These students are responsible for keeping track of process, managing their team, and reporting to the Steering Committee.

Sub-Teams **–** a group of students who are responsible for a specific part of the team. This can range from a group in charge of fundraising, or a group in charge of building the drive train for the robot. Sub-teams vary each season based on the necessities of the team.

Team Members **–** are students who are part of the team. Each team member must fulfill all the requirements outlined in the student participation part of the handbook.

Administrative Positions

Corporate Sponsor Coordinator –Responsible for soliciting sponsors. This person is responsible for maintaining sponsor relations and recognition, before, during, and after the building phase. This person also prepares grant proposals, and obtains other donations (food, supplies, and services) as needed.

Fundraising Coordinator – Responsible for organizing fundraising events (carwash, etc)

Public Relations Coordinator – Plans team public events, presentations, email updates, and press releases. Coordinates team identity such as logos, appearance of robot and crate, uniforms (team shirts), giveaways, mascot, and team spirit activities. This person is also responsible for award submissions.

Media Leader – Documents all things that the team does including photos, videos, quotes, interviews, etc. Works with students to prepare DVDs and website for competition entry.

Internal Communications Coordinator – Directs internal communications and maintains calendar/schedule.

Treasurer – Manages financial records.

Administrative Coordinator - Maintains team handbook, rosters, and contact information.

Travel Coordinator **–** Make hotel arrangements, provide team with directions and travel details.

Competition Positions

Competition Team Lead

- An adult who is responsible for overseeing the team leading up and during competition.

Pit Positions

- *Pit Crew Leader (Adult)* – an adult who is responsible for making sure the robot is ready for the next round of competition. This job can include working with students to fix broken parts, upgrade parts, making sure the pits remain a safe working environment, making sure students talk to judges and other teams, and manage pit crew scheduling. This adult should be a mentor who is familiar with all the systems in the robot.

- *Pit Crew Leader (Student)* – a student who is responsible for making sure that the robot is ready for the next round. This student should meet with the drive team after each round to find out what works and what did not. This person is responsible for pit communications. This includes communication with the pit crew, drive team, scouting team, and team audience members. This student should have a good understanding of all robot systems.

- *Pit Crew* –a group of students and mentors in charge of prepping the robot for the next round. Students are also responsible for talking to judges and other teams as they flow through the pits. Many times some pit crew members are "on-call specialists" who are called in when a problem occurs in an area they specialize in.

Field Crew

- *Drive Coach* – a mentor or student who works with the drive team on the field to set strategy and coach through the round. This person is also responsible for communicating with the pit crew.

- *Driver* – students who drive the robot during the competition rounds. These students must work with the drive coach to follow a strategy and communicate with the pit crew about any issues that arise during the round.

- *Human Player* – a student who plays the human portion of the game. This student must communicate with the drivers and follow the set strategy.

- *Photographer/Videographer* – a student or adult who is in charge of taking pictures and video throughout the competition. At some competitions this student does receive a field access pass.

Scouting

- *Scout Lead* – a student or mentor who leads the scouting for the team to gather data on the other teams.

- *Scouts – students, parents, and mentors who gather data on other teams so the drive team can effectively strategize.*

Awards Team

- *Chairman's Interview Team* – a group of students who present our chairman's presentations to a group of judges. These students must have a good understanding of everything our team does.

- *Award Recipients*- At some of the events our entire team can't go to receive awards. In this case, these students will sit in the designated recipient area and will receive team awards.

- *Awards: A complete set of available awards are listed on the www.usfirst.org website under game and season info/Awards.*

General Sub-Teams

Drive-train and Chassis – Responsible for designing, constructing, and adjusting the robot's drive-train system and the skeletal structure of the robot.

Electrical and Programming- Responsible for electronics, wiring, circuitry, and vision system. Develops and updates computer programming.

Game Object Interaction Device – Responsible for the building and incorporation of any manipulators (including pneumatics) on the robot

Playing Field Construction- Interprets *FIRST* supplied blueprints of the playing field and builds parts of the field according to those specifications.

Strategy and Scouting – Includes rule monitor(s), provides competitive information for the competition team prior to and during competition, and develops scouting database and data collection system.

Animation – Designs and develops animation video for competition entry.

CAD/CAM – Creates CAD models and develops CAM code to design and make parts for the robot.

Safety and Controls – Includes safety captain(s), tools management, inventory of parts, and weight control.

Note: All positions are subject to change not only based on the specific challenge, but also the make-up of the team organization. These decisions will be made by the student leadership in conjunction with Steering Committee final approval.

Funding and Financials

Funding for the Engineers of Tomorrow Team comes from three sources:

- Major Sponsors – corporations that donate funds. Our sponsor levels for the 2015-2016 season are noted in the section that follows.
- Minor Sponsors – small companies, groups, or individuals that contribute funds, supplies, or services to the team. Minor sponsors are generally solicited through team members. (Each team member will solicit at least one minor sponsor for the following season)
- Team member registration fees, travel expenses (transportation and meals), field trip expenses, and miscellaneous costs are all funded by the team member.

A team's participation in the *FIRST* Robotics Competition is not inexpensive. We anticipate needing to raise between $18,000 to $30,000 per season. To provide an idea of what team costs are, here are a few estimated budget items:

FIRST registration (entitles team to robot kit of parts and one competition)	$ 5,000
Additional Regional Competitions	$ 4,000
National competition registration fee (if qualify)	$ 5,000
Playing field construction	$ 500
Robot construction	$ 3,500
Shop Supplies	$ 1,000
Laptops for programming, animation, and CAD	$ 1,000
Crate construction materials	$ 200
Robot cart	$ 100
Team items (banners, giveaways, etc.)	$ 500
FLL Team Sponsorship	$ 250
Team Shirts	$ 1,500
Administrative costs (videos, copying, mailing, etc.)	$ 500
Pit supplies	$ 1,000
Additional start up costs (tools, supplies)	$ 2,000
Off-season event	$ 1,000

* This estimate does **not** include lodging or travel costs. All competitions require travel.

Communication Methods

Individual Contacts (Roster) – Once a student's application has been accepted, his/her contact information from the application will be put on the team roster. This roster can be found on the team communication area website. This roster includes phone numbers, personal email addresses, and mailing addresses.

Forum/Communication Area Website – Our team has an online tool located at members.kyeot.org that houses many tools for online collaboration. Students are expected to check and use this tool frequently throughout the season.

Email Loop – Our team uses a free service provided by Yahoo called Yahoo Groups to send emails to the entire team. This is our main form of communication. All students, and at least one parent per student, must have an active (non-spam) email address registered with the loop. To send an email to the loop, send an email to kyeot@yahoogroups.org after becoming a member. All emails sent through the loop are now moderated by a team member designated by the steering committee. The steering committee can decide to remove or re-implement this moderation at any time.

Email & Yahoo Group Use – Emails and the yahoo group should only be used to make EOT announcements. Emails have a tendency to cause uneasiness when attempting to bring-up or discuss controversial topics. Many times emails can be taken the wrong way and can cause damage that was not intended. All emails should be carefully read over prior to sending to ensure that it won't cause any issues.

Contact Information

Team Website: www.kyeot.org
Team Email Address: coach@kyeot.org
Team Yahoo Group: kyeot@yahoogroups.com
Team Phone Number: (502)-265-5827

Social Media

Facebook: https://www.facebook.com/kyeot
Tumblr: http://team2783frc.tumblr.com/

Resources

www.kyeot.org – Engineers of Tomorrow team website, includes:
- General team information

members.kyeot.org – Engineers of Tomorrow Student Area website, includes
- Team Roster
- Team Form
- Team Attendance System

www.usfirst.org – official website of *FIRST* Robotics Competition (FRC), includes:
- information about *FIRST*
- information about *FIRST* Robotics Competition
- video of last year's championship games
- Competition Manual

www.chiefdelphi.com – a website of an outstanding veteran team with helpful information and forums on many topics.

www.firstnemo.org – a website with information for non-engineering mentors.

Student/Parent Required Signatures

We have read and agree to abide by the requirements set forth in the Handbook of FRC Team 2783, for the 2015-2016 FIRST Robotics Competition Season, and understand any violation could, but not limited, result in the students direct suspension from any competition.

I also understand, all applicable paperwork has to be completed before any volunteer hours count.

Paperwork completion Checklists:
- Application filled out online.
- Application fee paid in full.
- Complete Handbook signed and turned in.
- Up to date Health insurance forms submitted and in team file.

Student Signature _____ Date_____

Parent Signature _____ Date _____