

Robofest 2005 Rules

1-6-05 v1.3 (Official Version)

RobofestSM is an open contest to increase young students' interest, engagement, understanding and use of science, technology, engineering, and mathematics (STEM). Robofest 2005 has the following three divisions in two contest categories:

- Competition
 1. Junior Competition Division (5-9th grade)
 2. Senior Competition Division (9-12th grade)
- Exhibition Division (5th-12th grade)

The competition

The Robofest competition is quite unique, because the shape and dimension of the playing field is unknown, the brightness of the competition area is unknown, the condition of the playing field change during competition, and a part of the competition problem is unknown until the competition day. The name of the challenge for the 2005 competition is RoboRelay (HTML, PDF versions are available at www.robofest.net). In order to maximize every student's learning, Robofest limits the number of students per team. Even if we allow up to 7 members, we recommend 4 members per team. There are two levels in this competition. Junior Competition Division is for 5th-9th grade students. Senior Competition Division is for 9th-12th grade students. Both Competitions use the same challenge theme, but Senior Division problem is more difficult than that of Junior Division and high-level programming languages are used. Teams are not competing in predetermined orders. For each round, whenever the team is ready to compete, they line up with the official competition score sheet, which can be found in the team envelope given during check-in.

The exhibition

The robotics exhibition is a great way for students to show off their creativity. Each team has complete freedom to create autonomous robotics projects such as robot pets, robot artists, dancing robots, storytelling with robots, robots for scientific experiments, and practical robotics applications. The team size depends on the number of robots used. Minimum is 1 and maximum is 1 + (number of robots multiplied by 2). Therefore, as an example, if two independent robots are used for the exhibition, the maximum number of students in the team is 5. Robots may be of any size and can use any material. Recommended topics for Robofest 2005 are legged robot version of RoboRelay, legged robot dancing, and using data logging capabilities of robots. On the day of Robofest, each exhibition team will be given a table on which to demonstrate the robot. After the opening ceremony, exhibition teams will have a chance (up to 5 minutes) to explain and demonstrate their robotics project to the public on the stage using a microphone. Teams must bring all the necessary materials for the exhibition. For example, if the robot performs a dance to music, the team must bring a CD or audiocassette tape. The sound system in the hosting site will be available to play your audiotape or CD. The following table summarizes the competition and exhibition rules:

Division Name	Robot Type Used	Recommended Programming Languages	Grades	Team Size	Challenge
Junior Robot Competition	Any robots	Icon based visual programming language	5-9	2-7	RoboRelay
Senior Robot Competition	Any robots	High-level programming language such as C or Java	9-12	2-7	Advanced RoboRelay
Exhibition	Any robots	Any	5-12	Min: 1 Max: 1+(2 x #Robots)	Any unique & creative project

Robofest 2005 will take place in several regions. Winners from each region will then move on to compete in World Robofest 2005 at Lawrence Technological University on Saturday, April 23, 2005. Number of teams for each site advancing to the World Robofest at LTU will be determined after the registration is closed. The best robots will be kept in LTU Robotics Display Case (Museum) – Teams will get equivalent robotics kits and parts as prizes.

General Registration Rules

- Team registration is done on the web. The registration fee is \$30 on the web using only major credit cards. Please note that no refund is allowed. There will be \$20 check-in fees at the competition site. The event is open to the general public and admission is free.
- A team can register in only one contest division at one regional site. Though not recommended, if a team wants to do both competition and exhibition, then the team must register separately for each division with different team ID number.
- A team must have an adult "coach". A detailed job description of the "coach" will appear in the next section below.
- Any organization, such as a school, home school, civic organization, etc. can form teams.
- There are four steps in the registration process:
 - (Step 1)** Coach Registration will begin at www.robofest.net after the official Robofest 2005 rules are posted on the web. The exact date and time will be announced through the [Robofest mailing list](#). After the registration, a coach ID and password will be sent to the coach's email address in less than 3 minutes from robofest@yahoo.com. You must confirm the coach registration by clicking a link in the email, otherwise the coach registration has not been completed. If you do not receive the confirmation email, either the system/network was down or you sent the incorrect email address. In either case, contact chung@ltu.edu to resolve the problem. Robofest 2003 and 2004 coaches can use their prior coach ID and password. If you forgot your password, click on "Forgot Password" link.
 - (Step 2)** Using the coach ID and password, the coach can now create teams after selecting a regional site. All the team member names and grades must be entered. Each team must provide at least one volunteer who will help with regional competition site setup or cleanup. The volunteer's name and email address needs to be entered. For an exhibition team, short exhibition description must be entered in this step. It must include the theme of the exhibition, functionalities of the robots, the number and types of sensors and motors used, and any other information to explain about the exhibition.
 - (Step 3)** After creating all the teams, pay the registration fee online using a major credit card. You will receive a payment confirmation email from Pay Pal, which can be used as a receipt. The registration will be closed if there are more teams who completed step 3 than the max capacity for each division of the hosting site. (If you want to send a check instead of using PayPal, you must contact chung@LTU.edu in advance)
 - (Step 4)** Take a team photo and robot photo with the team ID name sign and upload them to the web account. The requirements for the photos are: (1) standard "landscape" jpg file (width: height ratio must be 4:3) (2) size should be less than 350KB (3) must show all the team members listed (4) adult coach and volunteers may be in the picture (5) must show the identifiable team ID and team name (Write down the number on a paper and hold it when taking the photo or edit the photo file to add a text). The team ID number is decided in the **Step 2** above. If no photo is uploaded before the update deadline, certificates for the team will not have team and robot photos. Also, update any information on the web. The update deadline will be defined in the last section in this document for each regional site.

Team Coaches

- The coach will register their team(s), enter/update team information. The team coach is responsible for facilitating and overseeing team members. The coach must have a valid email address and must check the email account periodically. Email is the primary and official communication method between the team and the Robofest organizer. If their email address is changed, it is the coach's

responsibility to change it by logging into the coach's Robofest account. Then the coach must check his/her email box to confirm the change.

- Coach eligibility: a teacher, parent, college student, professor, tech specialist, or scientist/engineer can be a coach. Coaches must be adults without any criminal records.
- A coach can register more than one team desirably up to 5 teams from any one organization. A coach can represent only one organization, which means a coach cannot enter teams from different organizations.
- Robofest 2005 has multiple regional sites. A coach must register team(s) for only one regional site.
- It is recommended for coaches to recruit mentor(s), if necessary. The coach is responsible for entering on the web up to 5 volunteer names and their roles.
- Each coach must provide at least one volunteer for helping with either setup or cleanup at the hosting site. Each hosting site will send detailed information regarding the jobs.
- The coach is responsible for entering/updating the team data and uploading photos on the web before the update deadline. Please note that personalized certificates will be printed based on the information and the photos on the website. The Robofest organizer will not reprint certificates due to incorrect information on the web.
- Robofest has been attracting lots of media attention. Coaches must collect [Consent & Media Release Forms \(PDF file\)](#) not only for team students but also for coach him/herself and team volunteers. These must be submitted to the hosting site during check-in.
- Another important role of the coach is to find sponsors for their team(s). The Robofest website will list up to four sponsors per team on the web. A Certificate of Appreciation will also be given to the sponsor on the day of Robofest.
- Before and after Robofest, please contact newspapers, radio, and TV stations to recognize your teams efforts and achievements. Let us know if your teams were introduced on any media.

Team Members

- Must be students in April 2005, grades 5th-12th. ([Any exceptions, please contact chung@ltu.edu](#))
- Must solve problems by themselves. In order to assist students, Lawrence Technological University will provide technical workshops/resources for registered team members.
- It is recommended that a student should participate in only one team for a contest.

Team Volunteers

The team cannot work without the help of various volunteers for the jobs such as mentoring, financial sponsoring, transportation, or constructing playing fields, taking pictures, video taping, etc. The Robofest website will list up to five volunteers per team and a certificate of appreciation will be given to each team volunteer on the Robofest day. As mentioned before, each team must provide at least one volunteer for the setup or cleanup of the hosting site.

Common Sense Rules for Education

Construction of the robot body as well as all the programming should to be done by the students only. Parents, teachers, mentors, or coaches may not directly assemble the official robots or directly write the program code for the team at any time during the preparation period or during the contest. Any direct participation is a violation of the rules. The offending team will become ineligible for any awards.

There will be judges/proctors in the competition area. If any adult wants to give help to their team for any reason, the adult must get permission from the judges/proctors.

Only team members with badges are allowed in the pit (team table) area. No adults are allowed to be in the pit area, except team coaches with badges in case there is a need. It is strongly suggested that, for security purposes, the coach must watch the team table area, especially when the team plays.

Team's Responsibility on Robofest Day

- All the teams must check-in by 8:30am. Doors will open at 8am.
- Things to bring to Robofest venue
 - ❑ \$20 check-in fee
 - ❑ A laptop (or PC) computer for each team. (To solve the unknown part, each team must bring a computer. It is not recommended that any teams share computers)
 - ❑ Hard copy of programs. Please refer to Resources Button at www.robofest.net for the Tips on printing your program.
 - ❑ *Only for exhibition teams:* poster boards to introduce the exhibition description and all the necessary materials for the exhibition.
 - ❑ A power strip. A power cable, if available
 - ❑ Cardboard box to cover your robot and ID tower when downloading (Lego teams only)
 - ❑ Extra batteries
 - ❑ Signed Consent & Media Release forms
- Teams must use the team table assigned by the organizer. Please do not change the team tables. Judges *may* visit the team tables.
- Teams must have robot inspection and interview before the competition begins. Submit the hard copy of your program to judges during the inspection.
- In the competition round 1, each team member must introduce her/his role and accomplishments using a microphone to Judges & the public. Each team will have one minute for the team introduction.
- Exhibition team member must introduce her/his role and accomplishments using a microphone to Judges & the public, too. They will have 5 minutes for the presentation and demonstration of the project.
- For the competition, teams need to implement new additions for the unknown missions and adjust programs to allow for the variation in the new environment. Each team is expected to check/change the light sensor values for the black line, white area on the shelves and light bulb in the competition area. Another way to overcome those changes is to write programs to self-adjust light threshold values on the fly. This technique is required for senior division teams.
- It is the team's responsibility before the game to ensure the track is in satisfactory condition. Remember, we are using pieces of all-purpose shelves. There may be big cracks even if referees have checked the track before each game. Therefore, the team members should also check the playing field before each game.
- Lego teams only: whenever new programs are downloaded, both your robot and the IR tower MUST be covered by a box. If not, you may damage other robots and/or your program may be corrupted. Do not forget to bring an IR opaque cardboard garage to house your robots to prevent interference from another RCX while downloading programs. It is suggested to cover RCX's infrared sensor with electric tape after downloading a program in order to prevent it from receiving somebody else's program.

General Rules

- No food or drink are allowed inside the contest area
- Cameras with flash are not allowed inside the competition area
- **Do not make unnecessary noise which might disturb other teams in the pit area**

Judging and Prizes

About 20% of the total number of teams at each site will win big trophies during the award ceremony. Competition winners are directly decided by the final competition results. Judge's Award winners are decided by several categories including, but not limited to: performance (reliability), originality, creativity, functionality, programming, construction, teamwork, presentation, and new technology used. Every officially registered team member will receive a framed certificate of achievement during the award ceremony (also

possibly a medal, if we have a sponsor). If you do not attend the closing ceremony, it cannot be guaranteed that you will receive your awards at a later date.

How teams advance to World Robofest

Lawrence Technological University is planning to invite 20 junior competition teams, 16 senior competition teams, and 5 exhibition teams for the World Robofest 2005. The number of teams to advance from each region will be decided in proportion to the number of teams for that site/division after the registration is completed. For competition divisions, teams to advance to World Robofest are determined based on the following data:

- ❑ Average performance score – 80% (note that finalists will use the average of best two)
- ❑ Robot Inspection & Interview – 6%
- ❑ Team public presentation – 6%
- ❑ Source code inspection – 8%

For exhibition divisions, teams to advance to World Robofest are determined based on the following data:

- ❑ Originality (creativity) – 35%
- ❑ Public presentation performance (reliability) – 25%
- ❑ Inspection & Interview – 8%
- ❑ Usefulness – 8%
- ❑ Complexity and functionality – 8%
- ❑ New technologies used & other factors – 8%
- ❑ Source code inspection – 8%