

AIChE Annual Student Conference Chem-E-Car Competition 2018

Chem-E-Car Competition® Checklist

Done	Deadline Dates	Item
☐	NEW Chem-E-Car Competition Safety Training & Test: Coming August 2018	<ul style="list-style-type: none"> AIChE is currently redesigning the mandatory Chem-E-Car Competition Safety Training & Test. Every member of your Chem-E-Car team must view this module and pass the test with a score of 80% or higher before the competition in Pittsburgh.
☐	Registration Fee Deadline: September 14, 2018	<ul style="list-style-type: none"> \$200 Registration Fee payment deadline (1 fee per team) Please complete this form as soon as possible to confirm billing information: https://chenected.wufoo.com/forms/rqft4n11h98r5g/ Invoice & payment instructions will be sent after form completed
☐	EDP Deadline: September 14, 2018	<ul style="list-style-type: none"> An Engineering Documentation Package (EDP) must be completed and submitted via email. All Supplemental information (Equipment Specs, MSDS, etc) must be combined and saved in 2nd <u>separate</u> document titled “EDP Supplement.” See EDP Submission Instructions document for full details to make sure your EDP is received.
☐	Video Competition Deadline: September 14, 2018	<ul style="list-style-type: none"> Chem-E-Car Team Captain must upload video to folder. See Video Competition Instructions document for full details. Teams will be sent voting instructions in advance of the Conference.
☐	Early Bird Deadline for Annual Student Conference Registration: September 17, 2018	<ul style="list-style-type: none"> Registration fees for the AIChE Annual Student Conference increase after this date. <i>All Chem-E-Car Competition team members must be registered for the conference. This is in addition to the \$200 team registration fee.</i>
☐	Submit Chemical Lists / Chemical Order	<ul style="list-style-type: none"> Instructions for submitting this information will be sent to Team Captains and Advisors once they are available
☐	Receive EDP Feedback by October 15, 2018	<ul style="list-style-type: none"> The goal is for the EDP review feedback form to be emailed to your Chem-E-Car Team Captain by this date. Please read this review form and fix anything addressed by the safety reviewers. If you do not receive an EDP Review form, email studentchapters@aiche.org to check on the status.
☐	Create Poster by October 27, 2018	<ul style="list-style-type: none"> Prepare a poster that explains your vehicle design for the Chem-E-Car Poster Competition. Please see page 4 of this document for more information on what should be included in your poster.
☐	Prepare for OnSite Safety Inspection by October 27, 2018	<ul style="list-style-type: none"> Bring printed EDP, printed EDP Supplement, printed EDP Review Form, vehicle and poster to the On Site Safety Inspection in Pittsburgh, PA. Remember each team member must have proper PPE(safety glasses, lab coats, gloves) in order to be permitted onto the competition floor. Remember that the Competition Safety Coordinator and On Site Safety Judges are the final authority on safety issues, disqualifications, and rules issues.

For more information on this competition, contact AIChE at (646) 495-1364 or studentchapters@aiche.org.



2018 AIChE Annual Student Conference Chem-E-Car Competition Official Rules

Please be aware of the following for 2018

New rule this year:

All questions posed by rules and safety judges at the safety inspection and poster session must be answered by the undergraduate student team members and not by Faculty Advisors or any individual who is not an undergraduate student. The ability to explain car design, operation, safety and/or rules compliance is the responsibility of the undergraduate student team members.

Reminder to submit your AIChE Student Chapter Report:

All teams competing in the Regional Conference Competitions and the Annual Student Conference Competition must be from a Student Chapter in good standing. In particular, your Student Chapter must have submitted a Student Chapter Annual Report online to AIChE in the previous year. If your Student Chapter failed to submit an Annual Report in the previous year, then the Student Chapter Chem-E-Car Team will not be permitted to compete.

Note:

Due to time constraints and the large number of teams participating, the Chem-E-Car Committee will set up two (2) tracks at the 2018 AIChE Annual Student Conference Competition in Pittsburgh. The two tracks will be identical **to the extent possible**. Each team will run on one of the tracks in the first round, and then run on the other track in the second round, so each team will have 1 opportunity on each track.

The objectives of the AIChE Chem-E-Car Competition® are:

- To provide chemical engineering students with the opportunity to participate in a team- oriented hands-on design and construction of a small chemical powered model car;
- To demonstrate the ability to safely control a chemical reaction by changing a chemical reactant(s);
- To design and construct a car that is powered with a chemical energy source that will carry a specified load over a given distance and stop;
- To encourage students to become actively involved in their professional society;
- To increase awareness of the chemical engineering discipline among the general public, industry leaders, educators and other students.

There are two general competitions. The first is held at regional conferences and the second is held at the AIChE Annual Meeting. Each year, the annual competition is held in conjunction with the Annual Student Conference at the site of the AIChE Annual Meeting. A host AIChE chapter, along with the AIChE staff and the competition sub-committee from the Student Chapters Committee, and SChE, provides support for the annual competition. Please note that the Regional Competitions and Annual Competitions are separate competitions. Passing the safety inspection at the Regional Chem-E-Car Competition does not guarantee that your team will automatically pass the safety inspection at the Annual Student Conference Chem-E-Car Competition. This also means that safety and/or rules decisions made at regional competitions DO NOT automatically carry over to the annual competition.

There is a poster session, a video competition and a distance/performance session at each competition, as detailed below. For 2018, a video competition at the regional meetings is not required, but may be held for fun at the discretion of the host organizers. The video competition is required at the Annual Student Conference Competition.

Please be aware that the [Official Rules and Safety Rules have been updated as of June 2018](#). All teams are highly encouraged to read the entire document carefully even if you already read them for the Regional Competitions.

Competitions

A) Regional Conference Competitions

1. In general, a school may have more than one entry at the Regional Conference. However, the Host School has the right to set a limit, should the need arise.
2. The rules listed under the **Annual Student Conference** Competition shall apply for the regional conference competition.
3. Regional conference host school organizers should contact studentchapters@aiiche.org with questions or for clarification on the competition rules.
4. An AIChE-appointed safety coordinator will attend each regional competition. This coordinator is the final authority regarding Chem-E-Car Competition® rules, safety concerns, violations, disqualifications, and the like, for that Regional Competition only. This coordinator may be in contact with other members of the SCC Chem-E-Car Competition® sub-committee. The coordinator's judgment applies only to the regional competition and is not binding on judgments at the competition at the **Annual Student Conference**.

For more information on this competition, contact AIChE at (646) 495-1364 or studentchapters@aiiche.org.

Regional Conference Awards:

Performance Competition:

- 1st place: \$200
- 2nd place: \$100

B) Annual Student Conference Competition

In order to accommodate the increasing amount of teams that compete in the competition at the Annual Student Conference, the AIChE Chem-E-Car Rules Committee is currently evaluating format changes to reduce the time of the competition at the 2018 AIChE Annual Student Conference in Pittsburgh, PA. Any format changes will be formally announced to all teams who qualify for this competition. There will be no formatting changes at the 2018 Regional Chem-E-Car Competitions.

A maximum of 32 cars will be drawn from the regional competitions in the US and Colombia for the 2018 **Annual Student Conference**. The list of **Annual Student Conference** entries is drawn from the regional winners, based on the size of each region. The number of qualification slots reserved for each region is shown below:

- | | | | |
|----------------------|--------------|-------------------|--------------|
| • Mid-America: | 3 qualifiers | • Rocky Mountain: | 3 qualifiers |
| • Mid-Atlantic: | 5 qualifiers | • Southern: | 5 qualifiers |
| • North Central: | 5 qualifiers | • Southwest: | 2 qualifiers |
| • Northeast: | 3 qualifiers | • Western: | 3 qualifiers |
| • Pacific Northwest: | 2 qualifiers | • Colombia: | 1 qualifier |

Only one entry per school, via this qualifying procedure, will be allowed at the Annual Student Conference competition no matter how many compete at regional competitions.

NOTES:

- To be eligible to apply for the 2018 Annual Student Conference competition, your team must have had a team entry, participated, and qualified in your normal region (or in an AIChE approved alternative region). If your team did not compete in your normal region (or AIChE approved alternative), you cannot participate in the 2018 Annual Student Conference Chem-E-Car Competition.
- All student chapter teams that are competing in the Regional Conference Competitions and the **Annual Student Conference** Competition must be from a Student Chapter in good standing. Your Student Chapter must have submitted a Student Chapter Annual Report online to AIChE in the previous year. If your Student Chapter failed to submit an Annual Report in the previous year, then the Student Chapter Chem-E-Car Team will not be permitted to compete.
- If your team participated in a regional conference but did not qualify, you may email studentchapters@aiiche.org and ask to be added to the waitlist. Waitlist submissions will be accepted until May 31, 2018. If a spot opens up, there will be a lottery to choose which team from the waiting list gets a slot.
- For the 2018 **Annual Student Conference** competition, a \$200 entrance fee will be charged for each competing team. This entry fee will cover the disposal of chemicals and waste at the competition site.
- In May of 2018, the Chem-E-Car Competition® Rules Committee will evaluate all of the regional qualified teams to determine if their entry meets the **Annual Student Conference** Competition rules. If a team's entry is determined to not meet the **Annual Student Conference** Competition rules.

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Competition rules, that team will be disqualified and will not be able to compete at the 2018 **Annual Student Conference** Competition. Their slot will open up to the next team on the waiting list.

Chem-E-Car Competition® Rules

There are three events at a Chem-E-Car Competition®: a poster competition, a video competition and a car performance competition.

Poster Competition

- a. A poster board must be displayed with the autonomous vehicle on the day of the competition. This poster should clearly describe how the car is powered by a chemical reaction, how it stops on a chemical reaction, the unique features of the car, and the environmental and safety features in the design. Appropriate documentation on the design and testing of your vehicle must be available for inspection by the judges at the poster competition. This documentation must include:
 - vehicle design description, drawings and testing results;
 - complete Engineering Design Documentation package described in the Safety rules;
 - proof that the team has all of its required PPE (personal protective equipment);
 - evidence, if any, of creativity in the propulsion system design and the appearance of the vehicle.
- b. The poster competition and judging will occur prior to the Chem-E-Car Performance Competition. Team members must be present during judging to answer questions from the judges.
- c. A team must achieve a minimum score of 70% in the poster competition to be able to advance to the Chem-E-Car Performance Competition. Posters will be judged according to the following criteria:
 - Quality of the poster and team member presentations (50%)
 - Design creativity and unique features of the vehicle and safety considerations (35%)
 - Demonstration of knowledge of reactions, calibration methods by all team members, and ability by team members to answer questions posed by the judges (15%)
- d. Winners of the poster competition will be announced at the end of the performance competition:
 - 1st, 2nd and 3rd place certificates will be awarded;

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Video Competition (Optional at Regional Competitions)

Teams are encouraged to build excitement for their participation in the Annual Student Conference Chem-E-Car Competition® by submitting a quick intro video, profiling the team, car and participation in the competition.

- Videos will be broadcast at the Chem-E-Car Competition®.
- Videos will also be featured on ChEnected, the AIChE student page, shown on the ChEnected YouTube Channel, tweeted, and shown on Facebook.

Instructions:

- Videos should be no longer than 60 seconds
- Videos should be a quick, fun introduction to your car, your team and your school. What makes your car special?
- Be creative and get people excited about your participation in the competition
- Videos must show your school and car name
- Videos should be submitted in an .mp4 YouTube-friendly format.
- Videos submitted must comply with Youtube copyright policies.

If you submit a video that does not follow the outline above, it cannot be used or considered for the competition.

Teams will view the videos in advance of the competition and cast their vote for their favorite video. Teams are only eligible to win if they submit a vote. Please see separate document titled “Video Competition Instructions” for full information.

Chem-E-Car Competition® Performance Competition:

1. Load and Distance:

Each car will be given up to two opportunities to traverse a specified distance carrying a specified load of water. The required load and distance will be given to each team one hour prior to the start of the performance competition. The distance will be between 15 and 30 m \pm 0.005 m, and the load will be between 0 and 500 ml of water. Teams may not add or remove any "load" (or other inert items) to adjust the weight of their vehicle once the poster session has concluded. Teams are only allowed to adjust "fuel" or chemical reactants used in the car's chemical reaction. The load and distance will not change for the final round.

2. Course Layout and Distance Measurement :Due to time constraints and the large number of teams participating, the Chem-E-Car Committee will set up two (2) tracks at the 2018 AIChE Annual Student Conference Competition in Pittsburgh. The two tracks will be identical **to the extent possible**. Each team will run on one of the tracks in the first round, then run on the other track in the second round, so each team will have 1 opportunity on each track.

The car will start with its front end just touching the designated starting line, with the goal of keeping the car in bounds to a designated finish line. The performance is determined by the distance from the front-most point of the car to the finish line, whether or not the car stops before or after the finish line. The course should be wedge-shaped with a starting line and the prescribed distance clearly marked in an arc of constant distance **from the apex of the triangle**. The physical site will dictate the exact course layout. See Figure 1 for an example of the course layout. A vehicle that goes out of bounds will have

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its performance measured by the distance from where it went out of bounds to the finish line, and a penalty of 3.0 m will be added. “Out of bounds” is defined as having the entire vehicle traverse outside the taped boundaries of the course. The tape is considered a part of the course. If the car starts going backwards at the starting line, the score will count as 0m traveled. Note: the site location may also dictate an out-of-bounds region past the finish line. Vehicles traveling past this out-of-bounds region will be disqualified for that run.

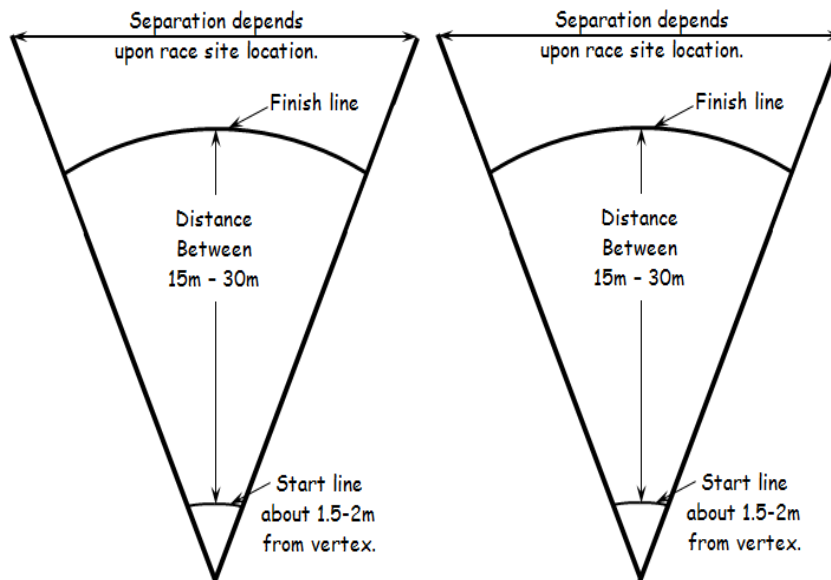


Figure 1. Sketch of typical performance course layout

3. Race Logistics:

A Chem-E-Car Competition® judge (or MC) will announce each team just prior to the start of their run. Each team will be asked to introduce its entry to the audience, giving the school name and briefly discussing the propulsion and stopping mechanisms. Each car will have two (2) attempts to complete the competition at the Annual Student Conference, 1 attempt on each of the two tracks. Each attempt is limited to two (2) minutes from the time the MC announces “Your time starts now” till the car comes to a complete stop. Any car that does not stop within the two minutes will be disqualified for that run. The best score of the two attempts will be used to determine the winner. In the event that a team fails to show up on the starting line, or the vehicle fails to start, the next team in the order of the competition will be announced and requested to proceed to the starting line immediately. The order of the second round at regionals will be determined by the standing of teams after the first round, starting with the team(s) in last place, and ending with the team(s) in first place. There will be a short 15 minute break between rounds at both competitions.

4. Starting Procedure:

Each car is guaranteed a maximum competition time of two (2) minutes. The car must start moving, traverse the distance, and come to a stop within this time interval. If the car goes out of bounds, the next team must be ready to start its run as soon as the MC invites the team to the starting line. Since the run time of cars that run, go out of bounds, or do not start may be less than two minutes, the next car in the order of the competition must always be ready to run at a moment's notice. **Please note that this is a design criterion. The MC will not guarantee a specific starting time or delay your team's start.** If a car does not stop within the 2-minute period, then it is disqualified from that round of the competition.

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5. Competition Order Logistics:

The purpose of the time restrictions is to allow all cars to compete at the **Annual Student Conference** competition within the period allotted for the event. Note: at the regional competition, the host may allow a more generous time allotment; however, the Annual Student Conference competition must follow the rigid time restrictions.

5.1. Team start order for each track is determined during the poster competition.

5.2. The order for the first round may change because of disqualifications (rules violations, poster problems, or safety issues, for example). If a car is disqualified that was scheduled to start before your car, then you will move up one position in the starting order earlier than was originally scheduled.

5.3. The load and distance are announced one hour before the competition starts.

5.4. Five (5) minutes before the start of the competition, the first three (3) teams for each track are called to the start. The first team for each track will be at the starting line, the second team at the ready table, and the third team beginning to move to the “at ready” position.

5.5. The first teams are given a one-minute warning before the competition starts.

5.6. The competition starts when the MC signals the timing to begin. The first teams are given two (2) minutes for the car to start moving, traverse the distance and stop. When the car stops, the timer is reset for the next competitor. The timing will also stop if the car travels out of bounds. If the car does not stop within the two-minute period, then it is disqualified from that round of the competition.

5.7. After the car for team 1 stops, the distance traveled is measured. During the distance measurement, team 4 is called and each team moves up one position. Team 1 should take their car directly to the chemical disposal station to dispose of their spent chemicals. This disposal process is repeated for each car upon completion of its run.

5.8. After the measurement is completed, team 2 is told to start their car, and has two (2) minutes to complete the run. When the car stops, the timer is reset for the next competitor. The timing will also stop if the car travels out of bounds. If the car does not stop within the two-minute period, then it is disqualified from that round of the competition.

5.9. During the distance measurement of team 2, team 5 is called and each team moves up one position. The process is continued until all qualified cars have competed in the round on each track

6. Vehicle Drive System:

An objective of this contest is for students to demonstrate the ability to control a chemical reaction. The only energy source for the propulsion of the car is a chemical reaction. The distance a vehicle travels must also be controlled by a chemical reaction, based on a quantifiable change and direct control of the concentration of a chemical species. This chemical reactant species must be a solid, liquid, or vapor.

6.1. Vehicle Design: Vehicles entered into the competition must have a significant and demonstrable

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student design component, particularly with respect to the vehicle drive system, and the starting and stopping mechanisms. Both the chemical reaction propelling the vehicle and the start/stop reaction (if there is one) must be physically on the vehicle during the competition (i.e., pre-loading of a drive system such as a capacitor assembly is not allowed). The vehicle must be powered by a chemical reaction and must be stopped by a quantifiable change, and direct control, of the concentration of a chemical species. This chemical reactant species must be a solid, liquid, or vapor.

Any vehicle that is purchased from a vendor without major modifications to its operation will be disqualified. For example a team could not purchase a fuel cell car and race this car without any modifications.

6.2. Commercial batteries: No commercial batteries of any kind (for example, AA batteries) are allowed as the power source. Commercial batteries are allowed for specialized instrumentation (e.g. detectors, sensors).

6.3. Autonomous vehicle: The car must be an autonomous vehicle and cannot be controlled remotely. Pushing to start the vehicle or using a mechanical starting device is not allowed. “Bleeding” the time off at the starting line or prior to the starting line is prohibited. Check with the Rules Coordinators (see below, item **13.**) if you have a specific question concerning your vehicle.

On-board computer control or programmable controllers are allowed but must not in any way control or measure the distance traveled. The program must be loaded onto the controller/computer/processor prior to the competition, and the settings may not be changed or communicated with after the competition begins. Wired or wireless communication with the on-board computer/controller is not allowed once the competition begins and during the competition. Teams may be asked to provide a copy of their complete programs to the rules committee on the competition day. Examples of an on-board programmable system might be an Arduino or Raspberry Pi unit.

Teams are also not allowed to use an encoder to regulate the velocity of the vehicle in order to control the distance.

6.4. No brakes: No mechanical force can be applied to the wheel, gears, driveshaft, etc., or ground to slow or stop the car (e.g. no brakes).

6.5. Mechanical or electronic timing devices: There can be no mechanical or electronic timing device(s) to stop the chemical reaction or stop the car. In addition, a timing device cannot utilize what is normally considered as an instantaneous reaction. For example, a constant or draining liquid feed to a sensing cell that employs an instantaneous reaction (such as acid-base or precipitation) would not be allowed. Another example would be a liquid draining out of a vessel to serve as a stop switch. This would be considered a mechanical timing device and would not be allowed. If there are questions whether an entry has a “mechanical or electrical” versus a chemical reaction stopping mechanism, the **Annual Student Conference** Rules Coordinators/judges have final say, regardless of prior rulings at regionals. Check with the **Annual Student Conference** Rules Coordinators (see item **13** below) if you have a specific question concerning your vehicle.

6.6. ICE: Internal combustion engines using an alternative fuel (e.g., biodiesel, ethanol, etc.) are allowed. The fuel **MUST** be completely synthesized by the students (no additive blending is allowed). Succinct safety procedures for the maintenance and operation of this engine must be demonstrated by the team, with considerations to indoor operation. If the fuel deviates in any way from those typically used, you should submit a description to the **Annual Student Conference Chem-E-Car Competition®**

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Rules Committee (see item **13** below), which will evaluate its acceptability. Note: Internal combustion engines are not allowed to emit visible combustion smoke to the competition space and are subject to sound restrictions. See the Safety Rules for a more complete discussion.

7. Size of Car:

All components of the car must fit into a box of dimensions no larger than 40 cm x 30 cm x 20 cm. The car may be disassembled to meet this requirement. If the judges are uncertain whether the car will fit inside the box when dissembled, they may request that the team demonstrate that they can do this.

8. Water Load Container:

The car must carry a container that holds up to 500 mL of water without spilling. An example container is a Nalgene Low-Density Polyethylene Narrow-Mouth Bottles (500 mL). At the competition, only the water will be supplied, thus each car must already have its own container.

9. Capital Cost of Vehicle:

The cost of the contents of the "shoe box" and the chemicals must not exceed \$3500 USD. The vehicle cost includes the donated cost of any equipment. The time donated by university machine shops and other personnel will not be included in the total price of the car. It is expected that every university has equal access to these resources. The cost of pressure testing is also not included in the capital cost of the car. The method used to estimate the donated cost of the equipment must be shown. It is expected that standard financial procedures will be used to estimate this cost.

10. Changes Required to Design: **The same car cannot be reused by a team from year to year.**

Substantial changes must be made in the propulsion system and/ or stopping mechanism and indicated in the JSA form of the EDP and in the poster presentation. Structural improvements are encouraged whenever necessary but will not be considered a significant enough change to reuse the vehicle.

11. Team Member Status and Conduct:

11.1. All team members attending the **Annual Student Conference** Competition must be active AIChE members and **must be registered for the Annual Student Conference.**

11.2. Faculty and graduate students can only act as sounding boards to student queries. The faculty cannot be idea generators for the project. There is no restriction on requesting assistance on vehicle safety – teams may request safety assistance from their faculty advisor, other faculty members, other universities, and professional practitioners in industry and elsewhere. All questions posed by rules and safety judges at the safety inspection and poster session must be answered by the undergraduate student team members and not by Faculty Advisors or any individual who is not an undergraduate student. The ability to explain car design, operation, safety and/or rules compliance is the responsibility of the undergraduate student team members.

11.3. The students working on the project must sign a statement saying they have read, understand, and abided by the rules. This statement must be included in the EDP and must be available at the poster competition.

11.4. The recommended minimum team size is five (5) participants. All team members do not have to be present at the Chem-E-Car Competition®; however, all are encouraged to attend, if possible. During the performance competition, only five (5) team members are allowed in the pit area at once.

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Team members can be swapped out during the competition.

11.5. All team members and the faculty advisor **MUST** have completed the required safety training as outlined in the Chem-E-Car Competition® Safety Rules prior to participating in the competition.

11.6. All student chapter teams that are competing in the Regional Conference Competitions and the **Annual Student Conference** Competition must have submitted a Student Chapter Annual Report online to AIChE by the submission deadline. If your Student Chapter failed to submit an Annual Report in the previous year, then the Student Chapter Chem-E-Car Team will not be permitted to compete.

12. Winning Team and Awards, Sponsored by Chevron

12.1 The winning team is the car that stops closest to the competition distance. This is defined as the absolute value of the distance between the front-most part of the car and the finish line, whether or not the car stops before or after the finish line. In case of ties, at the discretion of the Annual Student Conference judges, the team with the best average from the two runs may be declared the winner. Winners of the **Annual Student Conference** Chem-E-Car Performance Competition will be recognized immediately following the performance competition.

12.2 The **Annual Student Conference** Competition associated awards are:

- **1st place:** \$2000 and a trophy
- **2nd place:** \$1000 and a trophy
- **3rd place:** \$500 and a trophy
- **4th place** – certificate
- **5th place** – certificate
- **Best Use of a Biological Reaction to Power a Car** - \$1,000 Prize and Certificate: Sponsored by the Society for Biological Engineering
- **SACHE Safety Award** – Certificate: for the best application of the principles of chemical process safety to the Chem-E-Car Competition®.
- **Most Consistent Performance** - This award is based on the best average of the runs the vehicle makes. It has been created to recognize the team that has designed and most understands the performance of the reaction that powers the vehicle. Award consists of a certificate.
- **Spirit of the Competition** - This award is given to the team displaying the most team spirit as decided by a panel of judges. Award consists of a certificate and is awarded for 1st and 2nd place.
- **Most Creative Drive System** - Recognition is given to the team that has designed and installed the most creative propulsion system. The winner is decided by a panel of judges during the poster competition. Award consists of a certificate.
- **Golden Tire Award** - In 2002, Northeastern University team members created this award to recognize the team with the most creative vehicle design. The committee has adopted this as an annual award. The winning entry is decided by a ballot cast by each team entered in the competition. Teams are only eligible to win if they submit a vote. Award consists of a certificate and is given for 1st and 2nd place.
- **Best Video** – Video competition will be voted on by the Chem-E-Car Teams, similarly to the Golden Tire Award. Each team can submit 1 vote and cannot vote for themselves. Teams are only eligible to win if they submit a vote. Award consists of a certificate and is given for 1st and 2nd place.
- **Chem-E-Car Poster Award** - 1st, 2nd, 3rd, 4th, and 5th place certificates will be awarded.

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- **Outstanding Sportsmanship Award:** This award recognizes teams who demonstrate outstanding sportsmanship and cooperation during the competition. Award consists of a certificate.

13. Rules Coordinators: If there is any uncertainty on an issue of safety or other judging criteria, please contact the Chem-E-Car Committee. The decisions of the rules and safety judges are final. Please submit any rules questions to:

Dr. Skip Rochefort
Oregon State Univ.
541-737-2408
skip.rochefort@oregonstate.edu

Dr. Robert Ofoli
Michigan State Univ.
517-432-1575
ofoli@egr.msu.edu

Dr. David Dixon
SDSMT
(605) 215- 9729
david.dixon@sdsmt.edu

Questions can also be sent to studentchapters@aiiche.org .