

Society of Hispanic Professional Engineers  
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# SHPE Foundation

## Academic Olympiad

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# Overview

The Academic Olympiad (AO) is a team competition designed to test the technical knowledge of SHPE's **Hispanic Technical Talent**. The Olympiad, consisting of a written exam and an oral competition, will be held at the SHPE Conference. Each **official SHPE student chapter**, sending **10 or more** undergraduate students to the conference, is **required** to form **ONE (1)** team consisting of three (3) contestants and one (1) alternate. All contestants, including the alternate, must be current SHPE undergraduate student members. *(Students, who are not current members, must become a member by the time of registration)*. Each team is advised to include a variety of technical backgrounds as the questions asked during the Academic Olympiad will not be limited to any one particular subject.

The technical areas to be covered in the competition include, but are not limited to, the following:

- Bioengineering/mechanics
- Chemical Engineering
- Chemistry (Organic & Inorganic)
- Civil Engineering
- Computer Engineering/Computer Science
- Electrical Engineering
- Engineering Economics
- General Science (Trivia)
- Mathematics
- Mechanical Engineering
- Physics
- Statistics

The category headings contain a generalized breakdown of subject matter by discipline and general engineering course work. Category headings of chemistry, computer science, math, and physics contain material learned during a student's first and second year in college. The category headings of bioengineering, chemical engineering, civil engineering, electrical engineering, engineering economics, mechanical engineering, and statistics include course work from a student's second, third and fourth years in college. The general science category includes questions on Latino/as contributions to science and engineering. Question difficulty increases as the rounds progress.

## Team Members

Each team must consist of three (3) competing members and may have one (1) alternate. The alternate will serve as a backup contestant and may only participate in the Academic Olympiad in the event that one of the originally designated competing members cannot participate. The alternate may participate in the written and/or oral portion of the competition. However, once the written or oral competition has begun, the alternate **may not** substitute for a participant.

1. Each competing and alternate member must be enrolled as a full-time (12 hours/units), undergraduate student, at an accredited college/university in the United States or Puerto Rico, at the time of competition.
  - a. Graduate students, non-degree seeking undergraduates, or half-time undergraduate students are **not** allowed to participate in the Academic Olympiad.

2. Each team member must be a registered SHPE member.
3. Each team must consist of members from the same institution.
4. Each team **must register** their members for the SHPE Conference.
5. Each team must have three (3) competing members participating at any time during the Academic Olympiad. Teams consisting of only one or two competing members **shall not** be permitted to compete.
6. Each team must consist of **60%** Hispanic students.
7. Each competing and alternate member must possess valid college/university photo identification, which must be presented upon check-in for the written exam.

## Registration and Housing

Chapters with 10 or more undergraduate students attending the SHPE Conference **must** participate in the written exam of the Academic Olympiad.

Each of the three (3) competing members and one (1) alternate must register online for the SHPE Conference at [www.shpe.org](http://www.shpe.org). No exceptions. Upon registration, students must indicate they are participating in the Academic Olympiad. Students will be housed with the regular conference attendees at four students per room.

## Conference Registration and Travel Stipends

Only the team from each SHPE region that advances and participates in the oral competition of the Academic Olympiad will be provided a **reimbursement** of the **pre-registration** fees and a travel stipend up to \$100 for each team member. The *registration reimbursement* will be made payable directly to the student chapter, not to the students. The *travel reimbursement* will be made payable to the individual students, pending verification of travel expenses.

## Awards

The winning teams will receive scholarship awards for each of the team's **individual participating members and alternate** as follows:

- First Place - \$1,000
- Second Place - \$750
- Third Place - \$500

# Computational Devices

Teams may use calculators. Calculators with alphanumeric keypads are acceptable. Basic, non-programmable calculators are also acceptable. **Calculators will not be provided during the competition.** Only the following calculator models may be used on the examination.

- Hewlett Packard: HP 33s and HP 9s
- Casio - FX 115 MS and FX 115 MS Plus (Note: Models with "-SR" designation at end are also allowed.)
- Texas Instruments: TI 30X IIS, TI 30X IIB, and TI 36X Solar

The following devices are prohibited and violation of this rule is grounds for immediate disqualification and penalization as a non-participation chapter.

- Any calculating/computing device having a QWERTY keypad arrangement
- Palmtop
- Laptop
- Handheld or desktop computers
- Data banks
- Data collectors
- Personal data assistants (PDA)
- Cellular phones
- Organizers
- Ipods, ITouch, Internet Devices

Facilitators will check all computational devices and judge whether or not they may be used during the competition.

## Contact Information

Questions about the Academic Olympiad should be directed to [olympiad@shpe.org](mailto:olympiad@shpe.org). Additional information will be made available at [www.shpefoundation.org](http://www.shpefoundation.org).

# Rules for the Written Exam

## Overview

The purpose of the written portion of the Academic Olympiad is to qualify teams for the oral portion of the competition. The one (1) team from each SHPE region with the highest score in the written portion of the competition will advance to compete in the oral portion of the Academic Olympiad.

## Check-in

Contestants are required to arrive at least forty-five (45) minutes prior to the start of the competition for check-in at the designated testing location. ***All team members including the alternate must be present at the start of the written exam for that team to begin.*** All team members must present their valid school ID.

If the team arrives after the written portion of the competition has begun, they **WILL NOT** be allowed to enter the competition.

## Format

The exam period will last approximately ninety (90) minutes. The written exam will last exactly one (1) hour of the exam period. A start and stop time will be clearly stated prior to the beginning of the written exam. A timekeeper will periodically announce the time remaining for the exam.

The written exam will consist of fifty (50) questions. Each team will be given one (1) copy of the written exam, which they may separate so that each of the team members may work on different parts of the exam.

When the time expires, all writing instruments must be laid down, exam pages assembled, and **ALL** materials, including scratch paper must be returned to the facilitator. **Violation of this rule is grounds for immediate disqualification.**

## Scoring

The exams will be electronically graded using an answer key that will be created prior to the written exam. Each question answered correctly will be worth one (1) point. Points will not be deducted for incorrect answers. Once the exams have been graded, the points will be totaled and the single team from each region with the highest score will then compete in the oral competition.

## Sudden Death

In the event of a tie between teams in the same region, the teams that are tied will compete in a sudden-death round. There will be an additional 15 questions and a time limit of 15 minutes. Sudden death competition will proceed until a single team emerges as the winner from the region.

# Rules for the Oral Competition

## Overview

Each of the seven regional champions from the written exam will simultaneously compete in the head-to-head oral competition of the Academic Olympiad. After two rounds of questions, the teams will compete in a third and final, elimination-style round to determine the winner.

## Participants

***Any regional champion team not present for the oral competition will be disqualified and the next place team in that region will be asked to take their place. Team members competing in the oral competition must be the same members that participated at the written competition.*** In the unforeseen incident that one of the contestants that participated in the written exam is not able to continue to the oral exam, the alternate team member will take his/her place. No other replacements will be allowed.

## Game Flow

1. A laptop and LCD are used to project the questions.
2. Each question will be displayed on a projector screen and will be read by the moderator to all seven teams. Each question will have 4 or 5 multiple answers which will be labeled by the letters A to E.
3. The moderator will clearly articulate the questions displayed on the monitor or screen, regardless if the students are able to read the questions.
4. When reading questions, the moderator will read the full multiple choice answers (i.e. A. 10 lbs., B. 20 lbs., C. 30lbs., etc.).
5. Questions and answers **will not** be re-read or repeated.
6. After the question is read, the timer will begin, allowing all teams time to solve the question and answer. Each team shall be allowed to confer among itself before answering a question.
7. Depending on the round, **after** a question has been **completely read** the first time, teams shall have an allotted time to “buzz” in for the opportunity to answer the question. Teams must wait until the question has been **completely read** before they can “buzz” in.
8. The first team to “buzz” in will have the opportunity to answer the question. The team has three (3) seconds to provide an answer after buzzing in. If no answer is provided by the team within the three (3) seconds, the point value of the question will be deducted from the team’s score.

9. The moderator must verbally recognize the team after they buzz in before an answer is provided by that team.
  - a. If a team buzzes in and provides an answer without being verbally recognized, regardless if the answer is correct or incorrect the point value of the question will be deducted from their score.
  - b. If a team buzzes in and “interrupts” before the entire question is read and provides an answer with or without being verbally recognized, regardless if the answer is correct or incorrect the point value of the question will be deducted from their score.
  - c. If a team “blurts” the answer before “buzzing” in and provides an answer with or without being verbally recognized, regardless if the answer is correct or incorrect the point value of the question will be deducted from their score.
10. If a team “buzzes” in with an incorrect answer or non-response, the remaining teams will have an additional three (3) seconds to “buzz” in for the opportunity to answer the question. The team that has already answered incorrectly or non-response shall not be allowed to “buzz” in again.
11. If the overall countdown finishes without any team “buzzing” in, the moderator shall read the answer and move on to the next question. If a moderator inadvertently provides an answer before all teams have a chance to provide a response, no points are awarded for that question and the next question is read.
12. The first answer given by a team is its final answer. Once an answer has been shown or stated aloud it cannot be changed; teams should be cautious not to blurt out answers carelessly. Answers must be stated clearly and definitively.
13. Each judge shall be supplied with a hard copy of the questions together with annotated answers and explanations.
14. Prior to the start of the Oral Competition, the facilitator will read aloud to the audience and teams the competition rules.
15. Each student should be given scratch paper for use during the competition. The scratch paper must be collected at the end of the competition.

## Competition Rounds

The oral competition shall consist of three (3) rounds.

### Round 1

This round will consist of a total of fifteen (15) questions. Questions may be selected from any category consisting up to ten (10) questions. Teams will **initially** have 20 seconds to answer the question after the entire question has been read the **first time**. Questions are worth various points depending on the level of difficulty. Point totals from the end of Round 1 carry over to Round 2. Scores **are not** zeroed after Round 1.

### Round 2

This round will consist of a total of ten (10) questions. Questions may be selected from any category consisting of five (5) questions. Teams will **initially** have 30 seconds to answer the question after the entire question has been read the **first time**. Questions are worth various points depending on

the level of difficulty. Point totals from the end of Round 2 carry over to Round 3. Scores **are not** zeroed after Round 2.

### **Round 3**

The topic of the final question will be given. Each team decides how many points to wager. Teams may not wager more points than what they have. The final question will be read after each team's wagers have been collected. All teams will have 30 seconds to answer the question.

### **Tie Breakers**

If two or more schools are tied after the three rounds, the tie will be broken with a series of tiebreaker questions. . The topic of the tie-breaker question will be given. Each team decides how many points to wager. Teams may not wager more points than what they have. The tie-breaker question will be read after each team's wagers have been collected. Teams will have 30 seconds to answer the question.

### **Scoring**

1. Teams answering **correctly** will have the point value of the question **added** to their score.
2. Teams answering **incorrectly** will have the point value of the question **deducted** from their score.
3. Teams that buzz-in and are verbally recognized and do not provide an immediate answer within the three (3) seconds after pressing the "buzzer" will have the points of the question deducted from their score.
4. Teams that buzz-in with an answer without being verbally recognized by the moderator, regardless if the answer is correct or incorrect, will have the points of the question deducted from their score.

### **Team Responder/Buzzer System**

1. Each team shall be provided with one (1) desktop team responder (buzzer).
2. The team responder system shall be tested by the Facilitator and certified by the Judges
3. Any team member may activate the team responder. No team member shall hold the responder. The responder must remain resting on the team's table at all times.
4. The responder system shall allow for early "buzzing" in before the moderator completely reads each question.

### **Competition Officials**

Personnel required for the event shall include:

- Moderator - shall read questions and maintain flow of game
- Projector Operator - shall operate laptop for questions.
- Buzzer Operator (or Time Keeper if no buzzer system used).

- Score Keeper - shall track contestants' scores.
- Judges (3) - shall make rulings during oral competition.
  - Judges must be engineer or science professionals, professors, or graduate students members. An undergraduate student cannot be a judge.
  - The judge's panel will determine amongst themselves who will serve as the chief judge.
  - The judges are responsible for clarifying any questions that may arise during the game.
  - Conferring between judges during the game shall be kept to a minimum.
  - Disputed answers will be reviewed by all judges.
  - Disputes will be resolved at the end of each question and any point adjustments will be made accordingly.
  - The decision of the chief judge is final.

## Final Reminders for Contestants and the Audience

These rules must be read to the participants and audience prior to the start of the oral competition.

1. **NO PARTICIPATION** from the audience whatsoever. **NO MOUTHING OR SIGNALING FROM THE AUDIENCE** will be allowed. Any team that is deemed to be receiving assistance from the audience will be given one (1) warning and the corresponding point value will be deducted from the score. If there is a second instance in which the team deems to be receiving help from the audience, they will be immediately penalized and disqualified from the competition and subject to penalties as a non-participating chapter.
2. The audience must remain quiet and orderly during the competition. Loud and unruly behavior will not be tolerated. Anyone acting in a disruptive manner will be asked to leave the area.
3. Contestants may not have any books or papers (other than what is provided).
4. Computational devices, as previously described, are permitted and must be approved by the competition facilitator.
5. Photography, audio taping, or video taping is not permitted during the oral competition. Audience members may not photograph questions, copy questions, or write notes pertaining to the questions. Any such materials will be confiscated. Audience members found in violation of this rule will be asked to leave the premises immediately. (NOTE: Only media officials may photograph parts of the competition.)