



# ACADEMIC CHALLENGE

## 2024 Academic Challenge Coach's Guide

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# **Table of Contents**

The Academic Challenge	3
<b>IMPORTANT 2024 COMPETITION CHANGES</b>	4
2024 Fees	4
Important Dates	5
Getting Started	
Preparing for the Competition	7
Calculator & Testing Rules	8
Participation Categories	9
Advancement	10
Automatic Qualifying Scores for State Finals Competition	11
Scoring	12
Awards	14
Competition Day Schedules	
General Information	18
Frequently Asked Questions	19

## The Academic Challenge

Academic Challenge is a test-based competition hosted by The School of Extended Learning at Eastern Illinois University. Offered to high school students, subjects tested are biology, chemistry, computer science, engineering graphics, English, mathematics, and physics. More than 40 community colleges and universities in Illinois and Missouri provide sites for the tests. The tests are designed to present a challenge to the brightest high school students and are presented in multiple-choice format. Students have 40 minutes to complete tests that range in length from 30 to 80 questions.

The test material is drawn from high school senior and college freshman curricula to present a bridge between secondary and higher education. Tests are written by teams of faculty members at colleges and universities across the United States. Each team produces sets of tests that increase in level of difficulty in a progression from regional, to sectional, to state finals.

This Coach's Guide is for the use of the Academic Challenge coaches. Additional information concerning the Academic Challenge program is available on the Academic Challenge website at the link below:

https://castle.eiu.edu/academic\_challenge/

## **Guiding Philosophy of the Academic Challenge**

The goal of Academic Challenge is to acquaint high school students with the course content and the level of competition they will experience upon entering a science or engineering curriculum at the college or university level.

## **2024 Competition Dates**

Regional Testing Window: February 1-15, 2024

**Sectional Testing Window:** March 1-15, 2024

State Testing Window: April 8-11, 2024

#### **IMPORTANT 2024 COMPETITION CHANGES**

- 1. The School of Extended Learning is working with Dr. Doug Brandt to take over management of ACES. We wish him a happy retirement and thank him for his continued support of the competition!
- 2. All competitions will be held in-person at locations organized by The School of Extended Learning *unless* there are extenuating circumstances that require the competition to be held at a remote location.
- 3. The way in which individual medals are awarded to competitors whose raw scores tie for 1<sup>st</sup> through 5<sup>th</sup> place has been slightly altered from previous years. Please see p. 14 for more details. Please note, the change to how awards are distributed in the case of a tie *does not* affect the way individuals advance from competition to competition.
- 4. Roster changes must be submitted within the coach's site *no later* than 2 weeks before the scheduled competition. Site hosts cannot accommodate last-minute substitutions or roster changes on the day of the competition. This is to help ensure a more accurate scoring process and the timely distribution of awards.
- 5. All award trophies, medals, and ribbons will be shipped to the in-person competition hosts. All awards will be distributed by those hosts. Any teams who win awards (i.e., individual ribbons and medals, team ribbons and medals, team trophies) *must* stay for the ceremony on the day of the competition to receive their awards. Winning teams who leave before they are recognized at the ceremony may request to have their awards shipped to them for an additional fee of \$50 per trophy, \$20 per 14 medals, and \$5 per 14 ribbons. The School of Extended Learning will forward shipping invoices to the coach's school district. This additional shipping fee *does not* apply to schools that test online or have extenuating circumstances as determined by the site host.
- 6. JV students *may only* attend regional and sectional competitions. Many host spaces are limited. It is at the discretion of the regional and sectional hosts whether to allow JV participants. Please verify with the hosts before bringing JV participants.
- 7. Teams and students who advance to succeeding competitions will be eligible to earn awards at the succeeding competitions.
- 8. Due to budget constraints and the rising costs of manufacturing and shipping awards, there is a 25% *increase* to varsity, at-large, and JV fees, which is detailed below.
- 9. Emails are sent to all coaches whose schools participated in the 2023 competition. If your school *did not* participate in 2023, or if you are a new coach for your school, please send an email to academic\_challenge@eiu.edu to request your school be registered for the competition, that you are a new coach, or that you have not received a password to the coach's site.

#### 2024 Fee Increase

<b>2023 Fees</b>	<b>2024 Fees</b>
Varsity and At-Large—\$20 per student	Varsity and At-Large—\$25 per student
Junior Varsity (JV)—\$6 per student	Junior Varsity (JV)—\$8 per student

## **Important Dates**

April 8-11

October 25	Registration opens on website: <a href="https://castle.eiu.edu/academic_challenge/">https://castle.eiu.edu/academic_challenge/</a>
December 1	Deadline for competing schools and home-schooled individuals to register
December 15	Registration fees due to The School of Extended Learning
February 1-15	Regional competition window*
February 26	Regional tests, answer keys, and solution sets available on website
March 1-15	Sectional competition window*
March 25	Sectional tests, answer keys, and solution sets available on website

State competition window\*

May 3 State tests, answer keys, and solution sets available on website.

<sup>\*</sup>Roster changes must be submitted *no later* than 2 weeks before competition date

## **Getting Started**

#### **Forming Your Team**

Determining who should participate on your team is entirely up to you as the coach. Some coaches have try-outs, some ask for referrals from Science and Math teachers, and some schools might use whoever expresses interest in competing.

Individual competition dates are posted on the coach's site. It is important to make sure your team members will be able to attend the date of your testing. We understand that extenuating circumstances will arise, but it is vital for the accuracy of scoring and timeliness of awards distribution that coaches submit roster changes *no later* than 2 weeks from the competition date.

#### **Registering Your Team**

Please register for the competition once you have formed a team. Initial team registration must be made by December 1<sup>st</sup>.

Once you have your team formed or at least an idea of how many students will be competing, you can register for the competition. For more information on the registration process, go to the section titled "Participation Categories."

### **Academic Challenge Website**

The website can be located here: https://castle.eiu.edu/academic\_challenge/

Important information (e.g., coach's guide, competition schedule) is available publicly on this page. You may also register as a coach on this page. Once registered, you will receive a PIN within 72 hours of registering that you will need to enter once. After you have entered the PIN, you may log in and have access to team registration and the exam archive. In addition, students may access the exam archive from the home page using the password sent to you. After your events, you will also be able to access your participants' scores and some statistical data about the results.

## **Preparing for the Competition**

Below are some important details to prepare you and your team for the Academic Challenge.

#### **Exam Archive**

The exam archive contains all previous academic challenge exams, answer keys, and solutions. Access is open from the link on the Academic Challenge website.

The only purpose of these tests is for practicing for Academic Challenge. They may not be distributed outside of your academic challenge team for any other use. Please inform your students of this policy. UIUC holds the copyright on exams up through 2018, and we use them for the stated purpose with their permission. EIU holds the copyright on exams published after 2018.

#### **Topic Distributions**

Topic distributions for the exams are published on the Academic Challenge site as they become available from the exam authors. To access these documents, click on the "Exam Topics" link under the COACHES dropdown menu.

## **Calculator & Testing Rules**

Calculator usage at all levels of the Academic Challenge competition will follow the guidelines used in the ACT, SAT, and PARCC. As in past years, calculators are allowed on the math, physics, and chemistry tests only.

#### **General calculator rules:**

- Examinees must bring their own calculators and may not share calculators.
- Only one calculator per student is allowed.
- Each competitor is responsible for their own calculator.
- Testing site staff will not have extra batteries or calculators.
- An acceptable calculator includes any four-function, scientific, or graphing calculator, as long as it doesn't have any of the prohibited features (see **prohibited** list below).

#### The following calculators and types of calculators are prohibited:

- Calculators with built-in computer algebra systems. Calculators in this category include:
  - ◆ Texas Instruments: All model numbers that begin with TI-89 or TI-92, and the TI-Nspire CAS (the non-CAS TI-Nspire is permitted)
  - ♦ Hewlett-Packard: HP 48GII and all model numbers that begin with HP 40G, HP 49G, and HP 50G
  - ♦ Casio: Algebra fx 2.0, fx-CP400 (ClassPad 400), ClassPad 300, ClassPad 330, and all model numbers that begin with CFX-9970G
- Handheld, tablet, or laptop computers, including PDAs
- Electronic writing pads or pen-input devices (Sharp EL 9600 is permitted)
- Calculators built into cell phones or other wireless communication devices
- Calculators with a typewriter keypad (QWERTY format)
- Calculators with paper tape and/or that make noise
- Calculators that can communicate wirelessly with other calculators
- Calculators that have power cords

# Competitors will be dismissed from the test and their answer sheets not scored if they are found:

- using unauthorized calculators;
- using the calculator's memory to store any test materials;
- using any device to share information at any time during the tests or during break (All electronic devices, including cellular phones and pagers, must be turned off from the time the competitor is admitted to test until dismissed after testing concludes.);
- removing any part of a test book or any notes relating to the test from the test room;
- creating a disturbance or allowing an alarm, pager, or phone to sound in the testing room.

## **Participation Categories**

Schools may enter one team of varsity competitors (minimum of 6, maximum of 14), at-large competitors (maximum of 14), and junior varsity (JV) competitors (maximum of 14).

#### Varsity Team

The varsity team is composed of between 6 and 14 students who must be registered as full-time students at the school. Teams may substitute or replace members from the regional to sectional and/or sectional to state finals competition. A team may also drop members as long as they still have at least 6 members, but the number of team members cannot be increased beyond the number registered at the regional level. Exchange students enrolled as full-time students are eligible for the team and the competition provided they are not over 18 and have not graduated from secondary school in their home country.

#### **At-Large Competitors**

This category is for full-time students who compete as individuals and are not on a school team. This includes situations where a school competes with fewer than 6 varsity students as well as situations where a school competes with individuals in addition to a team. Homeschooled students are eligible to compete as at-large competitors in the division of their local public school. Coaches may bring a maximum of 14 at-large competitors.

#### Junior Varsity (JV)

JV participants compete only at regional and sectional sites that allow them to participate. JV participants choose which tests they take and compete for practice purposes only, thus their answer sheets do not have to be scored. JV participants are not eligible for awards or advancement. JV participants are not allowed at state finals. *Note*: Academic Challenge coaches must contact their competition site to determine if JV participants are allowed. Not all regional or sectional sites allow JV participants. Site hosts typically determine whether they will host JV participants by the capacity of the site facility. Coaches may bring a maximum of 14 JV participants.

#### Advancement

#### **Team Advancement**

The number of teams advancing (regional to sectional or sectional to state finals) is determined by the following rule. Within each division if there are:

Number of Teams	Number to Advance
1 – 2	All teams advance
3 – 7	2
8 – 12	3
13 – 16	4
17 or more	5

#### **Individual Advancement from the Regional to Sectional Competitions**

Individual competitors (either at-large competitors or members of teams) will qualify to advance if they attain a subject score equal to or better than the second highest score for that subject in their division. There is no limit on the number of individual competitors that may advance. For example, if two students tie with the first highest score and three tie with the second highest score, all five students will qualify to advance. These advancement rules also apply to individual members of teams whose team does not advance.

*Note*: Although the individuals with the three highest scores in a subject and within a division receive medallions, only the top two qualify to advance.

#### **Individual Advancement from the Sectional to the State Final Competition**

Individual competitors (either at-large competitors or members of teams that do not advance) will qualify to advance as individuals if they attain a subject score equal to or better than second highest score for that subject in their division., **or** if they meet or exceed the Automatic Qualifying Scores for State Finals Competition listed on the following page.

All advancement criteria are applied strictly within divisions.

The team scoring calculation will not be applied to a group of competitors that have registered as at-large competitors from a single school.

# **Automatic Qualifying Scores for State Finals Competition**

Subject	Division	Qualifying
		Scores
Biology	300	32
	700	33
	1500	36
	Unlimited	37
Chemistry	300	33
	700	36
	1500	37
	Unlimited	38
Computer	300	24
Science	700	23
	1500	23
	Unlimited	25
Engineering	300	22
Graphics	700	25
	1500	24
	Unlimited	28
English	300	67
	700	63
	1500	69
	Unlimited	68
Math	300	21
	700	23
	1500	20
	Unlimited	25
Physics	300	23
	700	19
	1500	26
	Unlimited	26

## **Scoring**

#### **Team Scores**

Team scores are calculated in a manner that attempts to weight each subject equally and limit the number of scores that count in any given subject to provide some equity between smaller and larger schools within a given division.

The <u>raw score</u> for an individual given exam is the total number of correct responses given by the student on an exam. There is no penalty for incorrect responses. The <u>team subject raw score</u> for a given subject is the sum of the two greatest individual raw scores earned by team members in that subject. If there is only one score in that subject, that will be the team subject raw score for that subject.

To equalize the contribution of the various subjects with varying numbers of questions and varying difficulties, a **normalized team subject score** is calculated. The greatest team subject raw score from all the teams participating in a school's division at the competition is determined. Each team subject raw score is multiplied by 100 and divided by the greatest team subject raw score to obtain the normalized team subject score for that particular subject.

normalized team subject score = 
$$\frac{100 \times \text{team subject raw score}}{\text{greatest team subject raw score}}$$

This results in a maximum normalized team score of 100 in each subject. The **total team score** is the sum of the team's normalized subject team scores in the subjects English, chemistry, and mathematics, and the team's two greatest scores in the remaining for subjects computer science, engineering graphics, biology, and physics.

Teams are ranked within their divisions by the total team score.

Example calculation of a total teams score:

	Biology	Chemistry	Computer	Engineering	English	Math	Physics
Student			Science	Graphics			
Student 1	32	28					
Student 2			25			18	
Student 3		31					15
Student 4				23	64		
Student 5	27						
Student 6						22	17
Student 7			28		68		
Student 8	21		16				
Student 9		22				24	
Student 10	33				59		

Team	32 + 33	28 + 31	25 + 28	23	64 + 68	22 + 24	15 + 17
Subject	= 65	= 59	= 53	(Only one	= 132	= 46	= 32
Raw Score				score)			
Highest	72	64	58	38	140	46	34
Team							
Subject							
Raw Score							
in Division							
Normalized	$\frac{65}{2} \times 100$	$\frac{59}{} \times 100$	$\frac{53}{2} \times 100$	$\frac{23}{2} \times 100$	$\frac{132}{2} \times 100$	$\frac{46}{-} \times 100$	$\frac{32}{2} \times 100$
Team	72	64	58	38	140	46	34
Subject	= 90.28	= 92.19	=91.38	=60.53	= 94.29	= 100.0	= 94.12
Score							

The team score will be the sum of the normalized team subject scores in English, math, and physics added to the scores from computer science and chemistry.

Team Score = 
$$94.29 + 92.19 + 100.00 + 91.38 + 94.12 = 471.98$$

#### **Individual Scores**

Individual scores are the raw test scores on each exam. These test scores are used to determine awards and advancement for each subject in each division.

#### **Awards**

## **Regional Competitions**

## Team Plaques

The three top-scoring teams in each division will be awarded 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> place plaques on-site during the ceremony at the end of the competition. In case of ties, duplicate plaques will be shipped to the winning schools from The School of Extended Learning.

In the special case where only one school is competing in a division, no team plaques will be awarded. However, the individual competitors on the team will still be eligible for individual medals. Please note that even though the school is not eligible for a team plaque, they will automatically advance.

#### Team Ribbons

Each varsity competitor on a winning team will be given a ribbon to commemorate their team's accomplishment. Winning teams will receive 14 ribbons to accompany their 1<sup>st</sup>, 2<sup>nd</sup>, or 3<sup>rd</sup> place plaque.

#### Individual Medals

Varsity team members and at-large competitors are eligible to receive individual medals during the ceremony at the end of the competition. 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> place medals will be awarded on-site to individuals who receive the first, second, and third highest raw scores on each respective subject test within a division. In case of ties, the number of ties in each higher place will determine the number of awards in each lower place. For example:

Biology Raw Scores	Chemistry Raw Scores	Math Raw Scores
40—1 <sup>st</sup> Place	32—1 <sup>st</sup> Place	27—1 <sup>st</sup> Place
40—1 <sup>st</sup> Place	26—2 <sup>nd</sup> Place	23—2 <sup>nd</sup> Place
38—3 <sup>rd</sup> Place	26—2 <sup>nd</sup> Place	23—3 <sup>rd</sup> Place
36—No award	24—No award	23—3 <sup>rd</sup> Place
34—No award	24—No award	23—3 <sup>rd</sup> Place
		19—No award
		19—No award

In the above example, Biology had two scores tie for a 1<sup>st</sup> place award, which eliminated 2<sup>nd</sup> place awards, allowing the next lowest score to qualify for a 3<sup>rd</sup> place award. Chemistry had a two-way tie for a 2<sup>nd</sup> place award, which eliminated 3<sup>rd</sup> place awards. Math had a three-way tie for a 3<sup>rd</sup> place award, and because there is no 4<sup>th</sup> or 5<sup>th</sup> place award at the Regional Competition level, no awards were eliminated.

Please note, the way in which awards are distributed in the case of a tie *does not* affect individual advancement from competition to competition.

#### **Sectional Competitions**

Team Trophies

The three top-scoring teams in each division will be awarded 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> place trophies on-site during the ceremony at the end of the competition. In case of ties, duplicate trophies will be shipped to the winning schools from The School of Extended Learning.

#### Team Ribbons

Each varsity competitor on a winning team will be given a ribbon to commemorate their team's accomplishment. Winning teams will receive 14 ribbons to accompany their 1<sup>st</sup>, 2<sup>nd</sup>, or 3<sup>rd</sup> place trophy.

#### Individual Medals

Varsity team members and at-large competitors are eligible to receive individual medals during the ceremony at the end of the competition. 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> place medals will be awarded on-site to individuals who receive the first, second, and third highest raw scores on each respective subject test within a division. In case of ties, the number of ties in each higher place will determine the number of awards in each lower place. For example:

Biology Raw Scores	Chemistry Raw Scores	Math Raw Scores
40—1 <sup>st</sup> Place	32—1 <sup>st</sup> Place	27—1 <sup>st</sup> Place
40—1 <sup>st</sup> Place	26—2 <sup>nd</sup> Place	23—2 <sup>nd</sup> Place
38—3 <sup>rd</sup> Place	26—2 <sup>nd</sup> Place	23—3 <sup>rd</sup> Place
36—No award	24—No award	23—3 <sup>rd</sup> Place
34—No award	24—No award	23—3 <sup>rd</sup> Place
		19—No award
		19—No award

In the above example, Biology had two scores tie for a 1<sup>st</sup> place award, which eliminated 2<sup>nd</sup> place awards, allowing the next lowest score to qualify for a 3<sup>rd</sup> place award. Chemistry had a two-way tie for a 2<sup>nd</sup> place award, which eliminated 3<sup>rd</sup> place awards. Math had a three-way tie for a 3<sup>rd</sup> place award, and because there is no 4<sup>th</sup> or 5<sup>th</sup> place award at the Sectional Competition level, no awards were eliminated.

Please note, the way in which awards are distributed in the case of a tie *does not* affect individual advancement from competition to competition.

#### **State Competitions**

Team Trophies

The five top-scoring teams in each division will be awarded 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, and 5<sup>th</sup> place trophies on-site during the ceremony at the end of the competition. In case of ties, duplicate trophies will be shipped to the winning schools from The School of Extended Learning.

Trophies will be awarded to both the top boundaried and to the top non-boundaried schools in Division 300.

#### Team Medals

Each varsity competitor on a winning team will be given a medal to commemorate their team's accomplishment. Winning teams will receive 14 medals to accompany their 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, or 5<sup>th</sup> place place trophy.

#### Individual Medals

Varsity team members and at-large competitors are eligible to receive individual medals during the ceremony at the end of the competition. 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, and 5<sup>th</sup> place medals will be awarded on-site to individuals who receive the first, second, third, fourth, and fifth highest raw scores on each respective subject test within a division. In case of ties, the number of ties in each higher place will determine the number of awards in each lower place. For example:

Biology Raw Scores	Chemistry Raw Scores	Math Raw Scores
40—1 <sup>st</sup> Place	32—1 <sup>st</sup> Place	27—1 <sup>st</sup> Place
40—1 <sup>st</sup> Place	26—2 <sup>nd</sup> Place	23—2 <sup>nd</sup> Place
38—3 <sup>rd</sup> Place	24—3 <sup>rd</sup> Place	23—2 <sup>nd</sup> Place
37—4 <sup>th</sup> Place	24—3 <sup>rd</sup> Place	22—4 <sup>th</sup> Place
33—5 <sup>th</sup> Place	24—3 <sup>rd</sup> Place	22—4 <sup>th</sup> Place
	21—No award	19—No award
	17—No award	

In the above example, Biology had two scores tie for a 1<sup>st</sup> place award, which eliminated 2<sup>nd</sup> place awards, allowing the next lowest score to qualify for a 3<sup>rd</sup> place award. Chemistry had a three-way tie for a 3<sup>rd</sup> place award, which eliminated 4<sup>th</sup> and 5<sup>th</sup> place awards. Math had a two-way tie for a 2<sup>nd</sup> place award, which eliminated 3<sup>rd</sup> place awards, and a two-way tie for a 4<sup>th</sup> place award, which eliminated 5<sup>th</sup> place awards.

Please note, the way in which awards are distributed in the case of a tie *does not* affect individual advancement from competition to competition.

# **Competition Day Schedules**

Each host institution schedules their own competition time within the range of dates provided for the competition. It is recommended that coaches have students in place five to ten minutes before the exams begin to get settled and logged into the exam site.

#### General Information

#### **Translation Dictionaries**

Foreign Exchange students are allowed to use non-electronic translation dictionaries for tests other than the English test. Permission must be obtained from The School of Extended Learning prior to the first competition. A representative from The School of Extended Learning will notify each site coordinator in advance that the student will be bringing a dictionary to the test. Electronic translation dictionaries are not allowed in the testing room.

#### **Individual Advancers – Reinforcement of Existing Rules**

Individual competitors (either at-large competitors or members of teams) will qualify to advance if they attain a subject score equal to or better than the second-place score for that subject in their division. This qualification for advancement attaches to the specific competitor and therefore at-large competitors who advance to the next level, or individual members of teams who advance when their team does not advance, cannot be replaced by other students.

#### Wild Card Advancement

There will be a wild card playoff for both the regional and sectional competitions. One team from each division will advance as the wild card winner at both the regional and sectional levels. The winners will be determined by The School of Extended Learning at the end of each level of competition.

## **Frequently Asked Questions**

#### 1. Can I replace a student?

#### Regional Competitions

If you are aware a teammate cannot make it prior to the roster being locked two weeks before the competition, you can go into your coach's site and make the replacement there. If there is an emergency (i.e., illness, accident, other serious, extenuating circumstance) the day of competition, you can have the replacement student attend, but they must take the tests that the original student had signed up for.

#### Sectional and State Competitions

At-large competitors who advance to the next level, or individual members of teams who advance when their team does not advance, *cannot* be replaced by other students. Team members, however, can be replaced by other students prior to the roster being locked two weeks before the competition. If there is an emergency (i.e., illness, accident, other serious, extenuating circumstance) the day of competition, you can have the replacement student attend, but they must take the tests that the original student had signed up for.

#### 2. When will results be posted?

Results will be posted on the website within 7 days after the last competition at a given level. You can find them at: <a href="https://castle.eiu.edu/academic\_challenge/results.php">https://castle.eiu.edu/academic\_challenge/results.php</a>. You can also find detailed results for your students by logging in using your coach's account.

#### 3. What do I do if a student has a question about a question on the test?

Have the student make note of the test subject and question during the exam. After the exam, let the site coordinator know of the question. They will then contact the a representative from The School of Extended Learning for guidance. No discrepancies will be handled the day of competition as Extended Learning may need to collaborate with the authors for a fair solution or clarification on the question.

#### 4. During competitions, what are my job duties?

Coaches will make certain their students are prepared and on-time for exams. Coaches may be required to serve as exam proctors at some competition sites.

## 5. Who do I contact with questions?

You should contact the site coordinator for questions about an upcoming competition. For other questions, contact The School of Extended Learning at academic\_challenge@eiu.edu