# Middlesex County Science Bowl

# Schedule

| Time | Event | Location |
|---|---|---|
| 8:30 AM - 9:00 AM | Team Check-in | Foyer |
| 9:00 AM - 9:15 AM | Opening Ceremony | Commons |
| 9:30 AM - 10:30 AM | Preliminary Test | Testing Rooms |
| 10:30 - 12:30 PM | Quiz Bowl Rounds (4) | Testing Rooms |
| 12:30 - 1:30 PM | Lunch | Commons/Rooms |
| 1:30 - 2:30 PM | Sprint Round | Testing Rooms |
| 2:45 - 3:00 PM | Closing/Awards Ceremony | Commons |

# Welcome

Welcome to the 2024 Middlesex County Science Bowl Competition! The competition will be held on **April 27th, 2024**. Check in will start at **8:30 AM** and end promptly at **9:00 AM**, with closing ceremonies and results taking place at approximately **3:00 PM**. This document provides some important information regarding logistics, competition format, topics that will be tested, and study resources for all teams. As a preface, all rounds of MCSB are team-based, and do not depend on individual results. If you have any questions or concerns, please feel free to reach out to us at mcasciencebowl@gmail.com.

# Checklist

Here is an essential checklist for all participants and advisors. Each of these tasks need to be completed by the indicated due date. If you have any questions, please make sure to contact us as soon as possible.

*Team Captains*:

- ☐ Fill out the team onboarding form by **04/13/24**
- ☐ Ensure all team members have filled out the competitor release form

*All Participants*:

- ☐ Fill out the competitor release form by **04/13/24**
- ☐ Review competition information
- ☐ Study tournament topics and review study resources
- ☐ Bring a technology device to the competition

# Tournament Day Info

## Release Form

**All participants are required to fill out a competitor release form by 04/13/24.** Please make sure to read through this form carefully and return it signed. If a participant fails to submit this form, they will unfortunately not be permitted to take part in the competition.

## Parking

All cars must be parked in Lot 1 as shown on the campus map between the Academy and West Hall buildings.

## Room Assignments

During Check-In and the Opening Ceremony, all teams will be informed of the online platform to find their room assignments for each of the competition's rounds. All participants must have access to the room assignments to ensure a smooth and efficient transition between rounds. There will be volunteers stationed across the main venue to direct teams to the correct testing rooms in the Preliminary and Quiz Bowl rounds. More information on Sprint round assignments will be provided on the day of the competition.

## Protest/Appeal

In the event that you would like to protest a question on any one of the rounds, or appeal a Quiz Bowl round result, please take the following steps:

1. Immediately inform your round proctor that you intend to protest/appeal a question or result.
2. Finish the round to the best of your ability.
3. Immediately after the round is complete, your team's captain must fill out the protest/appeal form.
4. Once your proctor informs the Head of Competition of the protest/appeal, they will speak to your team regarding the protest/appeal before the next round.

### Academic Integrity and Rules

During any and all rounds, external resources, including but not limited to, paper/virtual notes, digital devices with search engines (Google, Bing, Yahoo, DuckDuckGo, Aol, Ecosia, etc.), smartphones, smartwatches, social media platforms (Discord, WhatsApp, iMessage, Google Chat, FaceTime, Slack, etc.), other individuals, etc. are NOT allowed. Calculators will be allowed, but must be checked by your proctor before the round starts. Any violations of the rules will result in disqualification.

## Competition Format

### Preliminary Round

In the Preliminary Round, each team will receive one test packet with one answer sheet. Each test packet is **100 questions** and the round is **60 minutes long**. Your team will work together to answer multiple choice questions. There will be equal amounts of questions of each of our main testing topics (Biology, Earth/Space Science, Physics, Chemistry, and Computer Science). All questions have an equal weight, and there is no advantage in answering certain multiple choice questions. Teams only are awarded a point for getting a question correct, and there is no penalty for getting a question wrong, so make sure you try to answer as many questions.

### Sprint Round

The Sprint Round is a **60-minute**, **fast-paced team event** with **8 packets of questions** on our various testing topics, of varying difficulty and point values. The point weights for each of the questions are indicated on the respective test paper. At the starting signal, each team sends a runner to an assigned problem station to pick up copies of the first set of problems for each team member. As soon as a team has answers for one problem set, the runner may bring the answers to the problem station and pick up the next set. There will be 8 sets of problems in total. It is not expected that students will finish all the problems. Grading is immediate and scores are posted in real time.

## Quiz Bowl Round

The Quiz Bowl Round consists of **four rounds** of 20 tossups each. Each team will play at least 4 rounds of Quiz Bowl, with the top team from each of the two Playoff groups competing in the Final. Each member on the team will have a buzzer (we intend on using Buzzin.live so **all participants must bring a technology device**).

The moderator will begin to read "clues" about a scientific term, location, scientist, concept, etc. This is called the tossup question. Any competitor on either team can buzz in while the moderator is still speaking and answer. However, please note that only the buzzer can answer the question. If the buzzer answers correctly within the first few lines of the tossup **("power")**, their team will get 15 points. If the buzzer has buzzed outside of power or within the first few seconds after the reader finishes the tossup and gets it correct, their team will get 10 points. If the buzzer interrupts the reader before they finish reading the tossup and gets it incorrect, their team will lose 5 points **("neg")** and no one else from the team can buzz for that tossup **("locked out")**. If the buzzer answers incorrectly after the moderator finishes reading the tossup, there is no penalty, but their team will still be "locked out" for that tossup. If the tossup ends without anyone answering it correctly, the tossup is **"dead"** and the moderator will move onto the next tossup without reading any bonuses.

If a team gets a question right, they will be entitled to a bonus question with 3 parts. These bonuses can only be answered by the team who got the tossup right, and teams will be able to collaborate (speak to each other) to provide an answer to each part of the bonus **within 8 seconds** of the moderator reading each part. If they get a bonus part correct, they can get 10 extra points. They will have a shot at each of the 3 bonus parts. Once the bonus parts are over (if they even happen), the teams will move on to the next question.

We will be following **5-5-8 timing** for Quiz Bowl Rounds:
**5 seconds** after the buzzer has buzzed to provide an answer to a tossup
**5 seconds** after the moderator finishes reading the tossup for anyone to buzz before it is "dead"
**8 seconds** after the moderator finishes reading a bonus question for teams to direct an answer

You may refer to NAQT for a general overview of what Quiz Bowl is like.

# Tested Topics

Four subjects will be covered, including earth science, biology, chemistry, and physics. Most concepts tested will be approximately at the middle school level. However, teams are provided higher level articles, equations, or excerpts that they will have to utilize to solve some challenge questions. Some difficult questions will be at a high school level. For now, please have a look at some sample topics for each of the four subjects. We strongly encourage all teams to look at these topics, especially those teams which may be in 5th, 6th, or 7th grade, and haven't been introduced to them yet in school.

## Earth Science

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| **Earth:**<br>● General Info<br>● Carbon Dating<br>● Fossilization | **Water Cycle:**<br>● Steps of the water<br>● Clouds |
| **Geology:**<br>● Types of Rocks<br>● Effect of Volcanic Eruptions<br>● Crystal Formations<br>● Erosion, Weathering | **Plate Tectonics:**<br>● Fault Lines<br>● Pangaea<br>● Continental Drift<br>● Boundaries |

## Biology

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| **Basic Cell Biology**:<br>● All Major Organelles | **Genetics:**<br>● DNA & Chromosomes<br>● Punnett Squares<br>● Mitosis/Meiosis | **Basic Anatomy:**<br>● Organs<br>● Body Systems<br>● Body Structures |
| **Ecology:**<br>● Relationships<br>● Taxonomy<br>● Biomes and Ecosystems | **Well Known Scientists:**<br>● Creators of important theories/concepts | **Cycles:**<br>● Water, Carbon, Nitrogen Cycles |

## Chemistry

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| **Atoms & Molecules:**<br>● Atomic structure & properties<br>● Periodic table trends<br>● Electron configuration<br>● Lewis diagrams<br>● Mole concept | **Reactions:**<br>● Types of reactions<br>● Phases of matter<br>● Acids & bases<br>● Basic stoichiometry<br>● Famous chemists & experiments |

## Physics

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| **Mechanics:**<br>● Newton's Laws<br>● Energy equivalence<br>● Momentum<br>● Kinematics | **Other:**<br>● General physics concept trivia<br>● History of physics<br>● Famous physicists & experiments<br>● Pop culture (from movies, shows, etc.) |

## Computer Science

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| **Boolean Algebra:**<br>● Logic Gates<br>● Truth Tables<br>● Boolean Expressions<br>● Laws/Theorems | **Linear Algebra:**<br>● Types of Matrices<br>● Basic matrix operations<br>● Matrix properties |
| **Data Structures/Graph Theory:**<br>● Arrays, sets, stacks, and queues<br>● Basic terminology (vertices, edges, directed/undirected, etc.) | **Programming Languages:**<br>● Programming Concepts (variables, data types, and operators)<br>● Control structures |

## Space Science

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|---|---|
| **Solar System:**<br>● Parts of the Solar System | **Space Technology:**<br>● Famous experiments |

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- Formation history
- Earth’s movement & impact on Climate

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- Space Telescopes
- Important moments in spaceflight
- Science Fiction Technology

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**Celestial Phenomena:**

- Black Holes
- Supernovae
- Nebulae
- Comets
- Gravity
- Kepler’s Laws
- Formation of the Universe

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