

2024 NJAAPT PHYSICS OLYMPICS

www.njaapt.org

Registration, Events, Rules, and Scoring

Saturday, January 13, 2024

8:00am – 2:30pm

2 Locations (choose 1)

North/Central New Jersey – Bayonne HS, Bayonne NJ (Hudson County)

Southern New Jersey – Timber Creek HS, Sicklerville NJ (Camden County)

We look forward to your school's participation at the NJAAPT-sponsored "NJ Physics Olympics" The competition is a lot of fun and your students will meet, share experiences, and compete with other students from various parts of New Jersey.

Registration:

You must be a member of NJAAPT. Join / Register teams at www.njaapt.org

Register the number of teams you plan to bring. (6 students max per team).

Early Bird registration: \$30/ team before the Early deadline

Regular registration: \$40/ team after the Early deadline, until the final deadline.

At least one faculty member must accompany the team(s). Notify us if you wish to bring extra teacher colleagues – they are welcome to attend! All teachers will be asked to help judge an event or supervise students.

Payment can be made online or by mailed check. No purchase orders can be accepted.

Schedule:

8:00 am – 9:00 am	Registration check-in, Bagels/Donuts/coffee/juice-type food served, get set-up, judges can meet up
9:00 am	Welcome/introduction. Event 1 (Fermi Questions) will start.
9:45 am	Break, then rotate to other events
~12:00-12:30	South Jersey – fewer teams, will finish earlier North Jersey – more teams, lunchtime between a team's events You may bring your own box lunches . The cafeteria will <u>not</u> be open. You may arrange to have pizza/subs delivered.
~1:00-~2:30	Closing remarks, Announce winners, photos South Jersey finishes earlier (by ~1:00). North/Central later (~2:30)

Events:

PLEASE NOTE: The following are only brief descriptions of each event. Full rules, competition scoring procedures, and the scoring formula can be obtained at www.njaapt.org (Top menu Events/Physics Olympics).

1. **FERMI QUESTIONS** - To estimate the order of magnitude of a quantity that is difficult or impossible to measure.
2. **GRAB BAG EVENT** - Will be announced the day of the event!
3. **AIR LAUNCHER** - Design/build a device that will launch a ping-pong ball using air pressure
4. **INERTIA BALL** - push a bowling ball around a course as quickly as possible by touching it only with a broom
5. **MARBLE COASTER** - Construct a track along which a marble will be in motion for the longest period of time.
6. **PAPER HELICOPTER** - Build a slow descent paper helicopter to fall a distance between 9 and 12 feet in the longest time interval.

It is the team's responsibility to periodically check the website for updates/changes or inquire about clarifications to the rules.

Awards:

Participants at each location will be awarded the following trophies:

<i>First Place Event Trophy</i>	6 trophies, for the highest score in each of the 6 events.
<i>Third Place Overall Trophy</i>	Team with the 3 rd highest overall score in all 6 events.
<i>Second Place Overall Trophy</i>	Team with the 2 nd highest overall score in all 6 events.
<i>First Place Overall Trophy</i>	Team with the highest overall score in all 6 events.

The NJ Physics Olympics Silver Serial Bowl

The First Place Overall trophy team will also receive the NJ Physics Olympics Serial Bowl. The name of the winning team's school will be engraved on the bowl. That school will proudly display it in their school's trophy case until the next year's Physics Olympics.

Contacts:

North/Central New Jersey	Erika Sherger	erikasherger@icloud.com
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South Jersey	Nancy Michaelsen	hhsphysics@comcast.net

For questions about specific event rules, go to www.njaapt.org /Top menu/Forum and post your question. To receive replies via email from the forum, you must “subscribe” to the Forum. It is the team’s responsibility to periodically check in or inquire about changes and clarifications to the rules.

Note – the deadline for submitting questions about individual events is mid-November. After that date, questions cannot be addressed due to committee meeting dates/holidays.

General Rules and Scoring:

1. A team shall consist of no more than six (6) members. Each team member must attend the high school of the team.
 - a. No extra unregistered students or “cheerleaders” may attend.
 - b. Advance registration and payment of teams is required. There will be no on-site registrations.
 - c. No substitutions may be made for any member of a team during the course of the day’s events (i.e.: only the original team members and no others are eligible to compete in any of the events).
 - d. It is not required that all team members participate in a given event.
 - e. A team may not use another team’s entries for their own, even if they are from the same school.
2. Safety: Prior to each event a judge will inspect all devices. It must be clear to the judge that no part of a device is unsafe.
 - a. For example, no rat or larger animal traps may be used as these traps may sever fingers (mouse traps may be used), no elastic material wound so tightly that injury could result if it should snap free, no large fast spinning gyroscopes that could spin out of control, no compressed gas cylinders or dangerous chemical reactions.
 - b. If an entry is disqualified for safety reasons, the team will be given 20 minutes to modify their apparatus.
3. All teams are encouraged to use creativity while keeping in the spirit of the competition.
 - a. If a team is unsure that their entry is within the spirit of the rules or to discuss rule interpretations, it is their responsibility to ask their teacher to post questions on the NJAAPT website Forum before mid-November.
 - b. For anything constructed in advance, teams are not permitted to redesign, build, or re-build anything during the Olympics. Minor adjustments and repairs are permitted.
 - c. Teams may want to keep their device/construction covered or in a box to prevent other teams from copying.

4. It is the team's responsibility to dispose of their projects, building materials and trash, and to leave their assigned area clean. Teams must dispose of large bulk items at their own school and not leave them at the host school.
5. The following procedure will be followed to question/protest a judge(s) decision.
 - a. Only one team member may discuss rule disputes with the judge(s).
 - a. If the issue is not resolved, the teacher chaperone of the team may speak with the judge panel or coordinators of the Physics Olympics.
 - b. The decision of the judge panel/coordinator is final in all aspects of the event.
 - c. To maintain a respectful environment and to keep in the spirit of the competition, no confrontational behavior will be tolerated between students and judges, or between teachers and judges. Such behavior may result in a team being disqualified from an event.
 - d. At the competition, students and teachers may NOT check the scores of any other teams. The judges will keep the scores inside the folder provided and will not share scores or allow access to score sheets by teams/teachers. Teams/teachers found trying to obtain scores may be disqualified.
6. **Scoring:** A maximum of 100 points will be given for each of the six events; therefore, the maximum number of total points is 600 points.
 - a. The calculated score for each event can be found in the event rules, with a maximum of 100 points per event.
 - b. If a team does not participate in an event, they will receive a score of zero (out of 100 points) for that event.
 - c. The team with the highest number of total points will be the winner, followed by a second-place team, and a third-place team.
 - d. Trophies will be awarded to the 1st place team for each event.
 - e. Overall winner trophies (1st, 2nd, 3rd) will be awarded to the top three teams. o The NJ Physics Olympics Silver Serial Bowl will be awarded for one year of custody to the overall first team.
7. 3D printing is allowed under the following guidelines:
 - a. If the object being printed is a standard stock part item such as a gear or pulley, then it can be printed using a commercially-purchased program.
 - b. If a substantial part of, or the entire device being entered is 3D printed, then the device may be 3D printed as long as the team wrote the program, i.e., no commercially purchased programs may be used. The team must provide proof to the judge(s) that they wrote the program.
8. 3D printing is NOT allowed in events where the permitted materials are specified in the rules. (ex: if a device must be made of paper, tape, glue, wooden dowels – 3D printing would not fit the specifications for that event).