

# Rules of Physics Brawl Online

## PARTICIPATING IN THE COMPETITION

### Registration

- To participate in Physics Brawl Online, you need to pre-register at <https://physicsbrawl.org>.
- By registering for the competition, each team agrees to follow the Rules of Conduct and these Rules of Physics Brawl Online and confirms they have made themselves acquainted with them.
- A team consists of 1-5 members.
- To compete in categories A, B, or C, all of the team members must be high-school students, or primary school students, or their respective equivalent. There is also an Open category (non-competitive) for other competitors that do not meet the criteria for A, B, or C categories.
- Each contestant can compete in one category only and be a member of only one team (see Designation into Categories).
- The name of a team cannot spread political or religious views, cannot be rude or insulting, or be in any other way inappropriate. The chief organizer has a right to change the name of such a team, censor it, or disqualify the team completely.
- By registering in the competition, you agree with publishing the results of your team in the form of basic information (your name, surname, category, school, and points) in the results table on the website, handbooks, and yearbooks of FYKOS.

### Designation into Categories

- Teams compete in three categories; to which they are placed based on the following algorithm.
- All other teams not meeting the criteria participate in the Open category.
- Each player has a coefficient based on the expected year of graduation. If a player studies the last year of secondary education, he gets a coefficient of 4. If he studies the penultimate year, he gets a coefficient of 3 and so on. A minimum possible coefficient is 0.
- The coefficient of a team is calculated as the arithmetic mean of the coefficients of individual members (they are added together and divided by the number of members).
- The team is assigned the lowest category whose conditions it satisfies:
  - category A: team coefficient  $\leq 4$ ,
  - category B: team coefficient  $\leq 3$  and maximum two members have a coefficient 4,

- category C: team coefficient  $\leq 2$ , no member has a coefficient 4 and maximum two members have a coefficient 3.
- All categories share the same set of problems.
- Each category of the competition has a separate ranking.

## **DESCRIPTION OF THE COMPETITION**

### **Competition environment**

- The competition is online in a competition environment, which you can access from the Physics Brawl Online website. The link to the competition environment will be also sent to the contestants by email.
- The teams log in with their team password, which they will receive shortly before the beginning of the competition by email.
- Problems will be published in the form of PDF files in the competition environment after the beginning of the competition.
- Teams send the results directly via the competition environment. Results sent by other means (email, etc.) will not be accepted.
- Official announcements from the organizers will be communicated via the online board, in exceptional cases by email. The teams are required to watch the online board.
- During the competition, the up-to-date scores of all teams are accessible. However, these will be hidden 20 minutes before the end of the competition.

### **The competition system and awarding of points**

- The competition lasts 3 hours.
- Teams solve the problems. For each correct answer to a problem, the team receives a new problem (unless the solved problem is the last problem in the series).
- The competition consists of two parallel parts - the Main series and the Hurry-up (consisting of three series), more details are below.
- The competition consists of 4 parallel series.
- Every problem is specified by the maximum score, which the team receives for submitting the correct answer on the first attempt. The maximum score the team can get for the particular problem lowers after submitting incorrect answers (see the Main series or the Hurry-up series).
- The team aims to receive as many points as possible.
- After half of the game time elapsed, the option of skipping the problems activates.
- The team loses 1 point for skipping an unsolved problem in the series, and the new problem will become available. The team cannot answer the skipped problem anymore. Each team can skip up to 10 problems.

- If the team answers a problem incorrectly, they will not be allowed to submit an answer for 1 minute in that particular series.
- If there is a serious issue discovered with one of the problems during the competition, organizers reserve the right to modify the problem or to remove the problem from the competition completely, excluding any right to compensation for any of the teams.
- During the competition, all the participants are allowed to communicate only with the members of their team or with the organizers. Any interaction with teachers, other teams, etc. is strictly forbidden.
- The teams use computer(s) or other electronic equipment with access to the internet for solving the problems. Furthermore, teams are permitted to use calculators and writing or drafting supplies.
- Teams are permitted to use the internet and any literature as a source of information.
- The competition is based on fair play. The competition is monitored to prevent cheating.
- It is forbidden to use abusive language, give hints to other teams, or discuss solutions, in the official communication channel of the competition.

### The Main series

- At the beginning of the Main series of the competition, each team receives 7 problems. After solving any problem from this series, another problem from the series becomes available. The series contains approximately 50 problems. The exact number of the problems is not published in advance.
- Each of the problems is characterized by the maximum score, which is awarded only if the team answers the problem correctly on the first attempt.
- Points are awarded according to the following table (concerning the number of incorrect attempts):

no error (100 %)	1 error (~60 %)	2 errors (~40%)	3 errors (~20%)	4 and more errors
3	2	1	1	1
4	3	2	1	1
5	3	2	1	1
6	4	3	2	1
7	5	3	2	1
8	5	4	2	1
9	6	4	2	1

## The Hurry-up series

- One hour after the beginning of the competition, the option to answer problems from the Hurry-up series becomes available.
- Problems from this series are divided into three categories (mechanics M, usually electromagnetism E, others X).
- In the beginning, the team receives one problem from each category (i.e. problems M.1, E.1, X.1).
- After submitting the correct answer, the next problem from the respective category becomes available (e.g. the team correctly answers problem M.1, problem M.2 becomes available).
- Points are awarded according to the following table (concerning the number of incorrect attempts):

no error	1 error	2 errors	3 errors	4 and more errors
3	2	1	0	0
4	3	2	1	0

- During the first 30 minutes of the Hurry-up series (before the option of skipping the problems activates - see The competition system and awarding of points) each team can get a bonus. The bonus is awarded for each completed triplet (i.e. successfully answered problems of the same number in all categories - e.g. M.1, E.1, X.1), and consists in doubling the points awarded for the particular triplet.
- These bonus points are displayed in the result sheet only in the “bonus points” and “total points” columns.
- After the option of skipping the problems activates, the Hurry-up problems remain available, however, no bonus points will be awarded for the completed triplet.

## Format of the results

- The answer to every problem is always a number.
- The number of significant figures and the units of the answer are always written in the problem task.
- There will be a table of constants published. It is recommended to use these values to get the correct answers in the tolerance interval.

## Conclusion of the Competition and Announcement of Winners

- The competition ends 3 hours after its start.
- The winning team is the team with the highest number of points.

- If two or more teams have the same point score, the order is determined according to the earlier time of the last submitted correct answer. If the time of the last submitted correct answer cannot determine the order unambiguously, the order shall be determined by a draw.
- Immediately after the competition is finished, the preliminary results are published.
- The contestants may appeal to the organizers up to 30 minutes after the end of the competition. Their remarks will be considered and eventually reflected in the results.
- After all remarks from the contestants are discussed, the final results will be published on the Physics Brawl Online website.

## **ADDITIONAL REMARKS**

### **Breach of Rules**

- In the case of a substantial suspicion of a breach of the Competition Rules or the Rules of Conduct, the chief organizer has a right to perform extraordinary measures to confirm or rebut the suspicion and to prevent the continuation of disallowed conduct.
- In the case when a team breaches any of the Competition Rules or the Rules of Conduct, the consequences to that team will be decided by the chief organizer or by a committee designated for this task by the chief organizer.
- In the case of a less serious breach of rules, the chief organizer or a committee designated for this task by the chief organizer can decide on the removal of a certain number of points of a team based on the severity of the breach.
- Organizers are allowed to disqualify a team that commits a severe breach of rules.
- In the case of an extremely severe breach of the Competition Rules or the Rules of Conduct, the Central Committee of the competition may decide to ban participation in the competition in the subsequent years or another punishment, to the members of the team and/or to any of the schools they come from.
- Extremely severe breaches of rules involve especially any intentional attempt to obtain the problems or their solutions before the competition, their publication, or disclosure to other participants of the competition. Any intentional attempts to impede the smooth running of the competition to the other participants or the organizers, or an attack on the competition server, are also understood as extremely severe breaches of rules.

### **Final remarks**

- Organizers reserve the right to make minor changes to the rules before the start of the competition.
- Resolution of any potential conflicts or issues, not covered by these rules, is decided by the chief organizer or an organizer designated by him.



- A team has a right to appeal against a decision of the chief organizer, but no later than 14 days after the decision has been made. The appeal will be processed by the Central Committee of the competition, which will decide the case no later than 40 days after the appeal has been made.
- These rules have been ratified by the Central Committee of the competition Physics Brawl Online on 11. 10. 2021.
- These rules replace the previous version and come into effect on 11. 10. 2021.