Regulations
of the 4th International Team Mathematical Modelling Tournament for high-school students (MMT-2021)

1. General Provisions

1.1. The International Team Mathematical Modelling Tournament (hereinafter, the Tournament) is an intellectual competition for high-school students interested in mathematics and its applications.

1.2. The main goal of the Tournament is to develop students' skills in mathematical modeling of objects, phenomena, and situations of the surrounding reality, to get acquainted with the problems of applied mathematics and with mathematical problems that arise outside of mathematics *per se*.

1.3. Collateral goals of the Tournament:
- to instill in schoolchildren a steady interest in mathematics and scientific research;
- to encourage the teaching of mathematical modelling at all levels of education and for all students;
- networking between the domestic and foreign physics-and-math (informatics, engineering, etc.) schools or classes.

2. Tournament Structure

2.1. All participants of the Tournament are split into **teams**, and each of them:
- consists of exactly **four** members (who may come from different schools, cities, etc.);
- takes part in the **main** team contest and three **thematic** team competitions;
- belongs to exactly one of two Leagues: ***senior*** (grades 10–12) or ***junior*** (grades 8–9), and all its members take part in the competitions of the same League (i.e. a team that has at least one student of grades 10-11 automatically goes to the senior League).

2.2. ***Mathematical Modelling Contest*** **(MMC/Mammoth)** is the main team competition of the Tournament. At the contest, proposed is one problem of open type that implies building and exploring a mathematical model of a specific situation from the real world;
- the problem is handed out to all teams simultaneously in the beginning of the Tournament;
- in the middle of the Tournament, each team submits a solution;
- in the end of the Tournament, a conference is held, where all teams defend their solution in the form of oral presentations.

2.3. In the course of the Tournament, three thematic competitions are held:
- ***Olympiad in applied Mathematics*** **(MATS/"Primate")** — team competition with tasks closely connected to the applications of mathematics in mechanics, physics and other natural sciences;
- ***Olympiad "Mathematics around us"*** **(MAU/"Lobster")** — team competition where the participants are given mathematical problems inspired by the real world and life;
- ***Optimisation contest*** **("Goat")** — team competition where the participants are required to tune a provided computer model of an object so that the model comes to a state as close to the optimal one as possible (optimality criteria are defined in the problem statement).

3. Tournament Organisation

3.1. To prepare, conduct and summarize the results of the Tournament, the Organizing Committee, the Methodological Commission and the Jury of the Tournament are appointed, which include representatives of the M.V. Lomonosov Moscow State University:

- from the Faculty of Mechanics and Mathematics, the Faculty of Physics, and the Faculty of Computational Mathematics and Cybernetics;
- from The Advanced Educational Scientific Center (faculty) – Kolmogorov's boarding school of Moscow State University (hereinafter, AESC MSU).

Specialists from other organizations, including those from abroad, may also be involved in the Tournament.

3.2. The Organizing Committee of the Tournament, headed by the Director of the AESC MSU, fully manages the organization and conduct of the Tournament, provides its material, technical, personnel, and financial support.

3.3. The Methodological Committee of the Tournament creates tasks for all competitions and develops criteria for scoring the solutions, and at the end of the Tournament prepares its methodological materials for publication.

3.4. The Jury of the Tournament, that comprises specialists with proper qualifications:

- organizes scoring and expert examination of the solutions of the participants of the Tournament, which is done by the involvement of the staff of AESC MSU departments;
- if necessary, shows the participants of the Tournament checked works and considers their appeals;
- sums up the results of the Tournament and determines its winners and awardees.

4. Tournament scoring

4.1. The Tournament score is calculated as follows:

- the score of each team in a thematic team competition is an integer number of points from 0 to 400;
- the score of each team in the main team competition is an integer number of points from 0 to 1000;
- ***the total Tournament score*** is the sum of all team's scores in team competitions.

4.2. In each of the two Leagues separately, Tournament winners and awardees are determined:

- in the main team competition;
- in each of the tree thematic competitions;
- in the overall team rating.

4.3. The winners and awardees in each nomination of the Tournament are awarded with diplomas of three degrees, other successful participants are awarded with certificates of merit, and the rest of the participants will receive certificates of participation. In addition, the participants are awarded prizes.