



Klaipėdos
universitetas

Robotikos klubas

ANTWEIGHT RULES

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2. INTRODUCTION

This document defines the rules for robots in the Antweight competition. The rules are based on The goal is to develop participants' creative abilities, problem-solving and collaboration skills.

Tasks:

1. improve construction skills;
2. to encourage participants' curiosity and creative freedom;

to develop participants' communication and teamwork skills.

3. ROBOT CLASSES

Antweight competition robots are divided into three groups:

1. Antweight Beginners ¹ (200g)
2. Antweight Advanced ² (200g)
3. Antweight Plastic Class (200g)
4. Antweight (454g)

1 - Beginners are all participants who are under 18 years of age and have not won 1-3 places in the Antweight Beginners. If you qualify for the beginners event you can choose to participate in the advanced event,

2 - All participants that are older than 18 years of age, have won the Beginners competition in the past (1-3 places), are considered advanced. If you qualify for the advanced category you can not choose to participate in the beginners event

4. COMPETITION ORGANIZATION PROCEDURE

Information about the competition and its organization is published on the Klaipėda University Robotics Club's Facebook (<https://www.facebook.com/roboticsclubKU>) account and website (<https://kurc.lt>).

Contestants must listen to the competition organizers and judges. Otherwise, participants may be disqualified.

5. COMPETITION SAFETY RULES

Contestants must adhere to the following safety rules:

1. All active weapons must be immobilized and passive weapons must be covered, except in arenas and training rings,
2. if the robot is controlled by a remote control, the robot must stop if the connection between the robot and the remote control is lost (Failsafe must be configured on the remote control or controller),
3. all robots must have a power button or other feature that allows the robot to be turned off quickly (the robot must be turned off within 10 seconds),
4. Robot arms must be disconnected remotely to ensure the safety of participants.

Failure to comply with or follow these rules may result in disqualification from the competition.

6. ANTWEIGHT ROBOT REQUIREMENTS

1. Antweight – remotely controlled combat robots.
2. The weight of the robot is calculated taking into account the weight bonuses listed in the following table:

Category	Roller/traditional (0% bonus)	Non-roller/not traditional(50% bonus)
Antweight 200g	200g	300g
Antweight 454g/1lb	454g	681g

Note:

Roller: Traditional robots that move using standard wheels, tracks, or full-rotation rolling elements.

Non-Roller: Unconventional movement styles, including walking robots, shufflers, or hovercrafts.

3. The robot must be clearly marked with the number assigned to it and must be clearly visible.
4. The dimensions of the robot are unlimited.
5. During the fight, the robot may use additional weapons that are allowed during the competition.
6. The use of the following types of weapons is prohibited:
 1. liquid-based weapons;
 2. glue or adhesive soles;
 3. firearms or fire arms;
 4. the use of electricity for weapons;
 5. explosive weapons;
 6. threads, nets or fabrics.

7. The robot's battery voltage cannot exceed 50 volts.

7. Antweight Plastic Class design principles

The purpose of the **Antweight Plastic Only** category is to provide an accessible and affordable robot class that encourages creativity, experimentation, and rapid development using commonly available 3D-printing technologies.

Robots should follow both the technical requirements below and the general spirit of the category.

7.1 Robot Structure and Materials

The robot frame, body, armor, wedges, weapon components and other custom structural parts must be manufactured using **FDM/FFF 3D printing**.

The following materials are permitted:

- PLA
- PLA+
- PET
- PETG
- ABS
- ASA

Materials marketed under different names but having essentially the same properties and composition as PLA+ (for example, PLA Pro or Super PLA) may be accepted as PLA+.

7.2 Other materials may not be used for custom structural or protective parts. This includes, but is not limited to:

- metal;
- carbon fiber;
- fiberglass;
- UHMW;
- polycarbonate;
- other engineering plastics not listed above.

7.3 Composite, fiber-reinforced or blended printing materials are prohibited, even when the base polymer itself is permitted.

Examples of prohibited materials include:

- Carbon Fiber PLA;
- Carbon Fiber PETG;
- Glass Fiber ABS;
- wood-filled PLA;
- metal-filled PLA;
- flexible PLA or similar flexible blends.

7.4 Commercial Components

Commercial Off-The-Shelf (COTS) components may be manufactured from any material when used for their normal intended function.

Examples include:

- motors and gearmotors;
- electronic components;
- batteries;
- shafts and axles;
- bearings and bushings;
- gears;
- screws, nuts and other fasteners;
- connectors;
- adhesives.

COTS components must not be deliberately used as structural armor, additional ballast, weapon impactors or other components whose primary purpose is different from their normal function.

For example:

Permitted: using a steel shaft to support a wheel, bearings to support a rotating component, or screws to connect printed parts.

Not permitted: attaching metal components primarily to increase robot weight, using bearings or bolts as weapon impactors, or arranging metal components specifically to function as armor.

7.5 COTS components may be reasonably modified when required for installation, provided that their fundamental function is not changed.

Examples include shortening a motor shaft or machining a flat onto a shaft for a set screw.

7.6 Builder-made components equivalent in function to normal COTS components may be permitted. Examples include custom electronics, custom gearmotors, prototype components and custom shafts.

Magnets intended to increase traction or create additional downforce are prohibited.

7.8 Wheels and Traction Components

Tires and other surfaces whose primary purpose is to provide traction may use materials outside the permitted structural-material list.

Permitted examples include:

- commercially available rubber tires;
- cast silicone or rubber tires;
- rubber coatings;
- foam tires or traction elements.

Wheel hubs and other structural components connecting the tire to the motor or axle must either be commercially available components or be 3D printed from one of the permitted materials listed in Section 7.1

Rubber, foam or other traction materials must primarily serve as traction elements and must not be designed or positioned to provide significant additional armor or structural reinforcement to the robot.

7.9 Surface Treatment and Post-Processing

Painting, stickers, decals and other cosmetic finishes are permitted.

Coatings must be primarily decorative and must not significantly increase the strength, rigidity or impact resistance of the robot.

Post-processing techniques specifically intended to improve the mechanical strength or durability of printed parts are prohibited.

Examples include:

- annealing;
- acetone vapor treatment or soaking;
- boiling or other thermal strengthening processes;
- resin or composite reinforcement.

Normal removal of supports, sanding for fitment, drilling holes and other minor finishing operations required for assembly are permitted.

7.10 Spirit of the Category

The **Antweight Plastic Only** category is intended to keep robot construction affordable, accessible and focused on 3D-printed designs.

Competitors should not attempt to use technical loopholes to introduce materials or components that provide the same functional advantage as prohibited structural materials.

The Event Organizer may reject or disqualify a robot if its construction clearly violates the purpose or spirit of the category, even if a specific construction method is not explicitly prohibited by these rules.

Competitors who are uncertain whether a material, component or construction method is permitted are encouraged to contact the Event Organizer before the competition.

8. ANTWEIGHT MATCH RULES

1. The robot must be registered before the competition. During registration, the robot is assigned a number, which the participant must place on the robot in a visible place.
2. The duration of a robot round cannot exceed 1 min 30 s.
3. The total fighting time for each fight is up to 15 minutes (5 minutes for 3 rounds, and five minutes for each participant for preparation and robot maintenance. If a participant uses up their 5 minutes for preparation or maintenance, they lose the fight).
4. Before the start of the fight, each robot may be inspected by the organizers to ensure that the robot meets the weight requirements before the fight.
5. The first robot to fall out of the arena loses.
6. After 30 seconds, the battle arena turns from static to dynamic – additional obstacles appear.
7. The arena is divided into two parts (red and blue) and a starting zone.
8. If one of the robots stops moving, stops, or becomes uncontrollable, the judge gives the participant 10 seconds to regain control of the robot.
9. At any time during the battle, the robot controller may refuse to continue the battle. In this case, the participant loses the battle.
10. Robots can clash with each other for no longer than 10 seconds. After 10 seconds, the referee warns of the time. If the participants do not move away from each other within 5 seconds, the fight is stopped and the robots are returned to their original places in the arena. A pin is considered to be preventing an opponent from moving for at least 3 seconds, but there must be 5 second delay between pins.
11. If both participants' robots fall out of the arena at the same time, the fight is stopped and the robots are returned to their original positions in the arena.
12. At the end of the match, only the robot participant or the referee may remove the robot from the arena. The participant is responsible for safety before removing the robot from the arena. If the robot's weapons are on, then they must be turned off before removing the robot from the arena.
13. All disputes arising during the competition shall be resolved by the referee. The referee's decision shall be final. In the event of any conflict or dispute, the referee and/or the organizers shall have the final say.

9. ANTWEIGHT MATCH WINNING CRITERIA

A participant can win a round in 3 ways:

1. neutralizing the opponent,
2. throwing an opponent out of the ring,
3. scoring more points than the opponent.

Points are awarded according to the following criteria:

1. neutralizing an active weapon (50 points),
2. neutralizing a passive weapon (30 points),
3. partial chassis damage (20 points),
4. pinning an opponent(15 points)¹
5. a hit with an active weapon that deals damage to opponents armor
6. a hit with an active weapon that does not deal damage (5 points),

1 – pin is considered to be preventing an opponent from moving by holding him to a wall or other obstacle or when an opponent is pushed out onto the triangle(200g arena).