

Rules of the Robopoly Grand Concours 2026-2027

V1.1

Mission Léman

Cans, bottles and plastic of every kind are piling up on the shores and at the bottom of Lake Geneva. This year, your robot is off on a clean-up mission: collect as much waste as possible, without scooping up any fish along the way.

And here we go, the Grand Concours is back for the 2026-2027 edition! This year, no more fixed course: **you choose your strategy**. An open field, a beach, a lake full of fish, and limited time. Your robot will need to move around freely, avoid rocks, find objects, tell them apart and bring them back.

Robopoly is pleased to present the rules of the Grand Concours below!

1 General information

1.1 Registration

The Robopoly competition is **open to everyone** (members and non-members), whatever their age and knowledge of robotics. As a result, all types of ground robots are allowed (Prisme kit base, Arduino, Raspberry Pi, Mindstorms...), see section 3.

You can register for the Grand Concours in teams **of one to four people**. Registration is done via the [following link](#) (also available on our website and social media).

Registration opens on 30 September 2026, after the competition's presentation demo. It **closes on 1 November** of the same year (Sunday of week 8).

1.2 Schedule

The competition will take place **between week 10 and week 12 of the spring semester**. The exact date, as well as other important dates and times, will be communicated by email and on our social media as soon as possible.

1.3 Team support and follow-up

Robopoly supports you throughout the year, from the first idea to competition day.

Project kick-off evening

Right after the October break (week 7), we will hold a project kick-off evening. It is neither mandatory nor official: it's a chance to get started together, ask your first questions and get help with the design of your robot. Of course, you are free to start working before then.

Progress evening

Another evening of the same kind will be held before the PDR, to help you move forward and prepare your presentation. Here too, attendance is optional.

Monday evening open sessions

Robopoly's Monday evening open sessions are the right time to come and ask questions, get help or use the equipment in the club room.

A PDR (Preliminary Design Review) will be held in **week 10-11 of the autumn semester**. The PDR is the first "official" presentation of your progress. NO STRESS, the PDR is in your own interest: it's an opportunity to get early feedback on your ideas. At the PDR we expect your first concepts, sketches, lines of thought, as well as your organisation plan (budget, tasks...). The PDR format is free (PowerPoint, poster, etc.). It lasts **less than 30 minutes** in total, including your presentation, your questions and ours.

A CDR (Critical Design Review) will be held in **week 3-4 of the spring semester**. The purpose of the CDR is to all but validate your concept. A PowerPoint presentation is expected, explaining your systems and prototypes (the beginnings of your robot's construction). The CDR lasts **30 minutes** in total. Like the PDR, it is not graded and has no impact on your score: its only purpose is to help you succeed with your robot.

Additional Q&A sessions may be organised if needed. Don't hesitate to ask your questions, even if they seem silly! You can always contact us by email or on our social media (linktr.ee/robopoly).

1.4 Interpretation

Anything that is not forbidden is allowed. The committee reserves the right to change the rules without notice.

2 The course

Your robot or robots operate on the field without any help. Their goal is simple: **collect as much waste as possible and bring it back to the collection zone**, within a limited time.

The field is completely open and divided into two environments:

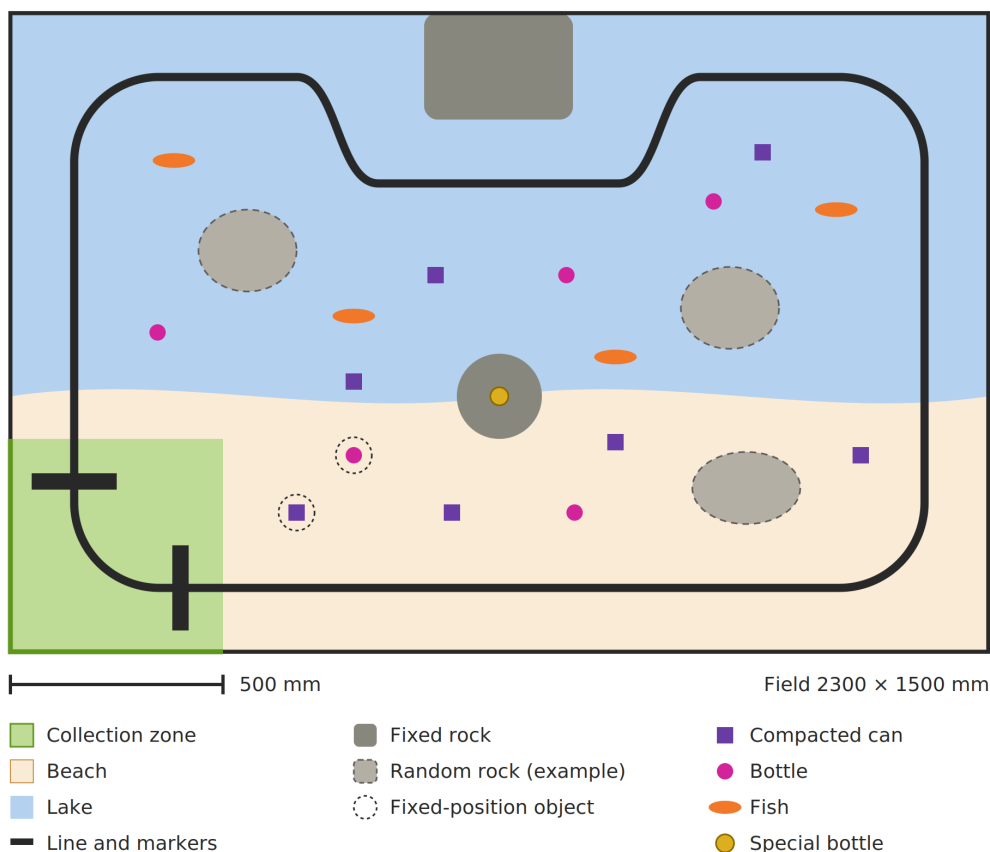


- **The beach**, close to the collection zone, contains only waste. It is the "safe" environment.
- **The lake**, further away and larger, contains as much waste as the beach, but also **fish**, a protected species. Taking a fish out of the water costs points. **There is no actual water on the field**; it is purely cosmetic.

Rocks are scattered across the field and must be avoided. In the centre, a rock holds a **special bottle**, worth more than ordinary waste.

There is no imposed order and no mandatory path. You can stick to the beach, go for the lake, try for the special bottle, make many round trips or collect everything in a single trip. Strategy is an integral part of the challenge: time spent crossing the field is time you're not spending collecting!

2.1 Field overview



Indicative diagram of the field. The positions of objects and random rocks are given as examples.

The field is a rectangle enclosed by walls. It contains:

- **The collection zone (green)**, in the bottom-left corner. It is both your starting point and the place where waste must be dropped off to count. Its floor and the walls around it are green.
- **The beach (beige)**, in the lower part of the field, covering about 40% of its area.



- **The lake (light blue)**, in the upper part of the field, covering about 60% of its area.
- **A black perimeter line**, which runs all the way around the field 150 mm from the walls and crosses the collection zone. Its corners are rounded.
- **Two collection zone markers**: a black stripe perpendicular to the line at each of the two points where the line enters the collection zone.
- **A fixed rock against a wall**, which the line goes around.
- **A central rock**, placed on the boundary between beach and lake, which holds the special bottle.
- **Additional rocks**, placed at random on competition day.

What is the line for? It is not mandatory, but it provides a guaranteed way back. A lost robot only has to drive straight ahead: since the line runs along all the walls, it will always reach the line before hitting a wall. It then simply follows it, in either direction, to a collection zone marker.

To get off to a good start, one compacted can and one bottle are always placed at a **fixed, known position**, on the beach, near the collection zone.

The field has been designed with **different levels of difficulty**, the lake being the hardest. Your strategy can focus on the beach alone, which already lets you score a good number of points. A perfect score is not a realistic goal, so start simple!

⚠ **The field diagram** and the test module, which will be available later in the club room, do not exactly represent the final field. In addition, the positions of the waste and fish are drawn at random on competition day: your robot must be able to find them, not memorise their coordinates.

2.2 Start and finish

Start

The robot or robots are placed **entirely inside the collection zone**, in the position and orientation of your choice. The timer starts when the first robot starts (provide a button, a switch or any other actuator). No human intervention is allowed afterwards, except as set out in 2.6.1.

Counting waste

A piece of waste is counted as soon as it is **fully placed on the floor inside the collection zone** and the robot is no longer touching it. When the robot leaves the collection zone again, the referees remove the objects it dropped there, to avoid clutter.

Fish

A fish counts as a penalty **as soon as it is out of the water**, meaning as soon as it is no longer entirely in the lake: stranded on the beach, dropped in the collection zone, or carried by the robot out of the lake. A fish dropped in the collection zone is penalised permanently. For the others, their position at the end of the match is what counts: a fish that the robot puts back in the lake before the end is not penalised.



Special bottle

The special bottle scores once it is dropped in the collection zone, and is worth more than a regular bottle. It is a "bonus" for those who want an extra challenge.

End of time

When the timer runs out, objects still carried by a robot (held inside it or gripped by a claw) are counted as follows:

- **100% of the points** if the robot is entirely inside the collection zone,
- **50% of the points** if it is anywhere else on the field.

Fish penalties are counted at 100% in all cases.

2.3 Scoring

1. Compacted cans (14 pts)

Score: **+2 points** per can dropped in the collection zone.

2. Bottles (15 pts)

Score: **+3 points** per bottle dropped in the collection zone.

3. Special bottle (8 pts)

Score: **+8 points** if it is dropped in the collection zone.

4. Fish (penalty)

Score: **-4 points** per fish taken out of the water. 4 fish in the lake.

5. Presentation (8 pts)

Score: **4 points** for originality and complexity, **4 points** for aesthetics.

6. Penalties

Each intervention on the robot costs **1 point**; a slight nudge if the robot is stuck costs **0.5 point**.

Object distribution

	Cans	Bottles	Fish
Beach	4	2	—
Lake	3	3	4
Central rock	—	1 special bottle	—

The theoretical maximum score is **45 points**.



2.4 Specifications

Here you will find all the dimensions, features and specifications of the course, to help you design and program your robot.

2.4.1 Field

Rectangular field of about **2300 × 1500 mm** (order of magnitude), enclosed by perimeter walls about **200 mm** high. Floor in three colours:

- **Collection zone:** green (the walls around it are the same colour),
- **Beach:** light beige, about 40% of the area,
- **Lake:** light blue, about 60% of the area.

The beach and the lake will be painted to look like sand and water respectively; they are not flat, uniform colours. The boundary between them is wavy.

2.4.2 Perimeter line

Black line **20 mm** wide, running all the way around the field **150 mm** from the walls.

- The corners are rounded with a sufficient radius. There are no sharp angles.
- Around the fixed rock, the line moves away from the wall to pass at least **150 mm** from the rock, in smooth curves.
- No object or rock is placed on the line or within 150 mm of it.

2.4.3 Collection zone

Square of about **500 × 500 mm** in the bottom-left corner of the field. Its floor and the two walls around it are **green**. The perimeter line crosses it.

At each point where the line enters the collection zone, a marker is drawn: a black stripe **40 mm** wide and **200 mm** long, perpendicular to the line and centred on it, located about **100 mm** inside the zone.

2.4.4 Rocks

- **Fixed rock:** attached against a wall, known position.
- **Central rock:** fixed position, on the beach/lake boundary in the centre of the field. About **200 mm** in diameter and **70 mm** high, with a flat top on which the special bottle sits.
- **Additional rocks:** about **3**, placed at random on competition day. Footprint of **200 to 300 mm**, height of at least **150 mm**, weighted so they don't move when a robot touches them. All rocks are grey.

Placement guarantees: at least **300 mm** between two rocks and between a rock and a wall, at least **150 mm** between a rock and the line. No random rock is placed in the collection zone or near the two fixed-position objects. Touching a rock is not penalised.

2.4.5 Waste and fish

Waste and fish identical to those used in the competition will be produced and made available for testing.

- **Compacted can:** cube of **40 mm**, slightly chamfered edges, **purple**, with a steel weight in the centre of its base.
- **Bottle:** cylinder of **Ø 40 mm** and **65 mm** high, standing upright, **pink/magenta**, with a steel weight in its base that keeps it stable.
- **Fish:** fish shape, **80 to 120 mm** long, on a flat base, **orange**, no metal. Its height, about **50 mm**, is between that of the can and that of the bottle.
- **Special bottle:** same dimensions as a bottle, **gold**.

Waste and fish can therefore be told apart by **colour, shape, height and the presence of metal**: several approaches are possible, from purely mechanical sorting to computer vision.

Apart from the two fixed-position objects and the special bottle, objects are placed at random on competition day, with at least **150 mm** between an object and the line, a wall, a rock or another object. Fish are only in the lake.

2.4.6 Match conditions

Match duration: **5 to 8 minutes**, to be confirmed later. Teams compete one at a time, with only one team on the field at once.

The competition takes place indoors, under the hall's artificial lighting, which will not be identical to that of the club room. Each team gets time on the field before its run to calibrate its sensors on the real floor colours and under the real lighting.

2.5 Test module

While designing your robot, it is important to test its different parts. A test module for line following and object pickup will be available in the club room.

Access to the final course will be possible two to three weeks before the Grand Concours; each team will be able to test its robot on the course.

2.6 Competition procedure

2.6.1 Interventions on robots

During matches, technical problems can, and will, happen. That's why an intervention system is in place in case a robot loses one of its parts or gets lost on the field.

Each intervention results in a penalty of **1 point**; the robot is put back in the collection zone, and the objects it was carrying are returned to their starting position for the match. For a

minor intervention, such as giving it a slight push to unblock it, the penalty is **0.5 point**. The timer is not stopped during interventions.

2.6.2 Presenting your robot

As you can see in the scoring, 8 points relate to the originality, complexity and aesthetics of your robot. That's why each team, at the end of its run, will give a **short presentation (approx. 5 min)** to tell us about the merits of its robot, its story, its style, why it's more complex than it looks, why it's by far the best...

2.6.3 Number of runs

Each team gets **two runs**. The first one is mandatory. Once its score is known, the team may choose to try again with a second run. In that case, **only the score of the second run counts**, even if it is lower than the first.

3 Participating robot

3.1 General robot specifications

Each team may use **one or more robots**, which compete together on the field during the same run. The line-up must stay the same throughout the competition. Each robot is a brain (a brick or a control board) and the peripherals attached to it (motors, sensors, etc.). Purely mechanical parts (with no motor or sensors) may be detached from a robot.

The design, as well as the components and parts used to build your robot, are completely free. No maximum size is imposed, but all of your robots together must fit entirely inside the collection zone at the start. Keep in mind that only **300 mm** of free space is guaranteed between two rocks, and **150 mm** between the line and the walls: a robot that is too big may get stuck. We recommend not making a robot larger than **250 mm** in diameter.

Each participating robot must be fully autonomous and may not receive any human command in any way, whether from a team member or a spectator. Robots from the same team may communicate with each other, including wirelessly. However, no device placed outside the robots (computer, camera, phone, beacon...) is allowed during the match, and robots may not communicate with any external device. Robots must move along the ground, staying in contact with the field.

The competition takes place indoors. Therefore, no technology requiring a specific environment, such as sunlight or GPS, is allowed.

Any device likely to damage the field or its components, or the spectators, is strictly forbidden. Robots must be electrically powered (batteries, cells, ...). Any thermal, chemical or combustion energy source (petrol, butane, etc.) is strictly forbidden.

3.2 Homologation

Homologation is a simple check of your robot by the jury members to make sure it complies with the competition rules. It is required to validate your registration on the day and must be completed before the official start of the competition.

A robot may be disqualified if it does not comply with the safety rules or if it damages the field or its components.

4 Prizes

There's a lot to win, and not just for the podium: **every participating team will go home with something**. The exact number of prizes will depend on the number of registered teams. The **first prize is worth about 100 CHF**.

5 Financial support

Robopoly provides all teams taking part in the Grand Concours with a **50 CHF allowance**. **25 CHF** is available to buy components from the stock and **25 CHF** to pay for 3D printing. Of course, you may use your own equipment, which you will get back after the competition.

6 Conclusion

The whole Robopoly committee hopes you will enjoy taking part in this competition. Be inventive, both in the design of your robot and in the strategies you choose, respect your opponents and above all: have fun!

If in doubt, don't hesitate to ask the committee for more details!

Good luck!