

Robosota

Finnish Combat Robotics Community



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“Combat robotics for schools and clubs in nutshell”

Ver.1.0

What is Combat Robotics?

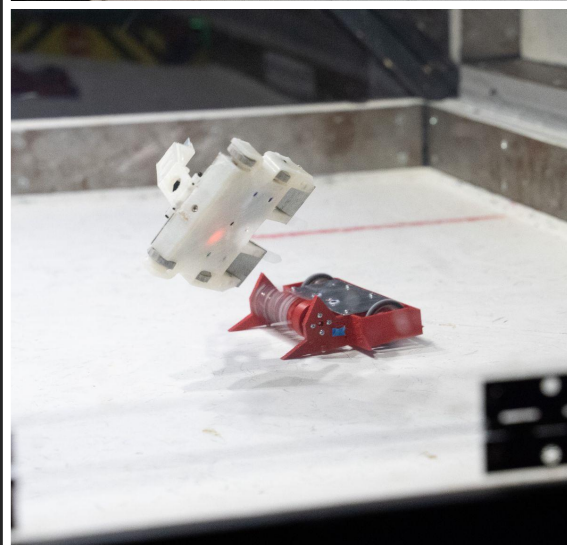
Combat robotics is a hobby where radio-controlled or autonomous robots compete in weight classes. The objective is to disable the opponent or knock it out of the arena within a time limit of 3 minutes.

Age recommendations:	Non-spinners:	Ages 8 and up.
	Spinners:	Ages 18 and up. Under 18 in parental advisory.
Gamestyle:	Match:	1 vs 1
	Tournament:	Knockouts, semifinals and final.
Gametime:	3 min or until the opponent is knocked out.	
Game platform:	1,2m ² closed arena. Floor from plywood, walls and roof from polycarbonate.	
Judging:	15 total points are divided between competitors. Knockout and forfeit will give full points for the winner without the need of judging.	

Aggression	4 points
Control	4 points
Damage	6 points
Last offensive move	1 point



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Leagues / weight classes

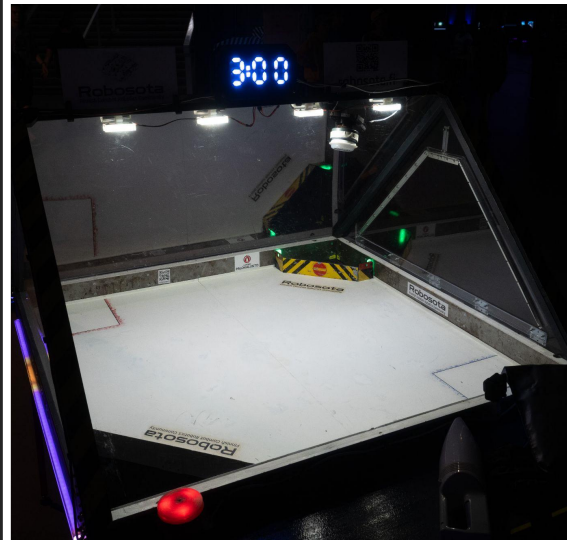
Robot maximum size in all leagues is 30 cm.

- 150 g plastic league
 - Only plastic materials are allowed on outer surfaces (Metal screws are ok for mountings).
 - Maximum weapon tip speed 20 m/s.
 - Good for schools, clubs, prototyping and starting sport.
 - Can be competed in open arena when spinners, pneumatics or springs are not allowed.
 - Cheapest and safest way to get into touch with sport because parts are cheaper and don't break like in normal leagues.
- 150 g normal league
 - All materials except highly flammables are allowed.
 - Maximum weapon tip speed 100 m/s.
- 450 g normal league
 - All materials except highly flammables are allowed.
 - Maximum weapon tip speed 100 m/s.



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Further rules and specs can be found from:
<https://robosota.fi/en/saannot-ja-oppaat/>



About Robosota association

Robosota is the main association in Finland for providing rules and competitions for Combat Robotics.

We also support club activities organized by schools and other organizations by providing information about the sport and creating safe and fair foundations for engaging in it.

The association is non-profit and does not engage in selling or renting its services to businesses.

However, as a school, community, or event organizer related to the field, you are welcome to reach out and inquire about our participation in events to showcase our activities.

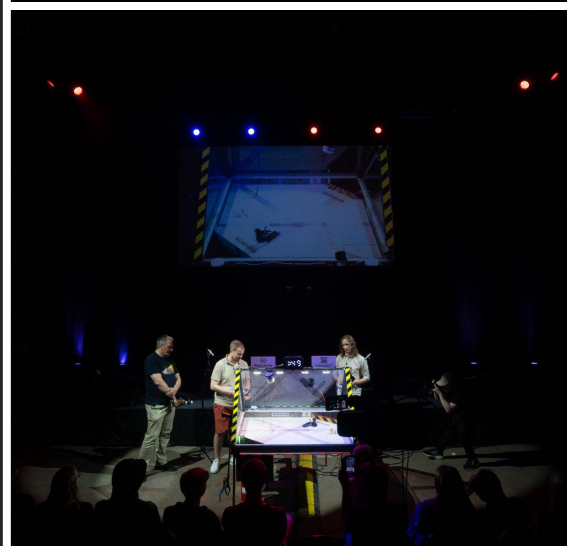
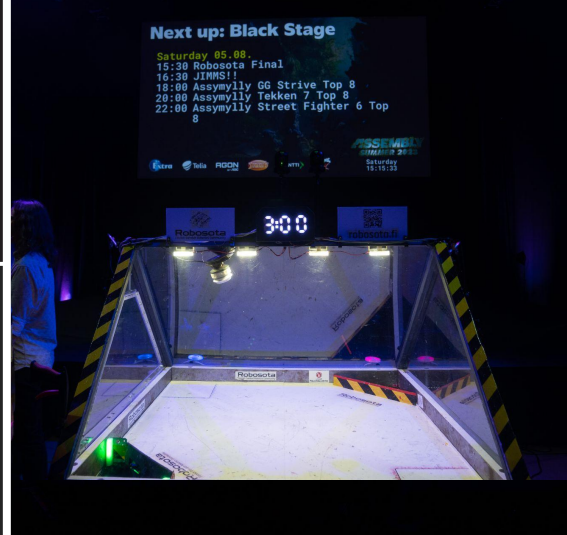
Membership

As member you will be part of the community and support sports development in Finland.

Members will also get discount from tournament participating fees.



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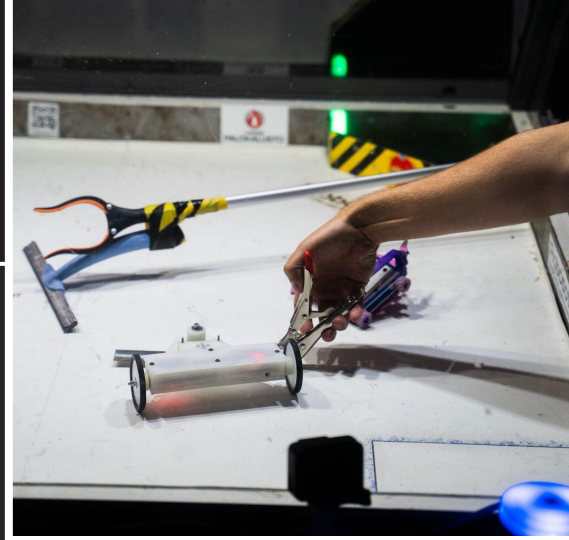


What will you need to start the hobby?

- Transmitter (RC -stick radio, phone, gamepad etc.)
- Receiver (Radio, wifi, bluetooth)
- Motors for driving and motor controllers
- Optional weapon with motor and driver
- At least one battery and charger
- Body materials
- Wires and connectors
- Tools



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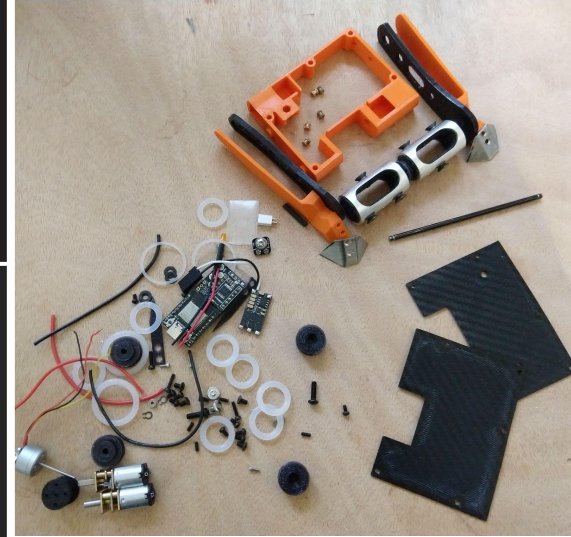


How to build?

- 3D printing
 - Self designed
 - Ready free prints from: Thingiverse and Grabcad
- CNC machining
- Sheet metal fabrication
- With hand tools
- Commercial build kits



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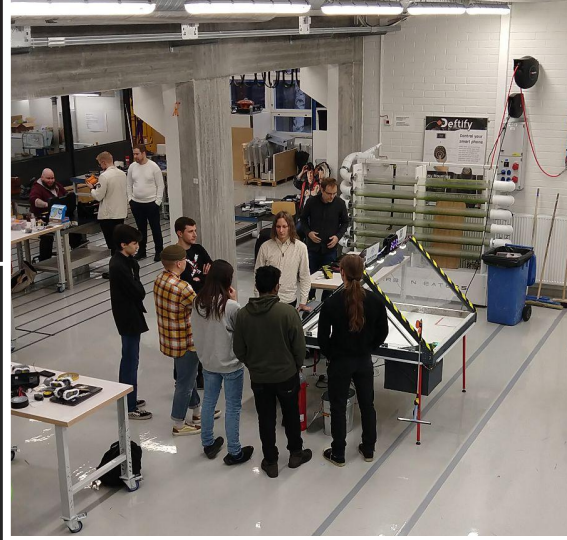


Combat robotics in schools & clubs

- STEM education (Wider variety and deeper look from components than in normal STEM education.)
 - Grade schools
 - Vocational schools
 - University of applied sciences / Colleges
 - Universities
- Club activities
- Competitions
- Way to market school, clubs, makerspaces / hacklabs...
- Individual projects
- Team projects



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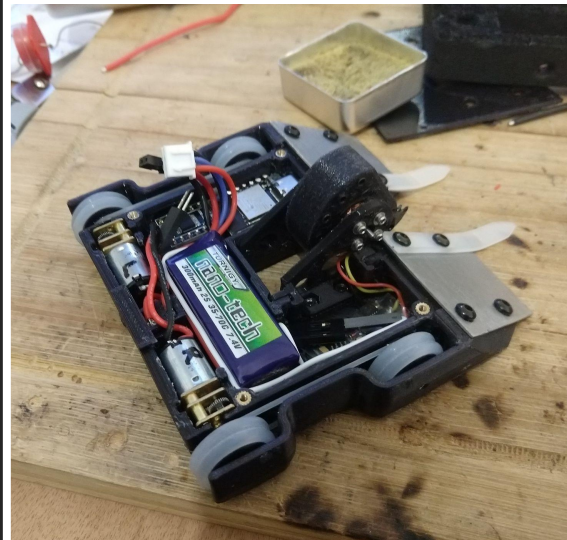
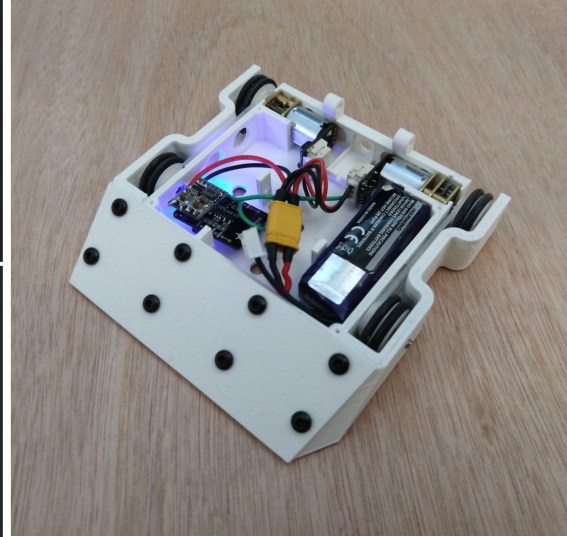


Fantastic way to learn from:

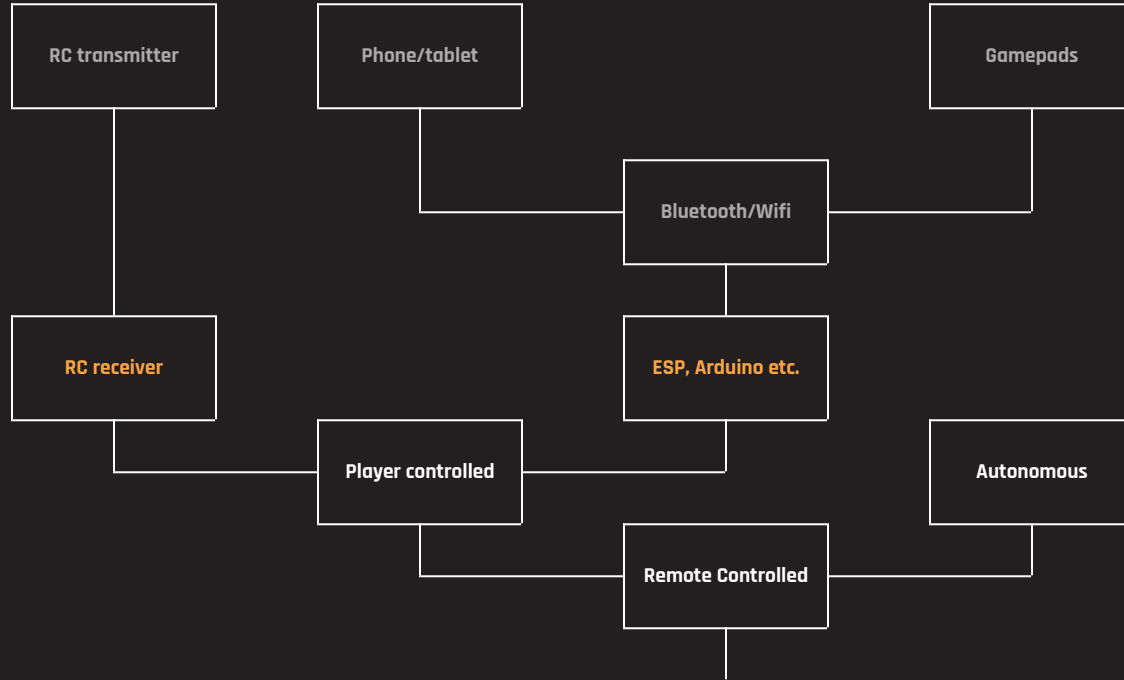
- Robotics
- Teamwork
- Materials
- Components
- Programming
- Electronics
- Pneumatics
- Mechanics



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Basics from controlling:



Starting costs examples:

Robots:

Drive kits: Battery, charger, LiPo safebag, weapon- and body materials not included in price.

Phone	Self made body, armours and weapon	65 € / student
Gamepad	Self made body, armours and weapon	105 € / student
RC	Self made body, armours and weapon	135 € / student

Build kits: Inc. battery, LiPo safebag and all bot components. Charger not included.

Phone	3D printed full set	159 € / student
Gamepad	3D printed full set	200 € / student
RC	3D printed full set	275 € / student

Full sets: Inc. charger, battery, LiPo safebag, materials. Self made body, armours, weapon.

Phone	Self made body, armours and weapon	129 € / student
Gamepad	Self made body, armours and weapon	169 € / student
RC	Self made body, armours and weapon	200 € / student

Prices are estimated and include Vat. 25,5%.



Combat arenas without electronics:

Open plastic league arena: 50 - 200 €

- Plywoods + woodmaterials
- Screws

Closed normal league arena: 800 - 1000 €

- Plywoods + wooden materials
- Polycarbonates
- Metals
- Screws

More from arenas: [Robosota ARENA GUIDELINES](#)

Material cost examples from 150 g bots:



	Bluetooth/Phone Full set. Selfmade body & armours	Price / pcs	Quantity needed to build one bot	Price total Vat. 25,5%
Transmitter	Android phone	0,00 €	1	0,00 €
Receiver	Beetle ESP32 - C3 (RISC-V Core Development Board)	11,00 €	1	11,00 €
Motor driver	HR8833 Thumbnail Sized DC Motor Driver 2x1.5A	7,00 €	1	7,00 €
Distributor & BEC	RR - CombatBot expansion board	12,00 €	1	12,00 €
Drive motors	N20 Gearmotor 6V 600RPM	8,50 €	2	17,00 €
Wheels	3mm Silicon Rubber O-Ring	0,20 €	8	1,60 €
Drivebelt	1.5mm Silicon Rubber O-Ring	0,10 €	2	0,20 €
Wires	22 AWG silicon wire, black + red (price 2x1m)	2,50 €	0,3	0,75 €
Power switch	RR - PCB Power Switch 10 A + allen key	4,50 €	1	4,50 €
Power switch bat.con	BT2.0 Male + female (Bot + battery)	2,00 €	1	2,00 €
Servo	Corona DS929HV (7.4v) M6 Digital Servo 2.4kg / 0.09sec / 12.5g	9,00 €	1	9,00 €
Nuts & bolts	12.9 / 10,8 Alloy steel bolts and nuts, heat inserts (Set)	6,00 €	1	6,00 €
Battery	Turnigy Nano-Tech 300mAh 2S 45-90C LiPo Pack	5,00 €	1	5,00 €
	LiPo safebag	8,00 €	1	8,00 €
Charger	iMAX B6 V3 80W 6A Battery Charger	25,00 €	1	25,00 €
Other materials	Body, armours... (Estimate)	20,00 €	1	20,00 €
			Total	129,05 €



	RC Full set. Selfmade body & armours	Price / pcs	Quantity needed to build one bot	Price total Vat. 25,5%
Transmitter	Flysky FS-i6 Transmitter	75,00 €	1	75,00 €
Receiver	Malenki Nano	34,00 €	1	34,00 €
Motor driver	Onboard	0,00 €	0	0,00 €
Distributor & BEC	Onboard	0,00 €	0	0,00 €
Drive motors	BBBxN&B Antweight N10 Gearmotors (600 / 1000 RPM) (price 1 pcs)	8,50 €	2	17,00 €
Wheels	3mm Silicon Rubber O-Ring	0,10 €	8	0,80 €
Drivebelt	1,5mm Silicon Rubber O-Ring	0,05 €	2	0,10 €
Wires	22 AWG silicon wire, black + red (price 2x1m)	1,50 €	0,3	0,45 €
Power switch	RR - PCB Power Switch 10 A + allen key	4,50 €	1	4,50 €
Power switch bat.con	BT2.0 Male + female (Bot + battery)	1,50 €	1	1,50 €
Servo	Corona DS929HV (7.4v) MG Digital Servo 2.4kg / 0.09sec / 12.5g	9,00 €	1	9,00 €
Nuts & bolts	12.9 / 10,8 Alloy steel bolts and nuts, heat inserts (Set)	5,00 €	1	5,00 €
Battery	Turnigy Nano-Tech 300mAh 2S 45-90C LiPo Pack	5,00 €	1	5,00 €
	LiPo safebag	8,00 €	1	8,00 €
Charger	iMAX B6 V3 80W 6A Battery Charger	25,00 €	1	25,00 €
Other materials	Body, armours... (Estimate)	20,00 €	1	20,00 €
			Total	205,35 €



Where to buy?

<https://shop.bristolbotbuilders.com/>
<https://www.fingertechrobotics.com/>
<https://hobbyking.com/>

British shop specialized into combat robotics

Canadian shop specialized into combat robotics

Transmitters, batteries, servos, brushless motors, ESC's

<https://www.aliexpress.com/>
<https://www.ebay.com/>

Nuts & bolts, bearings, brushless motors, ESC's etc.

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How to contact us?

You can contact us through email:
contact@robosota.fi

Find us from social medias:

Webpages:

<https://robosota.fi/>

Youtube:

<https://www.youtube.com/@Robosota>

Telegram:

<https://t.me/joinchat/AAAAAAtX2VbMUtuwh1w9pQ>

Facebook:

<https://www.facebook.com/groups/35317884617/>

