Table 1: Desired BOM

Component	Description	Purpose	#	á price (price per robot) SEK
DF45L024048-A	Brushless direct current (BLDC) motor with integrated hall sensors for the wheels	Used to spin the wheels of the robot.	4	830.4 (3273.60)
Hobbywing FPV XRotor 3110 900KV	Brushelss DC motor	High revolutions per minute (RPM) motor used to control the dribbler.	1	175.20 (175.20)
B-G431B-ESC1	BLDC motor driver	Motor driver with embedded μController current sensing and hall sensing to form a closed-loop control algorithm	5	208.96 (1044.8)
NUCLEO-H723ZG	μController	Computational power and real-time processing capabilities, supports μROS	1	322.58 (322.58)
Raspberry Pi 4 Model B/8GB	Single-board computer	Processing camera input and performing local path planning	1	979 (979)
TOF400C-VL53L1	Lidar	Chosen by UdeA for obstacle detection	2	176.32 (176.32)
VL6180 TOF	Lidar	Chosen by UdeA for obstacle detection	1	39.62 (39.62)
SX1280IMLTRT	Radio frequency (RF) transceiver	Used to transmit data over 2.4Ghz network	1	75.44 (75.44)
SKY66122-11	Integrated front-end-moduel (FEM)	Simplified integration with the RF circuit	1	40.48 (40.48)
6s 1300mAh -120C - GNB HV XT60	LiPo-battery	Used to power the robot	1	351.20 (351.20)
LT3750	Charging controller for the capacitors of the kicker	Charge controller for the kicker circuit	1	146.93 (146.93)
iC-PX2604 + PX01S 26-30	Wheel encoders	Will be used for odometry of the robot	4	224.40 (897.60)
WSEN-ISDS 6 Axis IMU	6-DoF IMU	Will be used for odometry of the robot	10	N/A
Raspberry Pi Camera-module 3	Camera	Provide images in front of the robot to detect the ball and obstacles	1	369 (369)
IR Break Beam Sensor - 5mm LEDs	Infrared (IR) sensor	Used to detect if the ball is close to the robot	1	99 (99)
JST 6B-PH-K-S	Connector	Hall sensor connector from the motor	4	3.85 (15.4)
JST B5P-VH	Connector	Motor connector	4	4.06 (16.24)
Connectors	Passive component	Supplied by Würth	N/A	N/A

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Component	Description	Purpose	#	á price (price per robot) SEK
Shaft hub with clamping bracket 4mm	Coupler	Couple the wheels with the motor shaft	4	139 (556)
Bearings	Bearings	Make the roller spin (dribbler)	2	18 (36)
Resistors	Passive component	Supplied by Würth or 326	N/A	N/A
Capacitors	Passive component	Supplied by Würth or 326	N/A	N/A
Voltage regulators	DC/DC buck converters	Supplied by Würth	N/A	N/A
Solenoid	Solenoid	Supplied by MDU	1	N/A
PCB	Printed circuit board (PCB)	The students will supply any custom PCB designed	2	N/A
LM74500 -QDDFRQ1	Reverse polarity protection	Used to protect against wrong polarity connections	1	16.45 (16.45)
BUK9Y8R5-80EX	N-channel mosfet	Used with the LM74500 -QDDFRQ1	1	17.95 (17.95)
SMBJ58A	TVS+	ESD protection diode, used in reverse polarity circuit	1	4.5 (4.5)
SMBJ26A	TVS-	ESD protection diode, used in reverse polairiy circuit	1	3.53 (3.53)
M3 16mm galvanized steel countersunk screw, 100 pack	Mounting screws	Screws for robot chassi	1	21.6 (21.6)
M3 galvanized steel locking washers, 200 pack	Washers	Chassi assembly	1	69.7 (69.7)
M3 steel locking washers, 200 pack	Locking washers	Chassi assembly	1	83.3 (83.3)
M3 stainless steel nut, 100 pack	Screw nut	Chassi assembly	1	21.85 (21.85)
M3 threaded inserts 3mm, 50 pack	Threades inserts	Chassi assembly	1	95 (95)
Bearings with flange iglidur® M250	Bearings for mini-wheels	Wheel assembly	100	3.34 (334)
X-RING 3.63X2.62/NBR70	Fasten the mini-wheels	Wheel assembly	100	6.2 (620)
Wheel hub 4mm	Fasten wheels to motor	Wheel assembly	4	139 (556)
Total price for 1 robot	**10457.69**			