Table 1: Alternative BOM that has equal components to UdeA

Component	Replaces	Purpose	#	á price (price per robot) SEK
MN5208 Navigator Type UAV Multi-Motor KV340	DF45L024048-A	BLDC motor	4	1027.32 (4109.28)
Hobbywing FPV XRotor 3110 900KV	N/A	High revolutions per minute (RPM) motor used to control the dribbler.	1	175.20 (175.20)
B-G431B-ESC1	N/A	Motor driver with embedded μController current sensing and hall sensing to form a closed-loop control algorithm	5	208.96 (1044.8)
ESP32-S3-DevKitC-1-N32R8V	NUCLEO-H723ZG	Chosen by UdeA	1	181.82 (181.82)
TOF400C-VL53L1	N/A	Chosen by UdeA for obstacle detection	2	176.32 (176.32)
VL6180 TOF	N/A	Chosen by UdeA for obstacle detection	1	39.62 (39.62)
GY-9960-3.3 APDS-9960	N/A	Chosen by UdeA for ball detection	1	44.80 (44.80)
Raspberry Pi 4 Model B/8GB	N/A	Processing camera input and performing local path planning	1	979 (979)
SX1280IMLTRT	N/A	Used to transmit data over 2.4Ghz network	1	75.44 (75.44)
SKY66122-11	N/A	Simplified integration with the RF circuit	1	40.48 (40.48)
6s 1300mAh -120C - GNB HV XT60	N/A	Used to power the robot	1	351.20 (351.20)
LT3750	N/A	Charge controller for the kicker circuit	1	146.93 (146.93)
AS5600-SO_EK_AB	iC-PX2604 + PX01S 26-30	Will be used for odometry of the robot	4	224.40 (897.60)
WSEN-ISDS 6 Axis IMU	N/A	Will be used for odometry of the robot	10	N/A
Raspberry Pi Camera-module 3	N/A	Provide images in front of the robot to detect the ball and obstacles	1	369 (369)
IR Break Beam Sensor - 5mm LEDs	N/A	Used to detect if the ball is close to the robot	1	99 (99)
Connectors	N/A	Supplied by Würth	N/A	N/A
Shaft hub with clamping bracket 4mm	N/A	Couple the wheels with the motor shaft	4	139 (556)
Bearings	N/A	Make the roller spin (dribbler)	2	18 (36)

Table 1: Alternative BOM that has equal components to UdeA

Component	Replaces	Purpose	#	á price (price per robot) SEK
Resistors	N/A	Supplied by Würth or 326	N/A	N/A
Capacitors	N/A	Supplied by Würth or 326	N/A	N/A
Voltage regulators	N/A	Supplied by Würth	N/A	N/A
Solenoid	N/A	Supplied by MDU	1	N/A
PCB	N/A	The students will supply any custom PCB designed	2	N/A
LM74500 -QDDFRQ1	N/A	Used to protect against wrong polarity connections	1	16.45 (16.45)
BUK9Y8R5-80EX	N/A	Used with the LM74500 -QDDFRQ1	1	17.95 (17.95)
SMBJ58A	N/A	ESD protection diode, used in reverse polarity circuit	1	4.5 (4.5)
SMBJ26A	N/A	ESD protection diode, used in reverse polairiy circuit	1	3.53 (3.53)
M3 16mm galvanized steel countersunk screw, 100 pack	N/A	Chassi assembly	1	21.6 (21.6)
M3 galvanized steel locking washers, 200 pack	N/A	Chassi assembly	1	69.7 (69.7)
M3 steel locking washers, 200 pack	N/A	Chassi assembly	1	83.3 (83.3)
M3 stainless steel nut, 100 pack	N/A	Chassi assembly	1	21.85 (21.85)
M3 threaded inserts 3mm, 50 pack	N/A	Chassi assembly	1	95 (95)
Bearings with flange iglidur® M250	N/A	Wheel assembly	100	3.34 (334)
X-RING 3.63X2.62/NBR70	N/A	Wheel assembly	100	6.2 (620)
Wheel hub 4mm	N/A	Wheel assembly	4	139 (556)
Total price for 1 robot	**11194.09**			