



**You**

Can you make me a challenge that involves engineering is budget friendly (arduino and 3d printing)



**ChatGPT**

Certainly! Here's a budget-friendly engineering challenge

### **Challenge: DIY RC Car with Steering Servo**

#### **Objective:**

Design and build a remote-controlled (RC) car using Arduino, servo motor for steering, and 3D printed components for the chassis and body.

#### **Requirements:**

1. Arduino board (Arduino Uno or Arduino Nano)
2. Motor controller (H-Bridge motor driver)
3. DC motors (for driving the wheels)
4. Servo motor (for steering)
5. RC transmitter and receiver module
6. 3D printer and filament
7. Batteries (for powering the Arduino, motors, and servo)
8. Wheels and tires
9. Basic tools for assembly and wiring

#### **Challenge Tasks:**

1. Design and 3D print the chassis and body parts for the RC car. Consider factors such as durability, weight distribution, and mounting points for electronic components.
2. Write Arduino code to interface with the RC receiver and control the motors and servo. The code should interpret signals from the RC transmitter to adjust the speed and direction of the motors and control the steering servo.
3. Assemble the electronic components onto the chassis, including mounting the Arduino, motor controller, servo, and batteries. Ensure proper wiring connections and secure placement.
4. Install the wheels and tires onto the motors and connect the steering servo to the front axle or wheels.
5. Test the RC car by pairing it with the RC transmitter and verifying that you can control its movement and steering remotely.
6. Fine-tune the code and hardware as needed for better performance, such as adjusting motor speeds, steering sensitivity, and turning radius.

#### **Optional Enhancements:**

- Add sensors (such as ultrasonic or infrared sensors) for obstacle avoidance or line following capabilities.
- Incorporate LED lights for improved visibility, especially when driving in low-light conditions.
- Design and print additional accessories or features for the car, such as a spoiler, roll cage, or custom body decals.

This challenge will provide hands-on experience in electronics, programming, and mechanical design, while also allowing for creativity in customizing the RC car's appearance and functionality. Have fun building and experimenting with your DIY RC car!



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