

Automotive Engineering

Glossary

WORDS TO KNOW

Assembly line—when workers, machines, and materials are arranged in a line to build a product

Automotive design—imagining and creating new cars and other vehicles

Automotive engineering—using math and science to build cars and other vehicles. People who do this are called automotive engineers.

Automotive manufacturing—putting together parts in a factory to make a lot of the same car or vehicle

Cargo—things carried in a vehicle

Criteria—the important goals for a vehicle's design. It includes the parts all vehicles have (such as doors and wheels), special features, and any other requirements (goals) for what the vehicle needs to be able to do.

Customer—the person or people who will be using a product

Design Thinking Process—the steps automotive teams take to solve problems and create vehicles. They define the need, brainstorm solutions, design (make a plan), build, test and evaluate, redesign, and share.

Die press—a tool in manufacturing that can shape and cut out materials, like metal, into vehicle parts

Efficient—doing something without wasting time or materials

Exterior—the outside of a vehicle

Factory—a big building with lots of machines and people that make products to sell

Feature—any part of a vehicle's design that makes it especially useful, fun, or different from other vehicles, like doors that open and close automatically on a minivan, special trim on the seats, or a new fuel-efficient engine

High quality product—an object (such as a car) that's made safely and without any mistakes. When manufacturers check to make sure their products are well made, that's called quality control.

Interior—the inside of a vehicle

Iteration—a revised version of a design

Manufacturing—assembling parts in a factory to make a lot of a product to sell. When cars are made at a factory, they're manufactured.

Mobility—the ability to move. In the automotive industry, vehicles and other machines that move people and things from place to place are different forms (or modes) of mobility.

Passenger—a person who rides in a vehicle

Prototype—a quick way to test an idea or show it to others. It can be a sketch or a model of your vehicle made with everyday materials like cardboard, paper, string, rubber bands, etc. Prototyping is the process of testing the model to see if it works.

Teamwork—people working together to solve a problem or play a game

Transport—to carry someone or something from place to place

Transportation—how people move themselves and things from one place to another

Vehicle—a machine, usually with wheels and an engine, used for moving people or things on land, usually on a road. Some examples are cars, SUVs, trucks, and motorcycles.

CAREERS IN THE AUTOMOTIVE ENGINEERING BADGE SERIES

Automotive Design

Clay sculptor—a person who makes models of vehicles out of clay

Creative designer—a person who comes up with ideas for new vehicles, such as new styles of sports cars, cars that are powered by electricity instead of gasoline, or vehicles to carry special cargo. Since designing a vehicle is a big job, there are different types of creative designers that focus on creating different parts of the vehicle such as the color and trim or the bumpers and doors.

Automotive Engineering

Systems engineer—a person who creates sets of vehicle parts that work together, like the wheels, axles, and other parts that help the vehicle “go” or all the electrical parts like the lights, the radio, and windows. She makes sure that the parts work well, are safe, and don’t cost too much to make.

Vehicle parts design engineer—a person who creates the parts for a new vehicle, making sure they meet safety, cost, weight, and performance requirements

Automotive Manufacturing

Assembly line operator—a person in a factory whose job it is to install a certain part of a product. For example, if the factory is manufacturing vehicles, each operator might install one particular part on a car, like the seatbelts, for every car that comes down the assembly line.

Launch engineer—a person who helps to update the assembly lines when a factory gets ready to make a new vehicle. She changes the assembly lines to make the new product and teaches people their new jobs.

Manufacturing engineer—a person who makes sure new vehicles can actually be built in a factory with real materials, machines, and workers. They make sure the criteria and instructions from the engineering team can be used to build the vehicle, over and over again.

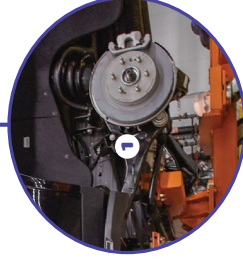
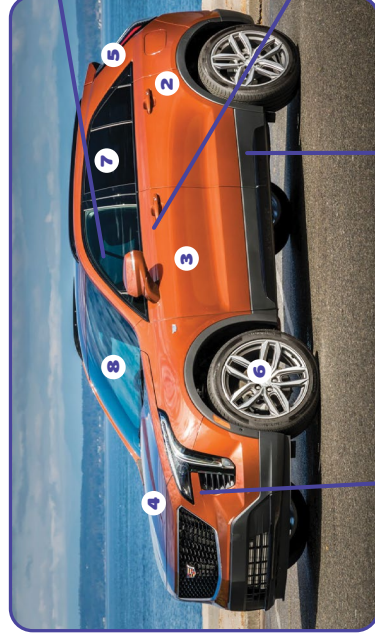
Plant engineer—a person who oversees the whole factory and makes sure the workers are safely making all the vehicles they’re supposed to every day

PARTS OF A VEHICLE

Cars and other vehicles are made up of lots of parts. There are parts on the outside, or the **exterior**, and parts on the inside, or the **interior**.

EXTERIOR

- 1 The **axles** connect two wheels and spin, causing the wheels to turn.
- 2 The **body** is the outside shape of a vehicle.
- 3 **Doors** open and close to let people get in and out.
- 4 The **hood** can be opened to take care of the engine and other parts.
- 5 People store cargo in the **trunk** of a vehicle.
- 6 Most vehicles have four **wheels** with tires that roll to move the car.
- 7 **Windows** help people inside the vehicle see where they're going.
- 8 The **windshield** lets the driver see in front of the vehicle.



INTERIOR

- 9 The **engine** powers the vehicle to make it go.
- 10 Each passenger sits in a **seat** with a **seat belt** to keep them safe if there's an accident.
- 11 The driver rotates the **steering wheel** to make the vehicle turn.