



# **SNS COLLEGE OF TECHNOLOGY**

**(An Autonomous Institution)**

**COIMBATORE-35.**



Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A++' Grade  
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai.

## **DEPARTMENT OF AUTOMOBILE ENGINEERING**

**COURSE NAME : 19AUB202 – AUTOMOTIVE SYSTEMS**

**II YEAR / III SEMESTER**

**Unit 4 – Suspension System**

**Topic : Independent Suspension System**



# INDEPENDENT SUSPENSION SYSTEM

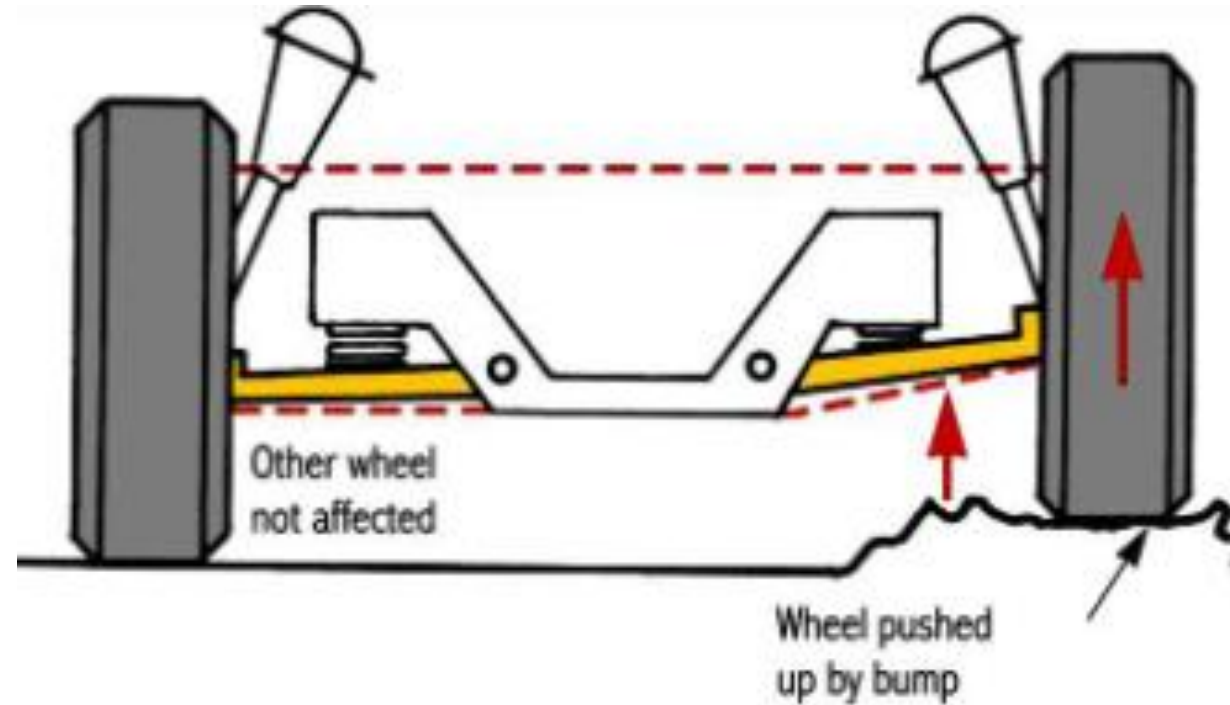


- ❖ Independent suspension is a type of vehicle suspension system in which each wheel on an axle is allowed to move vertically independently of the other wheels.
- ❖ This is in contrast to a solid axle suspension system, where the movement of one wheel can affect the others on the same axle.
- ❖ Independent suspension systems provide benefits in terms of ride comfort, handling, and adaptability to different road conditions, making them a popular choice in modern vehicles.



# COMPONENTS

- ❖ Control Arms (A-arms)
- ❖ Struts or Shock Absorbers
- ❖ Springs





# MACPHERSON STRUT SUSPENSION SYSTEM



- ❖ MacPherson strut suspension is a simple and commonly used design.
- ❖ It consists of a single control arm (lower control arm) attached to the wheel hub and a strut assembly that combines a shock absorber and a coil spring.
- ❖ Commonly found in front-wheel-drive vehicles, it provides a compact and space-efficient design.

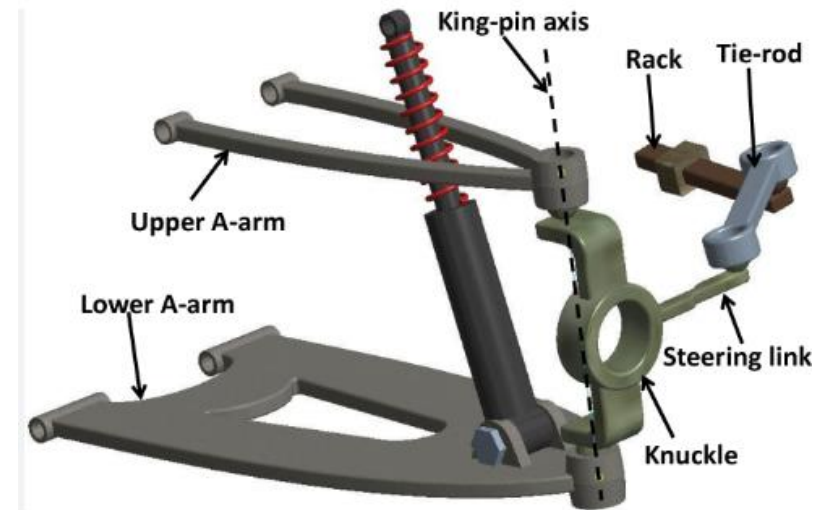




# DOUBLE-WISHBONE (A-ARM) SUSPENSION



- ❖ Double-wishbone suspension has an upper and lower control arm forming a roughly triangular shape, resembling the letter "A."
- ❖ The wheel hub is attached between these arms, and the shock absorber and spring are usually separate components.
- ❖ Common in both front and rear suspensions of many performance-oriented and luxury vehicles due to its ability to provide precise wheel control.

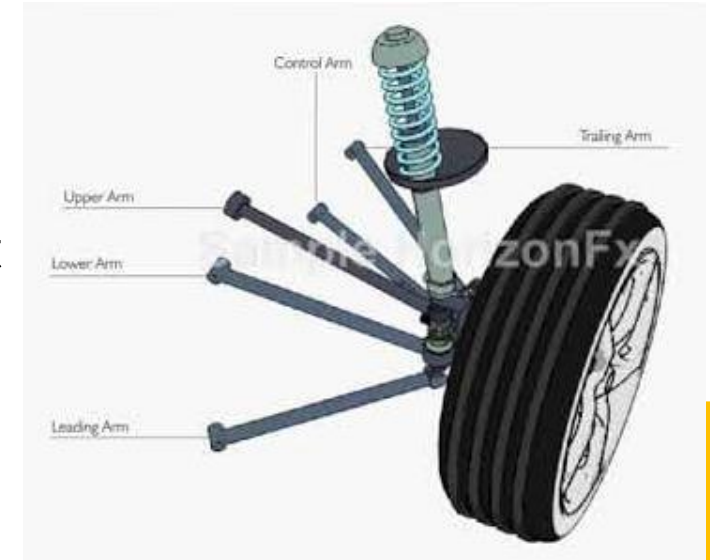




# MULTI LINK SUSPENSION



- ❖ Multi-link suspension uses multiple links and control arms to connect the wheel hub to the chassis.
- ❖ This design allows for more control over wheel movement and provides a good balance between ride comfort and handling performance.
- ❖ Found in a variety of vehicles, including sedans, SUVs, and high-performance cars, where a compromise between comfort and sportiness is desired.

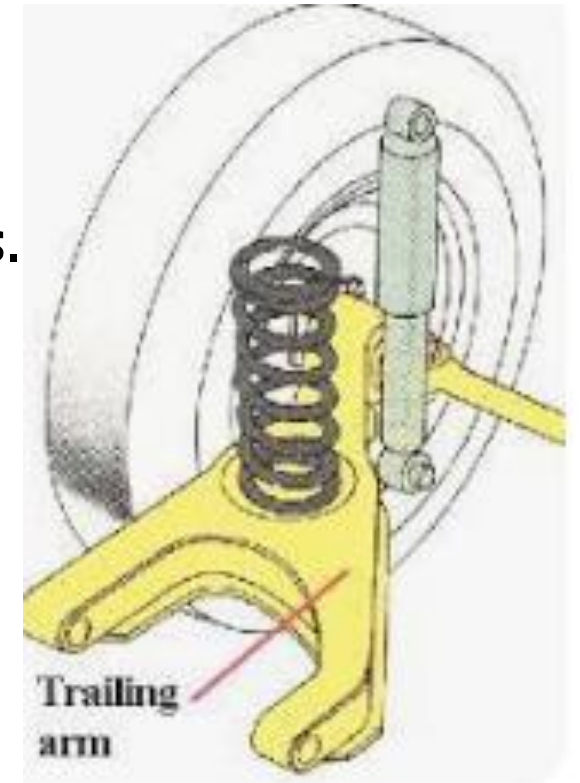




# TRAILING ARM SUSPENSION



- ❖ Trailing arm suspension features one or more arms that trail behind the vehicle's axle, providing a simple design with good wheel control.
- ❖ It is often used in the rear suspension of smaller vehicles.
- ❖ Common in compact cars and some rear-wheel-drive vehicles.

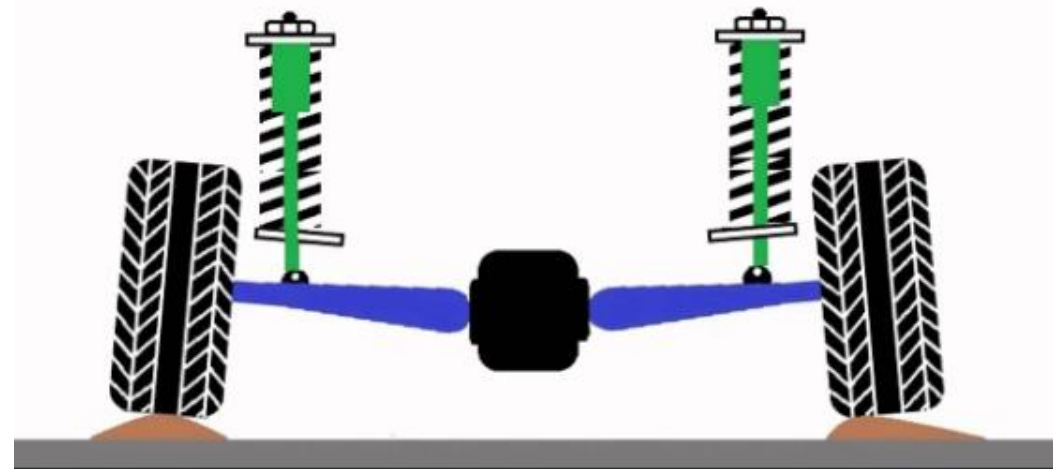




# SWING AXLE SUSPENSION



- ❖ Swing axle suspension uses half-shafts connected to a pivot point on the chassis.
- ❖ As the wheel moves up and down, the axle swings, allowing for independent wheel movement.
- ❖ Historically used in some rear-engine and rear-wheel-drive vehicles, but it has largely been replaced by more sophisticated designs.



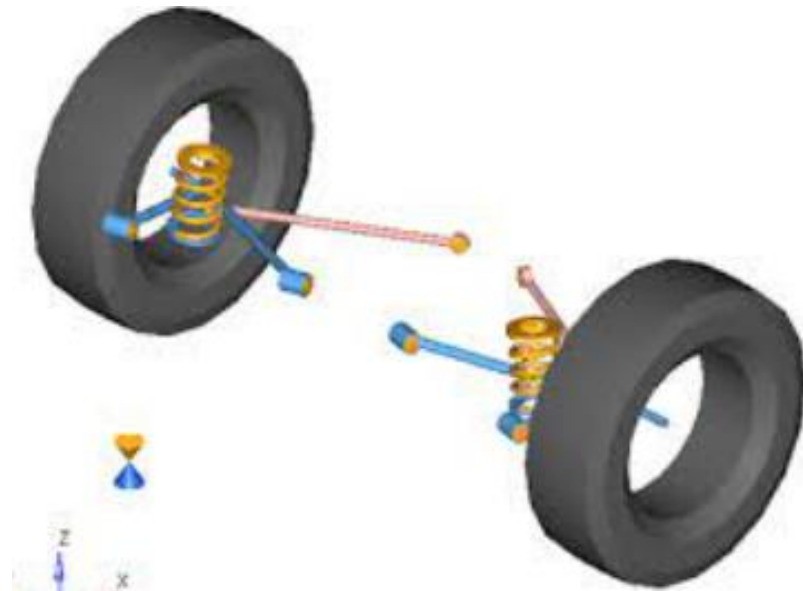




# SEMI TRAILING ARM SUSPENSION



- ❖ Semi-trailing arm suspension is a variation of trailing arm suspension, with the arms angled to provide a compromise between independent wheel movement and stability during cornering.
- ❖ Previously used in some rear-wheel-drive vehicles, it has become less common in modern designs.





# APPLICATIONS



- ❖ Passenger Cars:
- ❖ SUVs (Sports Utility Vehicles)
- ❖ Crossover Vehicles
- ❖ Sports Cars
- ❖ Luxury Cars
- ❖ Motorcycles
- ❖ Off-Road Vehicles:
- ❖ Electric Vehicles (EVs)



THANK YOU !!!