NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY
SERGARH-756060, BALASORE (ODISHA)
(Approved by AICTE& affiliated to SCTE&VT, Odisha)

LESSON PLAN

SUBJECT: Th-2 (AUTOMOTIVE SYSTEM & HEAVY EQUIPMENTS)

Name Of The Faculty :- Er. Nihar Ranjan Sahoo
Branch :- Automobile Engineering **Semester :-** 6th
Session :- 2024-25 **Examination :-** 2025 (S)

CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	No. of periods actually needed
1	FRONT AXLE	5	6
2	STEERING & STEERING GEOMETRY	8	10
3	SUSPENSION SYSTEM	11	13
4	BRAKES SYSTEM	20	22
5	WHEEL & TYRES	6	8
6	CHASSIS & HEAVY EQUIPMENTS	10	12
	Total Period:	60	71

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Discipline: AUTOMOBILE ENGINEERING	Semester: 6th	**Name of the Teaching Faculty:** Er. Nihar Ranjan Sahoo
		SESSION : 2024-25 **EXAMINATION :** 2025 (S)
Week	**Class Day**	**Topics to be Covered**
1st	1st	Introduction to Automotive System.
	2nd	**1. FRONT AXLE** Introduction & study of front axle assemblies.
	3rd	Front axle function, construction & Types of stub axle
	4th	Front axle function, construction & Types of stub axle
	5th	Front axle function, construction & Types of stub axle
2nd	1st	Front wheel assembly.
	2nd	Front wheel assembly.
	3rd	**2. STEERING & STEERING GEOMETRY** Introduction of steering system, function of steering
	4th	Principle of correct steering & Components of steering system & Types of steering gear.
	5th	Principle of correct steering & Components of steering system & Types of steering gear.
3rd	1st	Principle of correct steering & Components of steering system & Types of steering gear.
	2nd	Steering geometry i.e. camber, caster, king-pin, Inclination, understeer, oversteer, combined angle
	3rd	Steering geometry i.e. camber, caster, king-pin, Inclination, understeer, oversteer, combined angle
	4th	Steering geometry i.e. camber, caster, king-pin, Inclination, understeer, oversteer, combined angle
	5th	Toe-in Toe-out,wheel alignment & effects of incorrect wheel alignment, steering turning angle and turning radius.
4th	1st	Toe-in Toe-out,wheel alignment & effects of incorrect wheel alignment, steering turning angle and turning radius.
	2nd	Toe-in Toe-out,wheel alignment & effects of incorrect wheel alignment, steering turning angle and turning radius.
	3rd	**3. SUSPENSION SYSTEM** Introduction & function & requirement of suspension system.
	4th	Types of suspension spring like leaf spring, coil spring, rubber torsion unit, Torsion bar.
	5th	Types of suspension spring like leaf spring, coil spring, rubber torsion unit, Torsion bar.

Week	Class Day	Topics to be Covered
5th	1st	Types of suspension spring like leaf spring, coil spring, rubber torsion unit, Torsion bar.
	2nd	Types of suspension spring like leaf spring, coil spring, rubber torsion unit, Torsion bar.
	3rd	Types of suspension system such as independent suspension system, rigid axle Suspension system, its advantages and disadvantages
	4th	Types of suspension system such as independent suspension system, rigid axle Suspension system, its advantages and disadvantages
	5th	Types of suspension system such as independent suspension system, rigid axle Suspension system, its advantages and disadvantages
6th	1st	Types of suspension system such as independent suspension system, rigid axle Suspension system, its advantages and disadvantages
	2nd	Types of suspension system such as independent suspension system, rigid axle Suspension system, its advantages and disadvantages
	3rd	Stabilizer bar & shock absorber.
	4th	Stabilizer bar & shock absorber.
	5th	Stabilizer bar & shock absorber.
7th	1st	**4. BRAKE SYSTEM** Introduction, Principle of operation and requirements of brakes.
	2nd	Types of brakes such as drum brakes and its leading & trailing shoes, disc brakes. Brake fade.
	3rd	Types of brakes such as drum brakes and its leading & trailing shoes, disc brakes. Brake fade.
	4th	Types of brakes such as drum brakes and its leading & trailing shoes, disc brakes. Brake fade.
	5th	Hydraulic brakes and its components like master cylinder, tandem master cylinder, wheel cylinder, brake fluid and brake fluid grades.
8th	1st	Hydraulic brakes and its components like master cylinder, tandem master cylinder, wheel cylinder, brake fluid and brake fluid grades.
	2nd	Hydraulic brakes and its components like master cylinder, tandem master cylinder, wheel cylinder, brake fluid and brake fluid grades.
	3rd	Hydraulic brakes and its components like master cylinder, tandem master cylinder, wheel cylinder, brake fluid and brake fluid grades.
	4th	Hydraulic brakes and its components like master cylinder, tandem master cylinder, wheel cylinder, brake fluid and brake fluid grades.
	5th	Hydraulic brakes and its components like master cylinder, tandem master cylinder, wheel cylinder, brake fluid and brake fluid grades. Advantages and disadvantages of hydraulic brakes.
9th	1st	Hydraulic brakes and its components like master cylinder, tandem master cylinder, wheel cylinder, brake fluid and brake fluid grades. Advantages and disadvantages of hydraulic brakes.

Week	Class Day	Topics to be Covered
9th	2nd	brake fluid and brake fluid grades. Advantages and disadvantages of hydraulic brakes.
	3rd	brake fluid and brake fluid grades. Advantages and disadvantages of hydraulic brakes.
	4th	Power brake types, working and construction of air brake & handbrake.
	5th	Power brake types, working and construction of air brake & handbrake.
10th	1st	Power brake types, working and construction of air brake & handbrake.
	2nd	Power brake types, working and construction of air brake & handbrake.
	3rd	Power brake types, working and construction of air brake & handbrake.
	4th	Adjustment and bleeding of brake.
	5th	Common brake problems.
11th	1st	Anti-lock braking system.
	2nd	Anti-lock braking system.
	3rd	**INTERNAL ASSESMENT.**
	4th	**INTERNAL ASSESMENT.**
	5th	**5. WHEEL & TYRES** Introduction Basic construction of a tyre
12th	1st	Tyre dimension Classification of tyre, advantages and disadvantages of radial ply tyres over cross ply tyre.
	2nd	Tyre size designation
	3rd	Different types of tyre damages
	4th	Different types of tyre damages
	5th	Wheel, and its type
13th	1st	Wheel, and its type
	2nd	Wheel dimensions Wheel designation
	3rd	**6. CHASSIS & HEAVY EQUIPMENTS** Introduction and lay out of chassis showing its main components.
	4th	Types of chassis, frame and important chassis layouts.
	5th	Types of chassis, frame and important chassis layouts.
14th	1st	Tractor and its construction, Classification, construction and description of dump truck, grader, road roller, dozer, loader, cranes, scraper.

Week	Class Day	Topics to be Covered
14th	2nd	Tractor and its construction, Classification, construction and description of dump truck, grader, road roller, dozer, loader, cranes, scraper.
	3rd	Tractor and its construction, Classification, construction and description of dump truck, grader, road roller, dozer, loader, cranes, scraper.
	4th	Tractor and its construction, Classification, construction and description of dump truck, grader, road roller, dozer, loader, cranes, scraper.
	5th	Tractor and its construction, Classification, construction and description of dump truck, grader, road roller, dozer, loader, cranes, scraper.
15th	1st	Tractor and its construction, Classification, construction and description of dump truck, grader, road roller, dozer, loader, cranes, scraper.
	2nd	Tractor and its construction, Classification, construction and description of dump truck, grader, road roller, dozer, loader, cranes, scraper.
	3rd	Tractor and its construction, Classification, construction and description of dump truck, grader, road roller, dozer, loader, cranes, scraper.
	4th	Tractor and its construction, Classification, construction and description of dump truck, grader, road roller, dozer, loader, cranes, scraper.
	5th	REVISION

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