

GOVERNMENT POLYTECHNIC, NABARANGPUR DEPARTMENT OF AUTOMOBILE ENGINEERING		
Discipline: AUTOMOBILE ENGG.	Semester: 6TH	Name of the Teaching Faculty: RABINDRA PRASAD RATH
Subject: TH2. AUTOMOTIVE SYSTEM & HEAVY EQUIPMENTS	No. of days/per week class allotted: 4	Semester From date: 04-02-2025 To Date: 17-05-2025 No. of Weeks: 15
COURSE OUTCOMES	CO1: Able to know about the function & assembly of Steering mechanism & steering geometry CO2: Able to know about the suspension system and working Principle, types & functioning of brake. CO3: Able to know about the function of wheels, Tyres & designation, dimensions CO4: Able to know about the chassis of vehicle and various heavy equipment's.	
Week	Class Day	Theory/Practical Topics
1ST	1ST	1. FRONT AXLE Introduction & study of front axle assemblies
	2ND	Front axle function, construction & Types of stub axle
	3RD	Front wheel assembly
	4TH	Front wheel assembly
2ND	1ST	2. STEERING & STEERING GEOMETRY Introduction of steering system, function of steering
	2ND	Principle of correct steering & Components of steering system & Types of steering gear. Steering geometry i.e. camber, caster, king-pin, Inclination, understeer, oversteer
	3RD	Steering geometry i.e. camber, caster, king-pin, Inclination, understeer, oversteer
	4TH	Toe-in Toe-out, wheel alignment & effects of incorrect wheel alignment, steering turning angle and turning radius

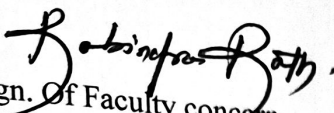
3 RD	1 ST	Toe-in Toe-out, wheel alignment & effects of incorrect wheel alignment, steering turning angle and turning radius
	2 ND	3. SUSPENSION SYSTEM Introduction & function & requirement of suspension system.
	3 RD	Types of suspension spring like leaf spring, coil spring, rubber torsion unit, Torsion bar.
	4 TH	Types of suspension system such as independent suspension system, rigid axle
4 TH	1 ST	Suspension system, its advantages and disadvantages. Stabilizer bar & shock absorber.
	2 ND	4. BRAKE SYSTEM Introduction, Principle of operation and requirements of brakes.
	3 RD	Types of brakes such as drum brakes and its leading & trailing shoes, disc brakes. Brake fade.
	4 TH	Hydraulic brakes and its components like master cylinder, tandem master cylinder,
5 TH	1 ST	brake fluid and brake fluid grades. Advantages and disadvantages of hydraulic brake.
	2 ND	Power brake types, working and construction of air brake & handbrake.
	3 RD	Adjustment and bleeding of brake.
	4 TH	Common brake problems. Anti-lock braking system.
6 TH	1 ST	brake fluid and brake fluid grades. Advantages and disadvantages of hydraulic brake.
	2 ND	Power brake types, working and construction of air brake & handbrake.
	3 RD	Power brake types, working and construction of air brake & handbrake.
	4 TH	Adjustment and bleeding of brake.
7 TH	1 ST	Common brake problems. Anti-lock braking system.
	2 ND	5. WHEEL & TYRES Introduction Basic construction of a tyre

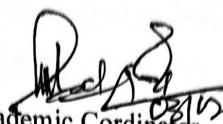
		Introduction Basic construction of a tyre
	3 RD	Tyre dimension
	4 TH	Classification of tyre, advantages and disadvantages of radial ply tyres over cross ply tyre. Tyre size designation
8 TH	1 ST	Classification of tyre, advantages and disadvantages of radial ply tyres over cross ply tyre. Tyre size designation
	2 ND	Different types of tyre damages

	3 RD	Different types of tyre damages
	4 TH	Wheel, and its type
9 TH	1 ST	Wheel, and its type
	2 ND	Wheel dimensions Wheel designation
	3 RD	Wheel dimensions Wheel designation
10 TH	4 TH	6. CHASSIS & HEAVY EQUIPMENTS Introduction and lay out of chassis showing its main components.
	1 ST	Introduction and lay out of chassis showing its main components.
	2 ND	Types of chassis
	3 RD	Types of frames
11 TH	4 TH	Types of chassis
	1 ST	Types of frames
	2 ND	Types of important chassis layouts.
	3 RD	Types of important chassis layouts.
	4 TH	Tractor and its construction

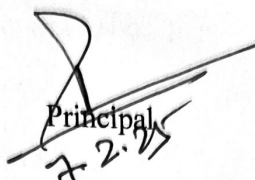
12 TH	1 ST	Tractor and its construction
	2 ND	Tractor and its construction
	3 RD	Classification, construction and description of dump truck
	4 TH	Classification, construction and description of dump truck
13 TH	1 ST	REVISION
	2 ND	Classification, construction and description of grader.
	3 RD	Classification, construction and description road roller.
	4 TH	Classification, construction and description dozer.
14 TH	1 ST	Classification, construction and description cranes
	2 ND	Classification, construction and description scraper.
	3 RD	REVISION
	4 TH	Classification, construction and description cranes
15 TH	1 ST	Classification, construction and description scraper.
	2 ND	MONTHLY QUIZ
	3 RD	construction and description of dump truck,
	4 TH	construction and description of dump truck,

<u>LEARNING RESOURCES:</u>			
<u>SL. NO.</u>	<u>NAME OF AUTHORS</u>	<u>TITLE OF THE BOOK</u>	<u>NAME OF THE PUBLISHER</u>
<u>1</u>	<u>KIRPAL SINGH</u>	<u>AUTOMOBILE ENGINEERING VOL-1 & 2</u>	<u>STD PUBLISHERS</u>
<u>2</u>	<u>RB GUPTA</u>	<u>AUTOMOBILE ENGINEERING</u>	<u>SATYA PRAKASHAN PUBLISHERS</u>
<u>3</u>	<u>Er. S.K. GUPTA</u>	<u>AUTOMOBILE ENGINEERING</u>	<u>S. CHAND</u>
<u>4</u>	<u>W.H. COURSE</u>	<u>AUTOMOTIVE CHASSIS & BODY</u>	<u>MC GRAWHILL</u>
<u>5</u>	<u>S.C. SHARMA</u>	<u>CONSTRUCTION EQUIPMENT AND ITS MANAGEMENT</u>	<u>SHARMA KHANNA PUBLISHER</u>


Sign. Of Faculty concern


Academic Coordinator


Sign. Of HOD I/C


Principal
7.2.25