

4062 - AUTO CHASIS - II									
Teaching Schedule Per Week			Progressive Assessment		Examination Schedule (Marks)				
Lectures	Practical	Credits			Theory		Practical Ex.	Total	
3	2	5	25	25	3 Hrs.	100	-	150	
Pre-requisite		Source	Semester		Theory	Test	Total	TW	PR
4055					75	25	100	25	-
								Gr Total	4
								125	

Rationale: Every Automobile Engineer is expected to possess some knowledge about the performance and constructional details of a vehicle. This would also include knowledge about details of bodybuilding and other chassis systems, which would enable him ultimately to carry out the maintenance and repair of an automobile.

COURSE CONTENTS		Hrs	Mks
1. PERFORMANCE OF AUTOMOBILE			24
Types of resistances like Air, Rolling and gradient resistance with amprirical relations, Tractor, Tractive effort, Relation between engine revolutions, torque and vehicle speed, type torque. Transmission efficiency – Overall gear ratio, Road performance curves, Acceleration, gradiability, Draw bar pole, Gear ratio requirement, weight distribution, stability of vehicle on slopes, turns and levelled road, Dynamics of vehicle on banked tracks, Vehicle vibrations like rolling, pitching, swaying and bouncing, Problems on stability, power requirement			
2. BODY ENGINEERING			20
Conventional trends, Integral, framed structure. Comparison of both, Types of Integral body like unitary skeleton, sub frame construction, Body function and requirement, layout of compartments like engine, passenger and luggage, Shape of body, Stream lining of body. Aerodynamic coefficient, Air pressure distribution, Visibility, Body mechanisms, door lock, driver seat mechanism, luxury seat mechanism, Body protection by mettalic, organic and inorganic coatings.			
3. STEERING SYSTEM			20
Function of steering system, Simple steering linkage, Fundamental condition for true rolling, Turning circle radius, Reversibility, semi-reversibility, Actual mechanism, Davis steering mechanism, Steering linkages used in practice like parallelogram linkage, 3- piece linkage, centre arm steering, Front wheel geometry – caster, and camber angle, Toe – in, Toe – out, kingpin inclination included angle, Ackerman angle, Types of steering gear boxes – worm and sector type, worm and roller, corn and follower, rack and pinion, Power assisted steering and power steering, Problems involving calculations of lock angles and turning circle radius.			
4. TRANSMISSION			16
Fluid flywheel, Torque convertor, Epicyclic gear train, Automatic gear boxes like hydramatic belt driven type, Semi Automatic gear boxes, Overdrive			
5. VEHICLE SUSPENSION			20
Types of suspension springs – leaf spring, coil spring, torsion bar, Shock absorbers, telescope type, Independent suspension – front wheel independent, types of independent suspension like – wishbone type, mac pherson type, vertical guide type, Trailing link type, swing half will type, Introduction to air suspension.			
Total			100

TERM WORK

Term work shall be presented in the form of journal, which consists of following: -

1. Problems involving calculation of power requirement.

SYLLABI OF COURSES FOR DIPLOMA PROGRAMME IN AUTOMOBILE ENGINEERING, LEVEL IV & V

2. Problem involving calculation of limiting speed, banking angle.
3. Drawing of different body mechanisms.
4. Explanation on visibility, stream lining etc.
5. Graphical measurement of lock angles, and comparing with calculated angle.
6. Problems involving the calculations of lock angles turning circle radius
7. Explaining working of transmission units with sketches.
8. Explaining working of type of independent suspension systems with sketch.

REFERENCE BOOKS:

1. Automobile Engg. by Kirpal Singh.
2. Auto Engineering by B.S. Narang.
3. Automobile Mechanics by Dr. N. K. Gere.
3. Vehicle body Engineering by J. Pawlowski.

