Program : **Diploma in Automobile Engineering**	
Course Code : **6052B**	Course Title: **Elementary Automobile Engineering**
Semester : **6**	Credits: **4**
Course Category: **Open Elective**	
Periods per week: **4 (L:3, T:1, P:0)**	Periods per semester: **60**

Course Objectives:

Course Prerequisites:

Topic	Course code	Course Name	Semester
Knowledge of basic science		Applied Physics I	1
Knowledge of basic science		Applied Physics II	2

Course Outcomes:

On completion of the course, the student will be able to:

COn	Description	Duration (Hours)	Cognitive level
CO1	Outline the engine principle and fundamentals	14	Understanding
CO2	Illustrate the functions and construction materials of engine components	15	Understanding
CO3	Show various components of Automobile transmission line	15	Understanding
CO4	Illustrate various components of Automobile chassis	14	Understanding
	Series Test	2	

CO – PO Mapping:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	2						
CO2	2						
CO3	2						
CO4	2						

3-Strongly mapped, 2-Moderately mapped, 1-Weakly mapped

Course Outline:

Module Outcomes	Description	Duration (Hours)	Cognitive Level
CO1	**Outline the engine principle and fundamentals**		
M1.01	Summarize the History of Automobile Vehicles in India and Abroad	2	Understanding,
M1.02	Outline the various classifications of Vehicles	3	Understanding,
M1.03	Explain various terminology of vehicle specification	4	Understanding,
M1.04	Explain working of two stroke and four stroke engines	5	Understanding,
Contents: **History, classification and basics of engine** Automobile Vehicles - Definition - History and development - Classification of Automobile, Major systems of an Automobile - their functions, Heat engines - Definition - types - comparison of IC and EC engines, engine terminology - bore - stroke - TDC - BDC - clearance volume - swept volume - total volume - compression ratio - mean effective pressure - indicated power - brake power - friction power - engine speed engine torque, classification of IC engines with respect to different parameters, Two stroke & four stroke SI engines - construction - working, Two stroke & Four stroke CI engines - construction - working, comparison of SI and CI engines- comparison of Two stroke and Four stroke engines.			
CO2	**Illustrate the functions and construction materials of engine components**		
M2.01	Outline the functions and materials used for the construction of various engine components	5	Understanding,
M2.02	Outline the components of fuel system of petrol engine.	4	Understanding,
M2.03	Outline the components of fuel system of Diesel engine.	3	Understanding,

M2.04	Outline the components of Cooling system and lubricating system	3	Understanding
	Series Test-I	1	

Contents:

Engine Components

Function of engine components and materials - Cylinder block - Cylinder head - crank case - oil pan, cylinder liners - Gasket - purpose - types , Piston, Piston rings - Piston pin - Connecting rod and crank shaft - flywheel - vibration damper - cam shaft, -Valves - Valve operating Mechanism - Manifolds - Components of petrol engine fuel system - Components of Diesel engine fuel system - functions. Outline the components of cooling system and lubricating system.

CO3	**Show various components of Automobile transmission line**		
M3.01	Outline the functions and types of Clutch	5	Understanding
M3.02	Outline the functions and types of Gear box	5	Understanding
M3.03	Outline the functions of propeller shaft, final drive and differential	5	Understanding

Contents:

Automobile Transmission

Functions of Clutch - Types of Clutches - working of single plate clutch, multi plate clutch. Functions of gear boxes, Types of gear boxes, working of sliding mesh gear box and synchromesh gear box. Automatic transmission-Functions of Propeller shaft, Universal joints - Final drive - Differential and drive axles

CO4	**Illustrate various components of Automobile chassis**		
M4.01	Outline the functions and types of suspension system	3	Understanding,
M4.02	Outline the functions and types of steering system	4	Understanding,
M4.03	Outline the functions and types of Brakes	4	Understanding,
M4.04	Outline the functions and types of tyres and wheels	3	Understanding,
	Series Test-II	1	

Contents:

Automobile Chassis

Suspension systems - Types of suspension systems - Components of suspension systems.

Steering system - Types of steering systems - Components of steering systems - Power steering

Brakes - Types of Brakes - Drum - Disc - Hydraulic brake - Air brake - Components of Brake systems,

Tyres and wheels - Purpose - Types of tyres and wheels

Text / Reference:

T/R	Book Title/Author
T1	Kirpal Singh S - Automobile Engg., Vol.I & II – Standard Publications
R1	R.B. Guptha - Automobile Engg. – Satya Prakasan
R2	K.M.Guptha - Automobile Engg., Vol. I& II – Umesh Publications
R3	Anil Chikara- Automobile Engg., Vol. I -Satya Prakasan
R4	William.H.Crouse Automotive mechanics – McGraw-Hill Publications
R_5	K.K.Ramalingam - Automobile Engg., Theory and Practice – Scitech Publications
R_6	Dr.N.K. Giri - Automobile Technology – Khanna publishers
R_7	Mathur and Sharma - I.C. Engines – Dhanpat rai publications

Online Resources:

Sl.No	Website Link
1	https://www.history.com/topics/inventions/automobiles
2	https://www.explainthatstuff.com/historyofcars.html
3	https://www.titlemax.com/articles/a-timeline-of-car-history/
4	https://cars.lovetoknow.com/History_of_the_Automobile_Industry