Government Polytechnic Dhangar, Fatehabad

Lesson Plan (Even Semester)

**Name of the Faculty : Mr. Sunil Kumar (Theory, Practical)**

Discipline : Mechanical Engg.

Semester : 6th

Subject : AUTOMOBILE ENGINEERING

Lesson Plan Duration: 15 weeks (from Feb, 2024 to June, 2024)

\*\*Work load (Lecture / Practical) per week (in hours): Lectures-03, Practical – 02

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| **Week** | **Theory** | | **Practical** | |
| **Lecture**  **Day** | **Topic (including assignment /**  **test)** | **Practical**  **Day** | **Topic** |
| 1st | 1st | **Introduction:** Automobile its development | 1st | Fault and their remedies in Battery Ignition system |
| 2nd | Various types of automobiles manufactured in India,  manufacturers and their location |
| 3rd | Classification of automobiles, Layout of chassis |
| 2nd | 4th | Test | 2nd | Adjustment of Head Light Beam (ii) Wiper and Indicators. |
| 5th | Types of drives-front wheel, rear wheel, four wheel. |
| 6th | Introduction to electric and hybrid vehicles. |
| 3rd | 7th | Governing of fuel- carburettor, electronic control module (ECM i.e, 8 bit,  16 bit and 32 bit computers) | 3rd | Dismantling and inspection of (i) AC Pump (ii) SU Pump |
| 8th | Concept of single overhead cam, double overhead cam, |
| 9th | Twin cam 16 valve Technology in 4 cylinder engine. |
| 4th | 10th | Revision and assignment | 4th | Dismantle (i) rear axle  (ii) differential and find |

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|  |  |  | Fault finding practices on an automobile - four  5th wheelers (petrol/ diesel vehicles).  Servicing/Tuning of a 2  6th wheeler/4 wheeler. | |
| 11th | **Transmission System: Clutch**  **–** Functions  Constructional details of single  plate clutch |
| 12th | Constructional details of multi  plate clutch |
| 5th | 13th | Centrifugal, semi centrifugal Clutch, Cone clutch and  Hydraulic clutch |
| 14th | **Gear Box –** Function Concept of sliding mesh,  constant mesh and synchromesh |
| 15th | Torque converter and overdrive, Automatic transmission, AMT and CVT |
| 6th | 16th | **Propeller shaft anr rear axle**- Function of Propeller shaft, Universal joint, Differential and Different types of Rear axles and Front Axles |
| 17th | **Wheels and Tyres** - Types of wheels, Types and specifications of tyres used in Indian vehicles, Toe in, Toe out,  camber, caster |
| 18th | King Pin inclination, wheel balancing and alignment, Factors affecting tyre life. |
|  | **Ist Sessional Test** | | | |
| 7th | 19th | **Steering System**-Function and principle of  Ackerman steering mechanism  Davis steering mechanism | 7th  8th | Servicing of hydraulic brakes :   1. adjustment of brakes 2. bleeding of brakes 3. fitting of leather pads   Tuning of an automobile engine. |
| 20th | Types of steering gear boxes  Worm and nut |
| 21th | Gear boxes worm and wheel worm and roller, rack and  opinion |
| 8th | 22th | Hydraulic Power steering system |
| 23th | Electrical Power steering system |
| 24th | Revision |

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| 9th | 25th | **Braking System**-Constructional detail and working of  hydraulic brake | 9th  10th  11th | Testing and Charging of an automobile battery and measuring cell voltage and  specific gravity of electrolyte.  Changing of wheels and inflation of tyres, balancing of wheels.  Measuring spark gap, valve clearance and ring clearance; carrying out cleaning  operations for adjustment. | |
|  | 26th | Constructional detail and  working of mechanical brake |
|  | 27th | Concept of air and vacuum  brake |
| 10th | 28th | Relative merits and demerits, details of master cylinder and wheel cylinder |
|  | 29th | Concept of brake drum, brake lining and adjustment Introduction to Anti lock brake System and its working |
|  | 30th | Test |
| 11th | 31th | **Suspension System**- Functions and types of coil  spring and leaf spring |
|  | 32th | Concept of Air suspension |
|  | 33th | Shock absorber Telescopic type  function |
| 12th | 34th | Shock absorber construction and working |
|  | 35th | Assignment | 12th | Revision |  |
|  | 36th | Revision |
|  | **2nd Sessional Test** | | | |  |
| 13th | 37th | **Battery**-Constructional details of lead acid cell battery, specific gravity and effect of temperature on it |  |  | |
|  | 38th | Specification of battery- capacity, rating,  number of plates, selection of battery for particular use, Battery charging,  chemical reactions during charge and discharge, |  |  | |
|  | 39th | Maintenance of batteries, Checking of batteries for voltage and specific gravity.  Batteries for electric and hybrid vehicles. | 13th | Revision | |
| 14th | 40th | **Dynamo and Alternator**- Dynamo - Function and details, Regulators - voltage current and  compensated type, Cutout - | 14th | Revision | |

Revision

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|  |  | construction, working and their adjustment, |  |
| 41th | Alternator - Construction and  working, Charging of battery by alternator. |
| 42th | Introduction to Integrated starter-alternator, wiring Diagram of an Automobile. |
| 15th | 43th | Revision | 15th |
| 44th | Revision |
| 45th | Revision |
| **3rd Sessional Test** | |