**BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK**

**DEPARTMENT OF MECHANICAL ENGINEERING**



 **LESSON PLAN**

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| SUBJECT: AUTOMOBILE ENGINEERING AND HYBRID VEHICLES(TH-2) | ACCADEMIC SESSION: 2022-23 |
| FACULTY: ACHYUT KUMAR PATRA  | SEMESTER: 6TH  |
|  | SEC: B |

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| **Discipline:****Mechanical Engineering** | **Semester: 6TH**  | **Section-B** | **Name of the teaching faculty:****Achyut Kumar Patra** |
| **Subject:****Automobile Engineering and Hybrid Vehicles** | **No. of Days/ per week class allotted: 04periods per week****(Mon-1 period, Wed-1 period, Thu-1 period, Sat -1 period)** | **Semester From Date: 14-02-2023 To Date: 22-05-2023****No. of weeks: 15 weeks** |
| **Week** | **Class Day** | **No of period available** | **Theory Topics** |
|  1ST | 14/02/2023 | 1 | **1.0 INTRODUCTION & TRANSMISSION SYSTEM:** 1.1 Automobiles: Definition, need and classification: Layout of automobile chassis with major components (Line diagram)  |
| 16/02/2023 | 1 | 1.2 Clutch System: Need, Types (Single & Multiple) and Working principle with sketch  |
| 2nd | 20/02/2023 | 1 | 1.2 Clutch System: Need, Types (Single & Multiple) and Working principle with sketch  |
| 21/02/2023 | 1 | 1.2 Clutch System: Need, Types (Single & Multiple) and Working principle with sketch |
| 23/02/2023 | 1 | 1.3 Gear Box: Purpose of gear box, Construction and working of a 4 speed gear box  |
| 25/02/2023 | 1 | 1.3 Gear Box: Purpose of gear box, Construction and working of a 4 speed gear box  |
| 3rd | 27/02/2023 | 1 | 1.4 Concept of automatic gear changing mechanisms |
| 28/02/2023 | 1 | 1.5 Propeller shaft: Constructional features |
| 02/03/2023 | 1 | 1.6 Differential: Need, Types and Working principle |
| 04/03/2023 | 1 | 1.6 Differential: Need, Types and Working principle |
| 4th | 06/03/2023 | 1 | **2.0 BRAKING SYSTEM:**2.1 Braking systems in automobiles: Need and types  |
| 09/03/2023 | 1 | 2.2Mechanical Brake |
| 11/03/2023 | 1 | 2.3 Hydraulic Brake  |
| 5th | 13/03/2023 | 1 | 2.4 Air Brake |
| 14/03/2023 | 1 | 2.5 Air assisted Hydraulic Brake  |
| 16/03/2023 | 1 | 2.6 Vacuum Brake |
| 18/03/2023 | 1 | **3.0 IGNITION & SUSPENSION SYSTEM:** 3.1Describe the Battery ignition and Magnet ignition system  |
| 6th | 20/03/2023 | 1 | 3.2 Spark plugs: Purpose, construction and specifications  |
| 21/03/2023 | 1 | 3.3 State the common ignition troubles and its remedies  |
| 23/03/2023 | 1 | 3.4 Description of the conventional suspension system for Rear and Front axle  |
| 25/03/2023 |  | 3.4 Description of the conventional suspension system for Rear and Front axle  |
| 7TH | 27/03/2023 | 1 | 3.5 Description of independent suspension system used in cars (coil spring and tension bars)  |
| 28/03/2023 | 1 | 3.5 Description of independent suspension system used in cars (coil spring and tension bars)  |
| 8TH | 03/04/2023 | 1 | 3.6 Constructional features and working of a telescopic shock absorber  |
| 04/04/2023 | 1 | **Monthly Class Test-I** |
| 06/04/2023 | 1 | **4.0 COOLING AND LUBRICATION:** 4.1 Engine cooling: Need and classification  |
| 08/04/2023 | 1 | 4.2 Describe defects of cooling and their remedial measures  |
| 9TH | 10/04/2023 | 1 | 4.3 Describe the Function of lubrication  |
| 11/04/2023 | 1 | 4.4 Describe the lubrication System of I.C. engine  |
| 13/04/2023 | 1 | 4.4 Describe the lubrication System of I.C. engine  |
| 15/04/2023 |  1 | **5.0 FUEL SYSTEM:** 5.1 Describe Air fuel ratio5.2 Describe Carburetion process for Petrol Engine |
| 10TH | 17/04/2023 | 1 | 5.3 Describe Multipoint fuel injection system for Petrol Engine  |
| 18/04/2023 | 1 | 5.4 Describe the working principle of fuel injection system for multi cylinder Engine  |
| 20/04/2023 | 1 | 5.5 Filter for Diesel engine |
| 11TH | 24/04/2023 | 1 | 5.6 Describe the working principle of Fuel feed pump and Fuel Injector for Diesel engine  |
| 25/04/2023 | 1 | **6.0 ELECTRIC AND HYBRID VEHICLES:** 6.1 Introduction, Social and Environmental importance of Hybrid and Electric Vehicles  |
| 27/04/2023 | 1 | 6.2 Description of Electric Vehicles, operational advantages, present performance and applications of Electric Vehicles  |
| 29/04/2023 | 1 | 6.3 Battery for Electric Vehicles, Battery types and fuel cells  |
| 12TH | 01/05/2023 | 1 | 6.3 Battery for Electric Vehicles, Battery types and fuel cells  |
| 02/05/2023 | 1 | 6.4 Hybrid vehicles, Types of Hybrid and Electric Vehicles: Parallel, Series, Parallel and Series configurations |
| 04/05/2023 | 1 | 6.4 Hybrid vehicles, Types of Hybrid and Electric Vehicles: Parallel, Series, Parallel and Series configurations |
| 06/05/2023 | 1 | 6.4 Hybrid vehicles, Types of Hybrid and Electric Vehicles: Parallel, Series, Parallel and Series configurations |
| 13TH | 08/05/2023 | 1 | 6.5 Drive train  |
| 09/05/2023 | 1 | 6.5 Drive train  |
| 11/05/2023 | 1 | 6.6 Solar powered vehicles  |
| 13/05/2023 | 1 | 6.6 Solar powered vehicles  |
|  14TH | 15/05/2023 | 1 | **Monthly Class Test-II / Internal Assessment Exam-II** |
| 16/05/2023 | 1 | Revision |
| 18/05/2023 | 1 | Revision |
| 20/05/2023 | 1 | Previous Year Questions Discussion |
|  15TH | 22/05/2023 | 1 | Previous Year Questions Discussion |