**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: BIDYUTA RANJAN ROUT | SEMESTER: 6TH |
|  | SEC: A |

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| **Discipline:**  **Mechanical Engineering** | **Semester: 6TH** | **Section-A** | **Name of the teaching faculty:**  **Bidyuta Ranjan Rout** |
| **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, Fri -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 | 15/02/2023 | 1 | **1.0 INTRODUCTION & TRANSMISSION SYSTEM:**  1.1 Automobiles: Definition, need and classification |
| 16/02/2023 | 1 | 1.1Layout of automobile chassis with major components (Line diagram) |
| 17/02/2023 | 1 | 1.2 Clutch System: Need, Types (Single & Multiple) |
| 2nd | 20/02/2023 | 1 | 1.2Working principle of single plate clutch with sketch |
| 22/02/2023 | 1 | 1.2 Working principle of Multi-plate clutch with sketch |
| 23/02/2023 | 1 | 1.3 Gear Box: Purpose of gear box, Construction |
| 24/02/2023 | 1 | 1.3 Working of a 4 speed gear box |
| 3rd | 27/02/2023 | 1 | 1.4 Concept of automatic gear changing mechanisms |
| 01/03/2023 | 1 | 1.5 Propeller shaft: Constructional features |
| 02/03/2023 | 1 | 1.6 Differential: Need, Types of differential |
| 03/03/2023 | 1 | 1.6 Working principle of differential with sketch |
| 4th | 06/03/2023 | 1 | **2.0 BRAKING SYSTEM:**  2.1 Braking systems in automobiles: Need and types of braking system |
| 09/03/2023 | 1 | 2.2Description ofMechanical Brake with sketch |
| 10/03/2023 | 1 | 2.3 Description of Hydraulic Brake with sketch |
| 5th | 13/03/2023 | 1 | 2.4 Description of Air Brake with sketch |
| 15/03/2023 | 1 | 2.5 Description of Air BrakeAir assisted Hydraulic Brake with sketch |
| 16/03/2023 | 1 | 2.6 Description of Air BrakeVacuum Brake with sketch |
| 17/03/2023 | 1 | **3.0 IGNITION & SUSPENSION SYSTEM:**  3.1Description of Battery ignition and Magnet ignition system |
| 6th | 20/03/2023 | 1 | 3.2 Purpose, construction and specifications of Spark plugs |
| 22/03/2023 | 1 | 3.3 Description of common ignition troubles and its remedies |
| 23/03/2023 | 1 | 3.4 Description of the conventional suspension system for Front axle |
| 24/03/2023 | 1 | 3.4 Description of the conventional suspension system for Rearaxle |
| 7TH | 27/03/2023 | 1 | 3.5 Description of independent suspension system used in cars (coil spring and tension bars) |
| 29/03/2023 | 1 | 3.6 Constructional features and working of a telescopic shock absorber |
| 31/03/2023 | 1 | **Monthly Class Test-I** |
| 8TH | 03/04/2023 | 1 | **4.0 COOLING AND LUBRICATION:**  4.1 Engine cooling: Need and it’s classification |
| 05/04/2023 | 1 | 4.2 Description of defects of cooling and their remedial measure |
| 06/04/2023 | 1 | 4.2 Description of defects of cooling and their remedial measure |
| 9TH | 10/04/2023 | 1 | 4.3 Description of Function of lubrication |
| 12/04/2023 | 1 | 4.4 Description of lubrication System of I.C. engine |
| 13/04/2023 | 1 | 4.4 Description of lubrication System of I.C. engine |
| 10TH | 17/04/2023 | 1 | **5.0 FUEL SYSTEM:** 5.1 Describe Air fuel ratio,5.2 Describe Carburetion process for Petrol Engine |
| 19/04/2023 | 1 | 5.3 Description ofMultipoint fuel injection system for Petrol Engine |
| 20/04/2023 | 1 | 5.4 Description of working principle of fuel injection system for multi cylinder Engine |
| 21/04/2023 | 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 |
| 26/04/2023 | 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 |
| 28/04/2023 | 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 |
| 03/05/2023 | 1 | 6.4 Hybrid vehicles, Types of Hybrid and Electric Vehicles |
| 04/05/2023 | 1 | 6.4Parallel, Series, Parallel and Series configurations |
| 13TH | 08/05/2023 | 1 | 6.5 Drive train |
| 10/05/2023 | 1 | 6.5 Drive train |
| 11/05/2023 | 1 | 6.6 Solar powered vehicles |
| 12/05/2023 | 1 | 6.6 Solar powered vehicles |
| 14TH | 15/05/2023 | 1 | **Monthly Class Test-II / Internal Assessment Exam-II** |
| 17/05/2023 | 1 | Revision |
| 18/05/2023 | 1 | Revision |
| 19/05/2023 | 1 | Previous Year Questions Discussion |
| 15TH | 22/05/2023 | 1 | Previous Year Questions Discussion |