

Discipline: Mechanical Engineering  
 Semester: 6th  
 Name of the faculty: Deepankar Pati

Subject: Automobile Engineering and Hybrid vehicles  
 No. of days/Per week: 4th/week  
 Semester starts: 1  
 Semester Ends: No. of weeks: 16 weeks

| MONTH | WEEK     | CLASS DAY | THEORY TOPICS   |
|-------|----------|-----------|---|
|       | 1st week | 1st       | Definition of Automobiles, needs and classification                                     |
|       |          | 2nd       | Layout of Automobile chassis with major Components.                                     |
|       |          | 3rd       | Definition of clutch system and needs.  |
|       |          | 4th       | Types of clutch system and working principle of Single plate clutch system with sketch. |
|       | 2nd week | 1st       | Working principle of Multiple plate clutch system with neat sketch.                     |

| MONTH | WEEK | CLASS DAY | THEORY TOPICS   |
|-------|------|-----------|---|
|       |      | 2nd       | Defination of Gear box and purpose of gear box          |
|       |      | 3rd       | Constraction and working of a 4-speed gear box          |
|       |      | 4th       | Concept of automatic gear changing mechanism            |
|       |      | 1st       | Define propeller shaft and its constructional features  |
|       |      | 2nd       | Defination of Differential and need                     |
|       |      | 3rd       | Types and working principle of Differential with sketch |
|       |      | 4th       | Conticene   |
|       |      | 1st       | Define Backing System in automobiles, need and types    |
|       |      | 2nd       | Concept of Mechanical Brake with neat sketch.           |
|       |      | 3rd       | Concept of Hydroelic brake with neat sketch.            |
|       |      | 4th       | Concept of Air- Brake System with neat sketch           |



| MONTH | WEEK     | CLASS DAY | THEORY TOPICS  |
|-------|----------|-----------|--|
|       | 5th week | 1st       | Concept of Air-assisted Hydraulic brake with sketch              |
|       |          | 2nd       | Concept of vacuum brake with sketch                              |
|       |          | 3rd       | Define Ignition and suspension system.                           |
|       |          | 4th       | Describe the battery ignition system                             |
|       | 6th week | 1st       | Describe Magnet ignition system                                  |
|       |          | 2nd       | Define spark-plug and purpose.                                   |
|       |          | 3rd       | Construction and working of sparkplug and specification          |
|       |          | 4th       | State the Common ignition trouble and its remedies               |
|       | 7th week | 1st       | Description of the conventional suspension system for rear axle. |
|       |          | 2nd       | Description of the conventional suspension system for front axle |

|          |     |     |  |
|----------|-----|-----|--|
|          |     | 3rd | Description of Independent Suspension System used in Cars e.g. Coil Spring |
|          |     | 4th | Independent Suspension System for Tension bars                             |
| 8th week | 1st |     | Constructional Features and Working of a telescopic shock absorber         |
|          | 2nd |     | Introduction to cooling and lubrication system in automobiles              |
|          | 3rd |     | Define Cooling System, need and classification.                            |
|          | 4th |     | Describe defects of Cooling System and their remedial measures             |
| 9th week | 1st |     | Describe the function of lubrication                                       |
|          | 2nd |     | Describe the lubrication system of I.C. Engine                             |
|          | 3rd |     | Continue   |



|           |     |   |
|-----------|-----|---|
|           | 4th | Introduction of Fuel System in automobiles  |
| 10th week | 1st | Describe Air-fuel ratio   |
|           | 2nd | Define Carburettor and its part   |
|           | 3rd | Describe Carburetion process for petrol engine                                    |
|           | 4th | Describe Multipoint Fuel injection system for petrol engine                       |
| 11th week | 1st | Continue  |
|           | 2nd | Describe the working principle of fuel injection system for multi-cylinder engine |
|           | 3rd | Filter for Diesel engine  |
|           | 4th | Describe the working principle of fuel injection Diesel engine.                   |

|      |     |  |
|------|-----|--|
| 12th | 1st | Continue   |
|      | 2nd | Describe the working principle of fuel injector for Diesel engine      |
|      | 3rd | Continue   |
|      | 4th | Introduction Electric and Hybrid vehicles                              |
| 13th | 1st | Introduction to social and environmental importance of Hybrid vehicles |
|      | 2nd | Importance of Electric vehicles  |
|      | 3rd | Description of Electric vehicles                                       |
|      | 4th | operational advantages   |
| 14th | 1st | present performance and applications of Electric vehicles              |
|      | 2nd | Battery for electric vehicles  |



|           |     |                                       |
|-----------|-----|---------------------------------------|
|           | 3rd | Battery types                         |
|           | 4th | Fuel cells                            |
| 15th      | 1st | Defination of Hybrid vehicles         |
|           | 2nd | Types of Hybrid and electric vehicles |
|           | 3rd | parallel configurations               |
|           | 4th | Series configurations                 |
| 16th week | 1st | parallel and series configurations    |
|           | 2nd | Drive train                           |
|           |     | Solar powered vehicles                |
|           | 4th | is ...<br>Continue                    |