**COURSE FILE**

**AUTOMOBILE TRANSMISSION SYSTEM (2033301)**

DIPLOMA 3RD SEM.

PRO. MUKESH KUMAR

**DEPARTMENT OF AUTOMOBILE ENGINEERING**

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**GOVERNMENT POLYTECHNIC CHAPRA**

**CONTENTS**

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**Time table**

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| --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1st10:00-11:00 | 2nd1:00-12:00 | 3rd12:00-1:00 |  | 4th2:00-3:00 | 5th3:00-4:00 | 6th4:00-5:00 |
| MON |  |  |  | LUNCH |  |  |  |
| TUE |  |  |  |  |  |  |
| WED |  |  |  |  |  |  |
| THU |  |  |  |  |  |  |
| FRI |  |  |  |  |  |  |
| SAT |  |  |  |  |  |  |

Department of Automobile Engineering

**Vision**

To be a centre of excellence in the field of Mechanical Engineering offering value based world class education and research producing well qualified engineers, who can contribute favorably to the technological and socio-economic development of the nation.

**Mission**

1. To ensure sufficient modern technological exposure to the students in order to create skilled professionals.

2. To frequently update the labs keeping in view the requirement of the current industry scenario.

3. To extend counseling and career guidance facility to the students to help them to achieve their goal.

4. To encourage faculties and staffs to pursue higher education and to do the research work.

5. To encourage faculties and staffs to participate in various seminars, conferences and workshops to keep themselves updated of the state-of-the-art technology.

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| --- |
| **Text / Reference Books:-**  |
| **Titles of the Book**  | **Name of Authors**  | **Name of the Publisher**  |
| Motor automotive technology..  | Anthony Schwaller  | Delmar Publisher Inc.  |
| Automotive service  | Tim Gills  | Delmar Publisher Inc.  |
| Automobile Engineering Vol. II  | Anil Chikkara  | Satya Prakashan New Delhi  |
| Automobile Mechanics  | Crouse / Anglin  | TATA McGraw – HILL  |
| Automobile Engineering Vol.-I  | Kirpal Singh  | Standard Publication  |
| The Automobile  | Harbans Singth Royat  | S Chand Publication  |
| Automobile Engineering  | R.B. Gupta  | Satya Prakashan New Delhi  |
| Automotive Mechanics  | S. Srinivisan  | TATA McGraw – HILL  |
| Automotive Technology  | H M SETHI  | TATA McGraw– HILL  |
| A text book of Automobile Engineering  | R.K Rajput  |
| Transmission Chassis & releted systems  | John Whipp  |

Unit-I Vehicle layout and Chassis frame:-

1.1 Classification and specifications of Chassis- 2-Wheeler, Passenger car, Commercial

Vehicle.

1.2 Vehicle layout & its types—2 Wheel Drive- Front Engine Front Wheel Drive, Rear

Engine Rear Wheel Drive, Front Engine Rear Wheel Drive & 4 Wheel Drive.

1.3 Major assemblies – their locations and functions.

1.4 Various loads acting on chassis frame.

1.5 Type of frames, frames construction, and material- 2 wheeler and 4 - wheeler.

8 -12

Unit-II Clutches:-

2.1 Principle, function and requirements of Clutch.

2.2 Various types of clutches used in Automobiles – single plate, multiplate clutches dry

& wet clutches, centrifugal clutch, Semi-centrifugal clutch, diaphragm clutch.

2.3 Materials used for clutch lining.

2.4 Hydraulic & mechanical clutch linkage, Cable operated clutch linkage.

2.5 Fluid coupling- principle, construction and working.

12 -14

Unit-III Gear Boxes:-

3.1 Principle and necessity of Gear Box.

3.2 Types, construction and working of gear boxes & their layouts such as sliding mesh,

constant mesh, synchromesh type, transfer case.

3.3 Gear ratios with the help of power flow diagrams.

3.4 Gear shift mechanism.

3.5 Overdrive

3.6 Concepts of automatic gear box.

3.7 Torque Converter- principle, construction and working

12 -14

Unit-IV Propeller shafts, universal joints & slip joints: -

4.1 Necessity and function of Propeller Shaft.

4.2 Constant velocity Joints- Inboard & outboard Joints- Rzeppa Joint, Tripod Joint.

4.3 Universal joint and slip joint.

4.4 Hotchkiss drive and torque tube drive.

6 -10

Unit-V Final drive: -

5.1 Principle, Necessity and function of final drive and differential.

5.2 Working of differential and differential lock. Backlash in differential.

5.3 Types of rear axles such as semi - floating, three quarter floating and full floating

type.

8 -12

Unit-V Wheels and Tyres:-

6.1 Types of wheels, rims and tyres.

6.2 Tyre materials, construction.

6.3 Necessity and types of treads.

6.4 Tyre inflation and its effect. Tyre rotation and nomenclature

6 -8

Lecture plan

|  |  |  |
| --- | --- | --- |
| **Unit** | **Name of Topic** | **No. of Lecture** |
| **01** | Classification and specifications of Chassis- 2-Wheeler ,  | **Lec-1** |
| Passenger car, Commercial Vehicle.  | **Lec-2** |
| Vehicle layout & its types— | **Lec-3** |
| 2 Wheel Drive- Front Engine Front Wheel Drive,  | **Lec-4** |
| Rear Engine Rear Wheel Drive, Front Engine Rear Wheel Drive &  | **Lec-5** |
| 4 Wheel Drive. | **Lec-6** |
| Major assemblies  | **Lec-7** |
|  – their locations and functions. | **Lec-8** |
| Various loads acting on chassis  | **Lec-9** |
| frame | **Lec-10** |
| Type of frames, frames construction, and  | **Lec-11** |
| material- 2 wheeler and 4 - wheeler | **Lec-12** |
| **Class test-01** |  |

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| **Unit** | **Name of Topic** | **No. of Lecture** |
| **02** | Principle, function and  | **Lec-13** |
|  requirements of Clutch. | **Lec-14** |
|  Various types of clutches used in Automobiles –  | **Lec-15** |
| Principle, construction and working of –disc brakes,  | **Lec-16** |
| single plate, multiplate clutches dry & wet clutches,  | **Lec-17** |
| centrifugal clutch, Semi-centrifugal clutch,  | **Lec-18** |
|  diaphragm clutch. | **Lec-19** |
| Materials used for clutch lining.  | **Lec-20** |
| Hydraulic & mechanical clutch linkage  | **Lec-21** |
| , Cable operated clutch linkage. | **Lec-22** |
| Fluid coupling- principle,  | **Lec-23** |
| construction and working. | **Lec-24** |
| **Class test-02** |  |

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| **Unit** | **Name of Topic** | **No. of Lecture** |
| **03** | Principle and necessity of Gear Box.  | **Lec-25** |
|  Types, construction and working of gear boxes &  | **Lec-26** |
| their layouts such as sliding mesh, constant mesh | **Lec-27** |
| , synchromesh type, transfer case. | **Lec-28** |
|  Gear ratios  | **Lec-29** |
| with the help of power flow diagrams. | **Lec-30** |
| Gear shift mechanism.  | **Lec-31** |
| mechanism. | **Lec-32** |
|  |  |
|  | Overdrive  | **Lec-33** |
| Concepts of automatic gear box.  | **Lec-34** |
| automatic gear box. | **Lec-35** |
| Torque Converter- principle,  | **Lec-36** |
|  construction and working | **Lec-37** |
|  |  |
| **Class test-03** |  |

|  |  |  |
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| **Unit** | **Name of Topic** | **No. of Lecture** |
| **04** | Necessity of Propeller Shaft.  | **Lec-39** |
| function of Propeller Shaft. | **Lec-40** |
| Constant velocity Joints- Inboard &  | **Lec-41** |
| outboard Joints- Rzeppa Joint, Tripod Joint | **Lec-42** |
| Universal joint and slip joint.  | **Lec-43** |
|  Hotchkiss drive and torque tube drive. | **Lec-44** |
| **Class test-04** |  |

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| --- | --- | --- |
| **Unit** | **Name of Topic** | **No. of Lecture** |
| **05** | Principle, Necessity of final drive and differential.  | **Lec-45** |
| function of final drive and differential. | **Lec-46** |
| Working of differential and differential lock.  | **Lec-47** |
| Backlash in differential. | **Lec-48** |
| Types of rear axles such as semi - floating,  | **Lec-49** |
| . three quarter floating and full floating type. | **Lec-50** |
| **Class test-05** |  |

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| **Unit** | **Name of Topic** | **No. of Lecture** |
| **06** | Types of wheels, rims and tyres.  | **Lec-51** |
| Tyre materials, construction.  | **Lec-52** |
| Necessity of treads.  | **Lec-53** |
| types of treads. | **Lec-54** |
| Tyre inflation and its effect.  | **Lec-55** |
| Tyre rotation and nomenclature  | **Lec-56** |
| **Class test-06** |  |

**Students list**

|  |  |
| --- | --- |
| **Roll Number** | **Name Of the Student** |
| 311131220001 | PANKAJ KUMAR |
| 311131220002 | TUSHAR |
| 311131220003 | DHIRAJ KUMAR |
| 311131220004 | SHASHIKANT KUMAR |
| 311131220005 | MANISH KUMAR CHAURASIYA |
| 311131220006 | DHRUV KUMAR |
| 311131220007 | ABHISHEK KUMAR SINGH |
| 311131220008 | ANKIT KUMAR |
| 311131220009 | RUPESH KUMAR TIWARI |
| 311131220010 | THAKUR ANISH ADARSH |
| 311131220011 | PAWAN KUMAR |
| 311131220012 | MUKESH KUMAR SAH |
| 311131220014 | ABHIJIEET KUMAR |
| 311131220015 | ARJUN KUMAR RAM |
| 311131220016 | VISHAL KUMAR |
| 311131220019 | SANTOSH KUMAR |
| 311131220020 | ANKESH KUMAR |
| 311131220021 | RAHUL RAY |
| 311131220022 | SONI KUMARI |
| 311131220023 | MUNNA KUMAR SHARMA |
| 311131220024 | ADITYA KUMAR |
| 311131220025 | AKSHAY KUMAR NIRALA |
| 311131220026 | AMIT KUMAR RAM |
| 311131220027 | SUMIT SAURABH |
| 311131220028 | ABHISHEK KUMAR RAM |
| 311131220029 | ANISH KUMAR |
| 311131220030 | MD ALHARISH |
| 311131220031 | SAURABH ANAND |
| 311131220032 | ADARSH BHARDWAJ |
| 311131220033 | VIVEK SAURAV |
| 311131220034 | DEEPAK KUMAR |
| 311131220035 | KAUSHAL KUMAR |
| 311131220036 | UTKARSH KUMAR |
| 311131220037 | AMAR KUMAR |
| 311131220038 | AYUSH RAJ |
| 311131220039 | AYUSH KUMAR |
| 311131220040 | AMAN KUMAR DEV |
| 311131220041 | KRISHNA PANDIT |
| 311131220042 | SHIVAM KUMAR |
| 311131220043 | RAVI KUMAR SAH |
| 311131220044 | SAURABH KUMAR |
| 311131220045 | VISHWAJEET KUMAR |
| 311131220046 | RAJEEV KUMAR CHAUHAN |
| 311131220047 | SHIPRA BHARTI |
| 311131220048 | ADITYA KUMAR |
| **401/A/21** | **SUBHAM KUMAR SINGH** |
| **402/A/21** | **ARUN KUMAR** |
| **403/A/21** | **AVINASH KUMAR** |
| **601/A/21** | **AMARJEET KUMAR** |
| **602/A/21** | **NIHAL KUMAR** |
| **603/A/21** | **SHAHNAWAZ ALAM** |
| **604/A/21** | **MUSKAAN KUMARI** |
| **605/A/21** | **ANUP KUMAR** |
| **606/A/21** | **AARIF PRAWEJ** |
| **607/A/21** | **BISHWASH SINGH** |
| **608/A/21** | **ABHISHEK KUMAR SINGH** |
| **609/A/21** | **SHIVAM KUMAR** |
| **610/A/21** | **ANURAG PRASAD** |
| **611/A/21** | **LALAN KUMAR YADAV** |