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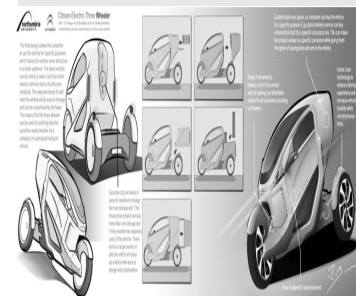
TWO AND THREE WHEELERS TECHNOLOGY

Hours Per Week :

| L | T | P | C |
|---|---|---|---|
| 3 | - | 2 | 4 |

Total Hours :

| L | T | P | CS | WA/RA | SSH | SA | S | BS |
|----|---|----|----|-------|-----|----|---|----|
| 45 | - | 30 | 5 | 5 | 30 | 20 | 5 | 5 |

**Source :**

<https://www.coroflot.com/robertwatson/Electric-three-wheeler>

COURSE DESCRIPTION AND OBJECTIVES:

This course makes the students to know and understand the constructional details, operating characteristics and vehicle design aspects of two and three wheeled vehicles.

COURSE OUTCOMES:

Upon completion of the course, the students will be able to achieve the following outcomes:

| COs | Course Outcomes | POs |
|-----|--|------|
| 1 | Know the working of two stroke and four stroke engines | 1,10 |
| 2 | Explain the functioning of clutch and gear box | 2,6 |
| 3 | Know the wheels, tyres, suspensions and braking systems | 3,9 |
| 4 | Familiarize the latest models of two wheelers | 4,12 |
| 5 | Explain the operations of three wheelers and latest models of three wheelers | 5,10 |

SKILLS:

- ✓ Knowledge on working of power unit in on automobile.
- ✓ To gain knowledge on types of frames clutches & gear box.
- ✓ Knowledge on working principles of break, wheels and tyres.
- ✓ Gain knowledge about the various parts of two and three wheelers

UNIT - I**L-9**

POWER UNIT: Two stroke SI engine, four stroke SI engine; merits and demerits. Symmetrical and unsymmetrical port timing diagrams. Short circuiting, Types of scavenging processes: merits and demerits, scavenging pumps. Rotary valve engine, fuel system, lubrication system. Magneto coil and battery coil spark ignition system, electronic ignition system. Starting system; kick starter system.

UNIT - II**L-9**

CHASSIS AND SUB-SYSTEMS: Mainframe and its types. Chassis and shaft drive, Single, multiple plates and centrifugal clutches. Gear box and gear controls, herring bone Gears. Front and rear suspension systems. Shock absorbers. Panel meters and controls on handle bar. Gyroscopic and pendulum effect.

UNIT - III**L-9**

BRAKES, WHEELS AND TYRES : Transmission systems in Two and Three Wheelers, Drum brakes, disc brakes, front and rear brake links, layouts. Spoke wheel, cast wheel, disc wheel and disc types. Tyres and tubes.

UNIT - IV**L-9**

TWO WHEELERS: Study and comparison of specification and features of major Indian models of mopeds, scooters and high performance vehicles. Injection systems, silencer design and after treatment devices, Cooling and lubrication system.

UNIT V**L-9**

THREE WHEELERS: Study and Comparison of specification and features of Indian models of Auto rickshaws, pickup van, delivery van and trailer. Maintenance & Fault tracing, injection systems, silencer design and after treatment devices, Cooling and lubrication system. Factors affecting the fuel economy and emission.

LABORATORY EXPERIMENTS**LIST OF EXPERIMENTS****TOTAL HOURS:30**

1. Carburetor tuning in idle condition.
2. Two wheeler tyre removal and vulcanize.
3. Play adjustment of clutch and brake.
4. Spark plug cleaning.
5. Assembling and dismantling of two wheeler gearbox.
6. Assembling and dismantling of two wheeler engines and checking lube oil.
7. Checking chain tension.
8. Two wheeler battery maintenance.
9. Two wheeler electrical system – horn, light.
10. Cylinder reboring.
11. Overall maintenance and service check list.
12. Shock absorber.
13. Performance and Emissions testing using two wheeler chassis dynamometer.
14. Measurement of CO from 100cc Engine by using gas Analyzer.
15. Measurement of NOX from 150cc Engine.

TEXTBOOKS :

1. Irving.P.E. - Motor Cycle Engineering - Temple Press Book, London – 1992.
2. The Cycle Motor Manual - Temple Press Limited, London – 1990.

REFERENCE BOOKS :

1. Encyclopedia of Motorcycling - 20 volume Marshall, Cavensih, UK – 1989.
2. BrayantR.V,Vespa - Maintenance and Repair Series – S.Chand& Co., New Delhi – 1986.2
3. Raymond Broad Lambretta - A Practical Guide to maintenance and repair – S.Chand& Co., New Delhi – 1987.