

## **AT8091 MANUFACTURING OF AUTOMOTIVE COMPONENTS**

### DETAILED SYLLABUS

#### **OBJECTIVE:**

- To impart knowledge on basic principle and production methods of automotive components.

#### **UNIT I CASTED ENGINE COMPONENTS**

Material selection and Manufacturing methods for Piston, Piston rings, Cylinder block, wet and dry liners, Engine head, Oil pan, Carburetors. Thermal barrier coating of Engine head and valves.

#### **UNIT II FORGED ENGINE COMPONENTS**

Material selection and Manufacturing methods for Crank shaft, Connecting rod, Cam shaft, valve, Piston pin, Push rod, Rocker arm, tappets, spark plug.

#### **UNIT III TRANSMISSION SYSTEM**

Material selection and Manufacturing methods for Clutch – Clutch lining – Gear Box – Gear – Propeller Shaft – Differential – Axle Shaft – Bearing – fasteners – Wheel drum. Methods of Gear manufacture – Gear hobbing and gear shaping machines - gear generation - gear finishing and shaving – Grinding and lapping of hobs and shaping cutters – gear honing – gear broaching.

#### **UNIT IV VEHICLE CHASSIS**

Material selection and manufacturing methods for chassis, dead axle, leaf spring, coil spring and shock absorbers – wheel housing – steering system, Brake shoes, wheel rim, Tyres. Heat treatment procedures.

#### **UNIT V RECENT DEVELOPMENTS**

Surface treatment – Plastics – Plastics in Automobile vehicles – Processing of plastics - Emission control system – catalytic converter – Hydro forming of exhaust manifold and lamp housing – stretch forming of Auto body panels – MMC liners – Selection of materials for Auto

#### **TEXT BOOK:**

1. Heldt. P.M, "High speed combustion engines", Oxford publishing Co., New York, 1990.

#### **REFERENCES:**

1. Gupta K.M. "Automobile Engineering" Vol. I & II, Umesh Publishers, 2000.
2. Kirpal Singh, 'Automobile Engineering', Vol. I & II, Standard Publishers, New Delhi, 1997.
3. Newton and steels, the motor vehicle, ELBS, 1990
4. Serope Kalpakjian and Steven R. Schmid, "Manufacturing Processes for Engineering Materials", Fourth Edition, Pearson Education publications – 2003