



Mahatma Gandhi Vidyamandir's

**Loknete Vyankatrao Hiray Arts, Science and Commerce College,  
Panchavati, Nashik-422003**

(Affiliated to SPPU, Pune, Reaccredited with 'A' grade, Recipient of Best College Award by SPPU)

## **Course Outcomes of M.Voc**

### **Department of Automobile Technology**

**Academic Year**

**2021-22**

## Course Outcomes: M.Voc. Subject (PMV(AT))

**Class : M.Voc. - I Automobile Technology**

**Semester-I**

Paper	Course code & course title	At the end of the course, student will be able to
I	Automotive Engine Technology.- 1 PMV (MATT 11)	Familiarise with history of Engines, its types & functioning.
		Understand types of engines & its construction & working.
		Learn the working cycles of different engines & indicator diagrams.
		Learn & understand the different Engine components , its construction & purpose of use etc.
		Learn & understand the power transmission diagrams.
		Understand various advanced features, techniques used in engines- DTSI, VVTEC, VTEC, OHC, Hybrid Engines, Electric Vehicles, Automatic Transmission
II	Power Transmission System PMV (MATT 12)	Understand the basics of power, types of power- brake power, indicated power, horse power.
		Learn how to different types of power calculated, its characteristics.
		Learn the types of clutches, power transmission from engine to clutch, its specifications, clutch assembly & its construction etc.
		Learn & understand types of gearbox, its construction & working, specifications etc.
		Learn the automatic transmission, its specifications & design, parts, working etc.
		Understand & learn fault finding & diagnosis of power transmission system in automobile.
III	Automotive body and Paint Technology PMV (MATT 13)	Learn & understand basics of engineering drawing – Orthographic projection, Plan, Elevation, end view, free hand sketches of auto parts etc.
		Learn & understand the different types of fitting operations - Marking, Cutting, filling, Hack sawing, Drilling, Reaming etc.

		Understand the different type operations in sheet metal – Bending, simple joint, and riveting, etc.
		Learn & understand different types welding – Arc welding, Gas welding, Brazing, Soldering, Spot welding, etc.
		Learn the procedure of Surface denting and finishing –stripping of old paint, sanding of different stages
		Learn the procedure for doing Painting – Types of paints, Lacquer coat, Rubbing, and polishing, etc.
IV	Automotive Engine Technology.- 1 (Practical) PMV (MATP 11)	Familiarise with history of Engines, its types & functioning.
		Understand types of engines & its construction & working.
		Learn the working cycles of different engines & indicator diagrams.
		Learn & understand the different Engine components , its construction & purpose of use etc.
		Understand various advanced features, techniques used in engines- DTSI, VVTEC, VTEC, OHC, Hybrid Engines, Electric Vehicles, Automatic Transmission
V	Power Transmission System (Practical) PMV (MATP 12)	Understand the basics of power, types of power- brake power, indicated power, horse power.
		Learn the types of clutches, power transmission from engine to clutch, its specifications, clutch assembly & its construction etc.
		Learn & understand types of gearbox, its construction & working, specifications etc.
		Learn the automatic transmission, its specifications & design, parts, working etc.
		Understand & learn fault finding & diagnosis of power transmission system in automobile.
VI	Automotive body and Paint Technology	Learn & understand basics of engineering drawing – Orthographic projection, Plan, Elevation, end view, free hand sketches of auto parts etc...

	(Practical) PMV (MATP 13)	Learn & understand the different types of fitting operations - Marking, Cutting, filing, Hack sawing, Drilling, Reaming etc...
		Understand the different type operations in sheet metal – Bending, simple joint, and riveting, etc..
		Learn & understand different types welding – Arc welding, Gas welding, Brazing, Soldering, Spot welding, etc.
		Learn the procedure of Surface denting and finishing –stripping of old paint, sanding of different stages.
		Learn the procedure for doing Painting – Types of paints, Lacquer coat, Rubbing, and polishing, etc..

### Semester-II

I	Automotive Engine Technology.-2 PMV (MATT 21)	Understand the description of internal combustion engines its features.
		Learn & understand the components of I.C engine & its features.
		Study basics, construction and working of single cylinder Two stroke Petrol engine.
		Understand construction and working of single cylinder four stroke Petrol engine
		Learn various difference between petrol & diesel engines.
		Classify the various types of engines, understand SI & CI engines, its features.
II	Automotive Systems and Electric Cars PMV (MATT 22)	Understand the configurations and functional descriptions of Hybrid vehicles
		Understand the configurations and functional descriptions of Electric vehicles
		Describe the working principles of various types of controllers and regulators and their use in measuring systems
		Study the various types of hybrid vehicles, it merits & demerits.
		Study the basic electric motors, direct current motors & brushless direct current motors its construction & working, characteristics etc.

		Learn & understand the various systems used in automobiles-antilock braking system, electronic power steering, electronic brake distributor its characteristics, working.
III	Project on Power transmission System PMV (MATT 23)	Understand the basic concepts & broad principles of projects.
		Understand concepts of project and production management.
		Get capable of self-education and clearly understand the value of achieving perfection in project implementation & completion.
		Apply the theoretical concepts to solve automotive problems with teamwork and multidisciplinary approach.
		Enable the students to implement project planning in their on job training (OJT) work.
		Demonstrate professionalism with ethics, present effective communication skills relate automotive issues to broader societal context.
IV	Automotive Engine Technology.-2 (Practical) PMV (MATP 21)	Understand the description of internal combustion engines its features.
		Learn & understand the components of I.C engine & its features.
		Study basics, construction and working of single cylinder Two stroke Petrol engine.
		Understand construction and working of single cylinder four stroke Petrol engine
		Classify the various types of engines, understand SI & CI engines, its features.
V	Automotive Systems and Electric Cars (Practical) PMV (MATP 22)	Understand the configurations and functional descriptions of Hybrid vehicles.
		Understand the configurations and functional descriptions of Electric vehicles.
		Describe the working principles of various types of controllers and regulators and their use in measuring systems.

		Study the basic electric motors, direct current motors & brushless direct current motors its construction & working, characteristics etc.
		Learn & understand the various systems used in automobiles- antilock braking system, electronic power steering, electronic brake distributor its characteristics, working.
VI	Project on Power transmission System (Practical) PMV (MATP 23)	Understand the basic concepts & broad principles of projects.
		Understand concepts of project and production management.
		Get capable of self-education and clearly understand the value of achieving perfection in project implementation & completion.
		Apply the theoretical concepts to solve automotive problems with teamwork and multidisciplinary approach
		Enable the students to implement project planning in their on job training (OJT) work.
		Demonstrate professionalism with ethics, present effective communication skills relate automotive issues to broader societal context.

**Class : M.Voc. – II Automobile Technology**

**Semester-III**

<b>Paper</b>	<b>Course code &amp; course title</b>	<b>At the end of the course, student will be able to</b>
I	Automotive Service Technology And Driving Skills. PMV (MATT 31)	Learn & understand the basic servicing skills of automotive parts/ vehicles.
		Learn & understand the problems occurs in engines, fuel systems, cooling system and remedies to problems, procedure to make problems overcome.
		Learn & understand the problems occurs in electrical system, braking system & air conditioning system and remedies to problems, procedure to make problems overcome.
		Learn & understand the basic motor vehicle rules- number plates, licence, safety aspects.
		Learn & understand traffic rules & regulations, road signs, its classifications.
		Learn & understand steps for registration of vehicle, permit, fitness & penalties. automotive insurance etc.
II	Automotive Electrical and Electronic. PMV (MATT 32)	Learn & understand the basics of electronic control modem (ECM).
		Understand the various types of sensors in automobile vehicles.
		Learn & understand the DTSI Technology its features, working etc.
		Understand the functioning of digital speedo meter & Odometer, sensors etc.
		Compare direct current & brushless direct current motors, its features etc.
		Learn & understand the different types of batteries, its features etc.
III	Rules and regulations in Automobiles. PMV (MATT 33)	Learn & understand the EURO norms, BS Norms, difference between BS & EURO norms.
		Learn & understand road signs, its classification, traffic rules etc.

		Learn & understand the Motor Vehicle Act 1988 & 2018.
		Understand the types of insurance, penalties for vehicles in different situations.
		Understand the difference between insurance & assurance
		Understand types of vehicles, types of permit, types of carriage etc.
IV	Automotive Service Technology And Driving Skills. (Practical) PMV (MATP 31)	Learn & understand the basic servicing skills of automotive parts/ vehicles.
		Learn & understand the problems occurs in engines, fuel systems, cooling system and remedies to problems, procedure to make problems overcome.
		Learn & understand the problems occurs in electrical system, braking system & air conditioning system and remedies to problems, procedure to make problems overcome.
		Learn & understand the basic motor vehicle rules- number plates, licence, safety aspects.
		Learn & understand traffic rules & regulations, road signs, its classifications.
		Learn & understand steps for registration of vehicle, permit, fitness & penalties. automotive insurance etc.
V	Automotive Electrical and Electronic. (Practical) PMV (MATP 32)	Learn & understand the basics of electronic control modem (ECM).
		Understand the various types of sensors in automobile vehicles.
		Learn & understand the DTSI Technology its features, working etc.
		Understand the functioning of digital speedo meter & Odometer, sensors etc.
		Learn & understand the different types of batteries, its features etc.
VI	Rules and regulations in Automobiles. (Practical) PMV (MATP 33)	Learn & understand the EURO norms, BS Norms, difference between BS & EURO norms.
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		Learn & understand the Motor Vehicle Act 1988 & 2018.
		Understand the types of insurance, penalties for vehicles in different situations.
		Understand the difference between insurance & assurance
		Understand types of vehicles, types of permit, types of carriage etc.
<b>Semester-IV</b>		
I	Hybrid Vehicles and Electronics PMV (MATT 41)	Understand basics of hybrid vehicles, their working and types of hybrid.
		Learn & understand the sensor control electric motor.
		Study & understand the ECM & Electronics Brake distributor, its features, working etc.
		Learn method of electric charging, synergy drive its features.
		Understand conversion of kinetic energy to electric energy, inverter its features, working.
		Learn & understand the diagnosis the electronic system with scanner.
II	Sedan and SUV Vehicles Technology PMV (MATT 42)	Learn & understand the types of cars as per car body & vehicle types etc.
		Understand the SUV type its features & applications.
		Understand the sedan type its features & applications.
		Understand the Hatchback type its features & applications.
		Understand the Station Wagon, sport type its features & applications.
		Learn & understand the difference between each type based on different parameters.
III	Project on Hybrid Vehicles PMV (MATT 43)	Understand the basic concepts & broad principles of projects.
		Understand concepts of project and production management.
		Get capable of self-education and clearly understand the value of achieving perfection in project implementation & completion.
		Apply the theoretical concepts to solve automotive problems with teamwork and multidisciplinary approach

		Enable the students to implement project planning in their on job training (OJT) work.
		Demonstrate professionalism with ethics, present effective communication skills relate automotive issues to broader societal context.
IV	Hybrid Vehicles and Electronics (Practical) PMV (MATP 41)	Understand basics of hybrid vehicles, their working and types of hybrid.
		Learn & understand the sensor control electric motor.
		Study & understand the ECM & Electronics Brake distributor, its features, working etc.
		Learn method of electric charging, synergy drive its features.
		Learn & understand the diagnosis the electronic system with scanner.
V	Sedan and SUV Vehicles Technology (Practical) PMV (MATP 42)	Learn & understand the types of cars as per car body & vehicle types etc.
		Understand the SUV type its features & applications.
		Understand the sedan type its features & applications.
		Understand the Hatchback type its features & applications.
		Understand the Station Wagon, sport type its features & applications.
		Learn & understand the difference between each type based on different parameters.
VI	Project on Hybrid Vehicles (Practical) PMV (MATP 43)	Understand the basic concepts & broad principles of projects.
		Understand concepts of project and production management.
		Get capable of self-education and clearly understand the value of achieving perfection in project implementation & completion.
		Apply the theoretical concepts to solve automotive problems with teamwork and multidisciplinary approach
		Enable the students to implement project planning in their on job training (OJT) work.

		Demonstrate professionalism with ethics, present effective communication skills relate automotive issues to broader societal context.
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