

GOVERNMENT POLYTECHNIC JAIPUR

LESSON PLAN

SUBJECT- TH:3(b)- ELECTRIC VEHICLES

SEMESTER- 5TH

SESSION-WINTER 2026 (DT-01/07/2026)

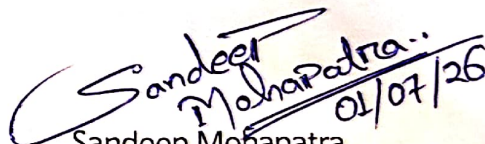
Week	Class	Unit	Topic / Sub-topic	Period
Week 1	Class 1	Unit I	Course Introduction, Evolution of Electric Vehicles	1
	Class 2	Unit I	Advanced Electric Drive Vehicle Technologies: EV, HEV and Plug-in Electric Vehicle (PIEV)	1
	Class 3	Unit I	Components Used in Hybrid Electric Vehicles	1
Week 2	Class 1	Unit I	Economic Impacts of Electric and Hybrid Vehicles	1
	Class 2	Unit I	Environmental Impacts of Electric and Hybrid Vehicles	1
	Class 3	Unit I	Parameters Affecting Environmental and Economic Analysis	1
Week 3	Class 1	Unit I	Comparative Study of Conventional Vehicles, EVs and HEVs (Economic & Environmental Aspects)	1
	Class 2	Unit I	Case Study and Numerical Discussion	1
	Class 3	Unit I	Unit-I Revision	1
Week 4	Class 1	Unit II	General Description of Vehicle Movement	1
	Class 2	Unit II	Vehicle Resistance, Tyre-Ground Adhesion and Rolling Resistance	1
	Class 3	Unit II	Aerodynamic Drag, Grading Resistance and Dynamic Equation	1
Week 5	Class 1	Unit II	Drive Train Configuration	1

Week	Class	Unit	Topic / Sub-topic	Period
	Class 2	Unit II	Automobile Power Train and Classification of Vehicle Power Plants	1
	Class 3	Unit II	Performance Characteristics of IC Engine and Electric Motor, Need of Gear Box	1
Week 6	Class 1	Unit II	Classification of Motors Used in Electric Vehicles	1
	Class 2	Unit II	Basic Architecture of Hybrid Drive Trains and Types of HEVs	1
	Class 3	Unit II	Energy Saving Potential and HEV Configurations (Series, Parallel, Series-Parallel, Complex)	1
Week 7	Class 1	Unit III	EV and HEV Configurations Based on Power Converters	1
	Class 2	Unit III	Classification of DC-DC Converters: Unidirectional and Bidirectional	1
	Class 3	Unit III	Step-Down (Buck) Converter: Principle of Operation	1
Week 8	Class 1	Unit III	Boost and Buck-Boost Converters	1
	Class 2	Unit III	Step-Up Converter: Principle of Operation	1
	Class 3	Unit III	Two-Quadrant and Multi-Quadrant Converters	1
Week 9	Class 1	Unit III	Unit-III Revision	1
	Class 2	Unit IV	Introduction to DC-AC Converters	1
	Class 3	Unit IV	Half-Bridge DC-AC Inverter (R Load & R-L Load)	1
Week 10	Class 1	Unit IV	Single-Phase Bridge DC-AC Inverter (R Load & R-L Load)	1
	Class 2	Unit IV	Electric Machines Used in EVs and HEVs: Principle, Working and Control	1
	Class 3	Unit IV	Permanent Magnet Motors and Their Drives	1

Week	Class	Unit	Topic / Sub-topic	Period
Week 11	Class 1	Unit IV	Switched Reluctance Motor	1
	Class 2	Unit IV	Characteristics and Applications of EV Motors	1
	Class 3	Unit IV	Unit-IV Revision	1
Week 12	Class 1	Unit V	Overview of Batteries	1
	Class 2	Unit V	Battery Parameters and Types of Batteries	1
	Class 3	Unit V	Battery Charging Methods	1
Week 13	Class 1	Unit V	Alternative Energy Sources: Solar PV Cells	1
	Class 2	Unit V	Fuel Cells, Supercapacitors and Flywheels	1
	Class 3	Unit V	Control Systems for EVs and HEVs, Electronic Control Unit (ECU)	1
Week 14	Class 1	Unit V	Schematics of Hybrid Drive Train and Control Architecture	1
	Class 2	Unit V	Regenerative Braking in EVs	1
	Class 3	Unit V	Unit-V Revision	1
Week 15	Class 1	All Units	Revision of Units I–III	1
	Class 2	All Units	Revision of Units IV–V	1
	Class 3	All Units	Model Question Paper Discussion, Assignment and Doubt Clearing	1

Unit-wise Period Distribution

Unit	Topic	Syllabus Hours	Planned Periods
Unit I	Introduction to Hybrid Electric Vehicles	9	9
Unit II	Dynamics of Hybrid and Electric Vehicles	9	9
Unit III	DC-DC Converters for EV and HEV Applications	9	9
Unit IV	DC-AC Inverters & Motors for EVs and HEVs	9	9
Unit V	Batteries	9	9
Total		45 Hours	45 Periods


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