


LESSON PLAN SUMMER-2023

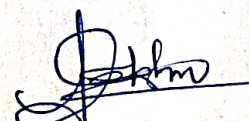
NAME OF THE TEACHING FACULTY-Mr. PRITISH KUMAR MOHANTY

SUBJECT-ELECTRICAL VEHICLES SEM-6th BRANCH-ELECTRICAL ENGG.

NO OF PERIODS AVAILABLE	WEEK	CHAPTER	TOPIC NAME	Period
5	WEEK-1	Introduction to Hybrid Electric Vehicles	Evolution of Electric vehicles	1
			Advanced Electric drive vehicle technology VehiclesElectric vehicles (EV)	1
			Hybrid Electric drive (HEV),	1
			Plug in Electric vehicle (PIEV),	1
			Components used Hybrid Electric Vehicle	1
4	WEEK-2		Electric hybrid vehicle Parameters affecting Environmental and Comparative study of vehicles for economic	1
			Comparative study of vehicles for environmental aspects	1
			General description of vehicle movement, Factors affecting vehicle motion- Vehicle resistance	1
5	WEEK-3	Dynamics of hybrid and Electric vehicles	tyre ground adhesion,	1
			rolling resistance,	1
			aerodynamic drag	1
			equation of grading resistance, dynamic equation	1
			Drive train configuration	1
5	WEEK-4		Automobile power train, classification of vehicle power plant	1
			Performance characteristics of IC engine	1
			electric motor, need of gear box	1
			Classification of motors used in Electric vehicles	1
			Basic architecture of hybrid drive trains	1
4	WEEK-5		types of HEVs Energy saving potential of hybrid drive	1
			,HEV Configurations-Series,	1
			HEV Configurations-parallel	1
			Series-parallel, complex.	1
5	WEEK-6	DC-DC Converters for EV and HEV Applications	EV and HEV configuration based on power converters	1
			CONT	1
			Classification of converters – unidirectional and bidirectional	1
			CONT	1
			Principle of step down operation	1
5	WEEK-7		Boost and Buck- Boost converters	1
			CONT	1
			Principle of Step-Up operation	1
			Two quadrant converters multi quadrant converters	1
			Electrical Engineering Curriculum Structure 210	1

			CONT	1
			DC-AC Converters,	1
			CONT	1
5	WEEK-8	DC-AC Inverter & Motors for EV and HEVs	Principle of operation of half bridge DC-AC inverter (R load, R-L load)	1
			Single phase Bridge DC-AC inverter with R load	1
			Single phase Bridge DC-AC inverter with R-L load	1
			Electric Machines used in EVs and HEVs	1
4	WEEK-9		principle of operation, working & control , Permanent magnet motors, their drives	1
			switched reluctance motor,	1
			Characteristics and applications of	1
			Overview of batteries	1
		Batteries	CONT	1
			Battery Parameters	1
5	WEEK-10		types of batteries	1
			CONT	1
			CONT	1
			Battery Charging	1
			CONT	1
5	WEEK-11		alternative novel energy sources-solar photovoltaic cells	1
			CONT	1
			fuel cells,	1
			CONT	1
			super capacitors	1
5	WEEK-12	flywheels	1	
		Control system for EVs and HEVs	1	
		CONT	1	
		CONT	1	
		overview of Electronic control unit ECU	1	
5	WEEK-13	Details of Electronic control unit ECU	1	
		Schematics of hybrid drive train	1	
		control architecture Regenerative braking in EVs.	1	


 Prepared by
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