

LECTURE PLAN

Faculty name : Shweta singh Year: 4th Semester: 8th Branch: EN,EC,ME,CE,CS,AG Subject: Electric Vehicles (KOE 090)

LECT. No.	UNIT		DETAILS AFTER THE LECTURES ARE DELIVERED			AFTER UNIT COVER			
			DATE	References	MATTER COVERED	UNIT No.	No. of LEC.	ASSIGN. No.	TEST No.
1	1	Introduction of Electric Vehicles		NPTEL Course on Electric Vehicles by Dr. Amit Jain, IIT Delhi ,M.Ehsani, Y.Gao, S.E.Gay, A.Emadi, Modern Electric, Hybrid Electric and Fuel Cell Vehicles – Fundamentals, Theory and Design,					
2		Concept of Electrified transportation							
3		Past, present status of electric vehicles							
4		Past, present status of electric vehicles							
5		Recent developments and trends in electric vehicles,							
6		Recent developments and trends in electric vehicles,							
7		Comparison of EVs and IC Engine vehicles,							
8		Understanding electric vehicle components							
9		Basic EV components and architecture							
10		Autonomy and vehicle computing needs							
11		Presentation Unit-1 (Revision)							
12	2	Electric Motor Drives for EV applications		NPTEL Course on Electric Vehicles by Dr. Amit Jain, IIT Delhi ,M.Ehsani, Y.Gao, S.E.Gay, A.Emadi, Modern Electric, Hybrid Electric and Fuel Cell Vehicles – Fundamentals, Theory and Design,					
13		Concept of EV motors							
14		Classification of EV motors							
15		Comparison of Electric motors for EV applications							
16		Recent EV motors							
17		BLDC motor							
18		SRM (switch reluctance motor)							
19		axial flux motor							
20		Introduction to power electronics converters							
21		DC-DC converter							
22		speed control of dc motor							
23		BLDC motor driving schemes.							
24		Presentation Unit-2(Revision)							
25		EV Batteries and Battery Management System		NPTEL Course on Electric Vehicles by Dr. Amit Jain, IIT Delhi ,M.Ehsani, Y.Gao, S.E.Gay, A.Emadi, Modern Electric, Hybrid Electric and Fuel Cell Vehicles – Fundamentals, Theory and Design,					

26		EV batteries								
27		Lead Acid batteries								
28	3	Lithium batteries								
29		Selection of battery for EVs								
30		Smart battery pack design								
31		Mechanical and reliability aspects of Li Ion packs								
32		UN38 regulation familiarity								
33		Cell balancing in Li Ion								
34		Battery second life and usage in BESS (energy storage systems)								
35		BMS - Global price trends,								
36		volumetric and gravimetric efficiency trends								
37			Presentation Unit-3(Revision)							
38	4	Charging system design technology for EV applications			NPTEL Course on Electric Vehicles by Dr. Amit Jain, IIT Delhi ,M.Ehsani, Y.Gao, S.E.Gay, A.Emadi, Modern Electric, Hybrid Electric and Fuel Cell Vehicles – Fundamentals, Theory and Design,					
39		Charging system design considerations								
40		AC & DC Charging								
41		Charging methods								
42		On-board/Off-board chargers								
43		Vehicle to charger communication system								
44		OCPP familiarity cloud and device side								
45		metrology								
46		billing and authentication types								
47		understand the computing needs in a charging system								
48		Understand internal major block diagrams								
49		low and high power chargers								
50		IEC61850 and 61851 familiarities,								
51		IEC61000, 60950/51, IEC62196 key highlights.								
52			Presentation Unit-4(Revision)							
53	5	EV Charging Facility Planning			NPTEL Course on Electric Vehicles by Dr. Amit Jain, IIT Delhi ,M.Ehsani, Y.Gao, S.E.Gay, A.Emadi, Modern Electric, Hybrid Electric and Fuel Cell Vehicles – Fundamentals, Theory and Design,					
54		Identification of EV demand								
55		Impact of EV charging on power grid								
56		Energy generation scheduling								
57		different power sources								
58		centralized charging schemes								
59		Energy storage integration into micro-grid								
60		Overview and applicability of AI for the EV ecosystem								
61		design of V2G aggregator								
62		case studies								
63		Presentation Unit-5(Revision)								