



Bhoj Reddy Engineering College for Women

(Sponsored by Sangam Laxmibai Vidyapeet, , Accredited by NAAC with A Grade, Approved by AICTE and affiliated to JNTUH,
Recognised by UGC under section 2(f) of the UGC Act, 1956)
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Department of Electrical and Electronics Engineering

Lesson Plan

Name of the Subject : Electric and Hybrid Vehicles
Academic Year : 2026-27
Subject Code : EE733PC
Semester : I
Name of the Faculty Member : Ch Prasannalakshmi
Class & section : IV-EEE

S. No.	Date	Name of the Topic	No. of Classes required	Cumulative number of periods	Teaching AID
UNIT-I: INTRODUCTION					
1	06-07-2026	Introduction to Conventional Vehicles	1	1	C&T, S/P
2	08-07-2026	Basics of vehicle performance	1	2	C&T, S/P
3	08-07-2026	vehicle power source characterization	1	3	C&T, S/P
4	13-07-2026	transmission characteristics	1	4	C&T, S/P
5	15-07-2026	Mathematical models to describe vehicle performance	1	5	C&T, S/P
6	15-07-2026	Problems on Mathematical models to describe vehicle performance	1	6	CPS
7	20-07-2026	Revision	1	7	C&T, S/P
8	22-07-2026	Slip Test	1	8	Quiz/Puzzle
UNIT-II: INTRODUCTION TO HYBRID ELECTRIC VEHICLES& HYBRID ELECTRIC DRIVE-TRAINS					
9	22-07-2026	History of hybrid and electric vehicles	1	9	C&T, S/P
10	27-07-2026	social importance of hybrid and electric vehicles,	1	10	C&T, S/P
11	29-07-2026	Environmental importance of hybrid and electric vehicles	1	11	C&T, S/P

12	29-07-2026	Impact of modern drive-trains on energy supplies.	1	12	C&T, S/P
13	03-08-2026	Hybrid Electric Drive-Trains, Basic concept of hybrid traction	1	13	C&T, S/P
14	05-08-2026	Axial Flux Permanent Magnet Motors	1	14	CBS
15	05-08-2026	Introduction to various hybrid drive-train topologies	1	15	C&T, S/P
16	12-08-2026	Power flow control in hybrid drive-train topologies, fuel efficiency analysis.	1	16	C&T, S/P
UNIT-III: ELECTRIC TRAINS& ELECTRIC PROPULSION UNIT					
17	12-08-2026	Electric Drive-trains	1	17	C&T, S/P
18	17-082026	Basic concept of electric traction	1	18	C&T, S/P
19	19-082026	Introduction to various electric drive train topologies.	1	19	C&T, S/P
20	19-082026	power flow control in electric drive-train	1	20	C&T, S/P
21	24-08-2026	Fuel efficiency analysis	1	21	C&T, S/P
22	31-082026	Introduction to electric components used in hybrid vehicles.	1	22	C&T, S/P
23	02-09-2026	Descriptive Test	1	23	Quiz/Puzzle
24	07-09-2026	Introduction to electric components used in electric and vehicles	1	24	C&T, S/P
25	09-09-2026	Introduction to electric components used in Hybrid vehicles	1	25	C&T, S/P

26	09-09-2026	Configuration and control of DC Motor drives,	1	26	C&T, S/P
27	16-09-2026	configuration and control of Permanent Magnet Motor drives,	1	27	C&T, S/P
28	16-09-2026	Configuration and control of Switch Reluctance	1	28	C&T, S/P
29	21-09-2026	Drive system efficiency	1	29	C&T, S/P
UNIT-IV: ENERGY STORAGE					
30	23-09-2026	Introduction to Energy Storage Requirements in Hybrid and Electric	1	30	C&T, S/P
31	23-09-2026	Battery based energy storage and its uses	1	31	C&T, S/P
32	28-09-2026	Fuel Cell based energy storage and its analysis	1	32	C&T, S/P
33	30-09-2026	Super Capacitor based energy storage and its analysis.	1	33	C&T, S/P
34	30-09-2026	Flywheel based energy storage and its analysis.	1	34	C&T, S/P
35	05-10-2026	Hybridization of different energy storage devices. Sizing the drive system:	1	35	C&T, S/P
36	07-10-2026	Matching the electric machine and the internal combustion engine (ICE),	1	36	C&T, S/P
37	07-10-2026	Sizing the propulsion motor, sizing the power electronics,	1	37	C&T, S/P
38	12-10-2026	selecting the energy storage technology, Communications, supporting subsystems	1	38	C&T, S/P
39	14-10-2026	Select suitable battery chemistry for city buses.	1	39	Problem Based Learning
UNIT-V: ENERGY MANAGEMENT STRATEGIES& CASE STUDIES					
40	14-10-2026	Introduction to energy management strategies used in hybrid and electric vehicles,	1	40	C&T, S/P
41	19-10-2026	classification of different energy management strategies,	1	41	C&T, S/P

42	26-10-2026	comparison of different energy management strategies..	1	42	C&T, S/P
43	28-10-2026	Implementation issues of energy management strategies	1	43	C&T, S/P
44	28-10-2026	Fuzzy Logic Controllers	1	44	CBS
45	04-11-2026	Descriptive Test	1	45	Quiz/Puzzl e
Tutorial Classes				00	
Total number of classes				45	

TEACHING METHODS:

C&T:-Chalk & Talk; S/P:-Slides/PPT; Videos; SEM: Seminar; Demo; CHART; ET/GL: Expert Talk/Guest Lecture; QUIZ; CPS: Class room problem solving;GD:- Group discussion; RTCS: Real time case studies; JAR:-Journal article review; PD:- Poster design; OL:-Online lecture/Google class room; Industrial Visit (IV), Assignment (ASG), Quiz/Puzzle (Q), Brain storming (BS), Think-Pair-Share (TPS), Certification(CERT), SIM: Simulation, P/G: Pledge/Greeting, Q/R: Quotes, references, LS: Literature Survey, RW: Report Writing, MM: Model making,PED: Professional/ethical dilemma, Coding, Activity/Event, FV: Filed Visit etc.

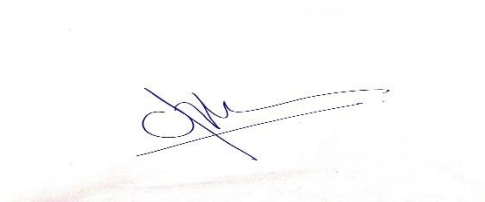
TEXT / REFERENCE BOOKS:

S. No.	TEXT / REFERENCE BOOKS	BOOK TITLE/AUTHORS/PUBLICATION
1	Textbook	C. Mi, M. A. Masrur and D. W. Gao, "Hybrid ElectriVehicles: Principles and Applications with Practical Perspectives", John Wiley & Sons, 2011.
2	Textbook	S. Onori,L. Serrao and G. Rizzoni,"Hybrid Electric Vehicles Energy Management Strategies", Springer 2015.
3	Reference Book	M. Ehsani,Y.Gao, S.E.Gay and A.Emadi,"Modern Electric, Hybrid Electric, and Fuel Cell Vehicles: Fundamentals,Theory, and Design", CRC Press, 2004.
4	Reference Book	T.Denton,"Electric And Hybrid Vehicles" , Routledge, 2016

WEB LINKS:

S. No.	WEB LINKS
1	https://nptel.ac.in/?utm_source=chatgpt.com

2	https://www.natboard.edu.in/?utm_source=chatgpt.com
3	https://www.araiindia.com/?utm_source=chatgpt.com
4	https://www.iea.org/?utm_source=chatgpt.com

A handwritten signature in blue ink, consisting of a stylized 'S' followed by a horizontal line and a diagonal stroke.

Signature of Faculty

HoD