



Department of Mechanical Engineering
Raajdhani Engineering College, Bhubaneswar, Odisha-751017
LESSON PLAN

Faculty Name	Debasish Mohapatra			Name of the Program	Diploma in Mechanical Engineering
Course Name	Automobile Engineering and Hybrid vehicles			Course Code/college code	[Th-2]/C311
Course Year	3 rd year	Semester	6 th	Academic Period	2023-24
No. of Classes allotted per Week	4		Planned Classes Required to Complete the Course		

Sl. No.	Topics to be covered	Module	No. of hours Required	Mode of Teaching	CO	BOOK	CHAPTER (PAGES)	OTHER SOURCE(IM)
1	Automobiles: Definition, need and classification: Layout of automobile chassis with major components (Line diagram)	I	1	LM/ IM	CO1	T1/T2		https://youtu.be/ZRqTVigM9DU?si=-eB5A1-9fPgCfEyz
2	Automobiles: Definition, need and classification: Layout of automobile chassis with major components (Line diagram)	I	1	LM/ IM	CO1	T1/T2		https://youtu.be/ZRqTVigM9DU?si=-eB5A1-9fPgCfEyz
3	Clutch System: Need, Types (Single & Multiple) and Working principle with sketch	I	1	LM/ IM	CO1	T1/T2		https://youtu.be/qPDxRZ3f2cE?si=fuiliqqDLBLOQRIB
4	Gear Box: Purpose of gear box, Construction and working of a 4 speed gear box	I	1	LM/ IM	CO1	T1/T2		https://youtu.be/mr5MESJd4eg?si=qlhdLgGRpgT0zwac
5	Concept of automatic gear changing mechanisms	I	1	LM/ IM	CO1	T1/T2		https://youtu.be/ml0Hbcs89wU?si=0GMkXYw7GUC0IxN4
6	Propeller shaft: Constructional features	1	1	LM/ IM	CO2	T1/T2		https://youtu.be/AECKqCyfMQA?si=fjYsmaJfDr9gTv2u
7	Propeller shaft: Constructional features	1	1	LM/ IM	CO2	T1/T2		https://youtu.be/AECKqCyfMQA?si=fjYsmaJfDr9gTv2u
8	Differential: Need, Types and Working principle	1	1	LM/ IM	CO2	T1/T2		https://youtu.be/DbZb0fbwR6M?si



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9	Introduction of latest automobile and components of automobile	1	1	LM/ IM	CO2	T1/T2		https://youtu.be/_MVXp-AliT0?si=iJZixAYKJygDDEy4
10	Previous year question discussion	1	1	LM/ IM	CO2	T1/T2		https://youtu.be/2y6lPfZx9S4?si=dkVwmNn7dgkpf-YM
11	Braking systems in automobiles: Need and types	2	1	LM/ IM	CO2	T1/T2		https://youtu.be/a5tcMhEWhsU?si=Nxlklsav2dhPzNbs
12	Braking systems in automobiles: Need and types	2	1	LM/ IM	CO2	T1/T2		https://youtu.be/a5tcMhEWhsU?si=Nxlklsav2dhPzNbs
13	Mechanical Brake	2	1	LM/ IM	CO2	T1/T2		https://youtu.be/MoRrFK6Zzq8?si=YF3s7bIpiMCaoApX
14	Hydraulic Brake	2	1	LM/ IM	CO2	T1/T2		https://youtu.be/_imyybhZV80?si=uJVcwPsvda1A8E-F
15	Air Brake	2	1	LM/ IM	CO2	T1/T2		https://youtu.be/h_NWGPUHI3U?si=UOijCQ8iQtE6iKPt
16	Air assisted Hydraulic Brake	2	1	LM/ IM	CO3	T1/T2		https://youtu.be/17jDLCQojdg?si=EN01IICYmVt7jJqB



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17	Vacuum Brake	2	1	LM/ IM	CO3	T1/T2		https://youtu.be/gk6JJStmb9c?si=kN3u5hrqhnPZqjT2
18	Vacuum Brake	2	1	LM/ IM	CO3	T1/T2		https://youtu.be/gk6JJStmb9c?si=kN3u5hrqhnPZqjT2
19	Quiz test	2	1	LM/ IM	CO3	T1/T2		https://youtu.be/cZep4Z-vpBc?si=BM4raQwn0D30ur1h
20	Previous year question discussion	2	1	LM/ IM	CO3	T1/T2		https://youtu.be/cZep4Z-vpBc?si=BM4raQwn0D30ur1h
21	Describe the Battery ignition and Magnet ignition system	3	1	LM/ IM	CO3	T1/T2		https://youtu.be/s_gI6ovMqIQ?si=SOD7Ed64JsMQGygi
22	Spark plugs: Purpose, construction and specifications	3	1	LM/ IM	CO3	T1/T2		https://youtu.be/hAPqDPZ3dh8?si=lLzCQMRAyo9LTjDg
23	Spark plugs: Purpose, construction and specifications	3	1	LM/ IM	CO3	T1/T2		https://youtu.be/hAPqDPZ3dh8?si=lLzCQMRAyo9LTjDg
24	State the common ignition troubles and its remedies	3	1	LM/ IM	CO3	T1/T2		https://youtu.be/s_gI6ovMqIQ?si=TpjL7M7-Qq3WwaIc
25	Description of the conventional suspension system for Rear and Front axle	3	1	LM/ IM	CO3	T1/T2		https://youtu.be/Ud343eCSFWE?si=WMFem-qRGne73gVK



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26	Description of the conventional suspension system for Rear and Front axle	3	1	LM/ IM	CO4	T1/T2	https://youtu.be/Ud343eCSFWE?si=WMFem-qRGne73gVK
27	Description of independent suspension system used in cars (coil spring and tension bars)	3	1	LM/ IM	CO4	T1/T2	https://youtu.be/MP_rUWfopgA?si=SiM19LFbczXZQv
28	Description of independent suspension system used in cars (coil spring and tension bars)	3	1	LM/ IM	CO4	T1/T2	https://youtu.be/MP_rUWfopgA?si=SiM19LFbczXZQv
29	Constructional features and working of a telescopic shock absorber	3	1	LM/ IM	CO4	T1/T2	https://youtu.be/Fe-yC36pKDY?si=QTqlqteOrYs6snDR
30	Previous year question discussion	3	1	LM/ IM	CO4	T1/T2	https://youtu.be/s_gI6ovMqIQ?si=0tnX9xxXO3nX5hs8
31	Engine cooling: Need and classification	4	1	LM/ IM	CO4	T1/T2	https://youtu.be/vSJB5vEdTtk?si=BBVKpeVyi5COc-p5
32	Engine cooling: Need and classification	4	1	LM/ IM	CO4	T1/T2	https://youtu.be/vSJB5vEdTtk?si=BBVKpeVyi5COc-p5
33	Describe defects of cooling and their remedial measures	4	1	LM/ IM	CO4	T1/T2	https://youtu.be/ae6u_Qw8wTM?si=dWNmkk3_MMQs9xdh
34	Describe defects of cooling and their remedial measures	4	1	LM/ IM	CO4	T1/T2	https://youtu.be/ae6u_Qw8wTM?si=dWNmkk3_MMQs9xdh



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35	Describe the Function of lubrication	4	1	LM/ IM	CO4	T1/T2		https://youtu.be/wrLGxNwpbt8?si=Zf8HLdqZQjqamRue
36	Describe the Function of lubrication	4	1	LM/ IM	CO4	T1/T2		https://youtu.be/wrLGxNwpbt8?si=Zf8HLdqZQjqamRue
37	Describe the lubrication System of I.C. engine	4	1	LM/ IM	CO4	T1/T2		https://youtu.be/G-qwO3HCr2s?si=JX56ezwQYRwVYOfN
38	Describe the lubrication System of I.C. engine	4	1	LM/ IM	CO4	T1/T2		https://youtu.be/G-qwO3HCr2s?si=JX56ezwQYRwVYOfN
39	Surprise test	4	1	LM/ IM	CO4	T1/T2		https://youtu.be/eFe43SnBIMI?si=WTQ-CGjfxSSsFcy1
40	Previous year question discussion	4	1	LM/ IM	CO4	T1/T2		https://youtu.be/eFe43SnBIMI?si=WTQ-CGjfxSSsFcy1
41	Describe Air fuel ratio	5	1	LM/ IM	CO5	T1/T2		https://youtu.be/83csy0wXwnw?si=1TW69tnX9cjt8Ti
42	Describe Carburetion process for Petrol Engine	5	1	LM/ IM	CO5	T1/T2		https://youtu.be/ktSyjKHWIuk?si=Cbv_5tnixI3AVxG0
43	Describe Multipoint fuel injection system for Petrol Engine	5	1	LM/ IM	CO5	T1/T2		https://youtu.be/09O7YkPJyKg?si=TTXb2ThErSwqKE-b



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44	Describe the working principle of fuel injection system for multi cylinder Engine	5	1	LM/ IM	CO5	T1/T2	https://youtu.be/09O7YkPJyKg?si=pcD0ep5nRRVJKTNM
45	Describe the working principle of fuel injection system for multi cylinder Engine	5	1	LM/ IM	CO5	T1/T2	https://youtu.be/09O7YkPJyKg?si=pcD0ep5nRRVJKTNM
46	Filter for Diesel engine	5	1	LM/ IM	CO5	T1/T2	https://youtu.be/PH84F-uEINU?si=wo-JN-bJ2g7eY8jB
47	Describe the working principle of Fuel feed pump and Fuel Injector for Diesel engine	5	1	LM/ IM	CO5	T1/T2	https://youtu.be/5VyqW9QkJaA?si=7ts9cipNgzt6RkyR
48	Describe the working principle of Fuel feed pump and Fuel Injector for Diesel engine	5	1	LM/ IM	CO5	T1/T2	https://youtu.be/5VyqW9QkJaA?si=7ts9cipNgzt6RkyR
49	Briefly some idea about CNG and battery operated automobile.	5	1	LM/ IM	CO5	T1/T2	https://youtu.be/8gpF8s915Gc?si=tKES5uCWbskUls6p
50	Previous year question discussion	5	1	LM/ IM	CO5	T1/T2	https://youtu.be/8gpF8s915Gc?si=tKES5uCWbskUls6p
51	Introduction, Social and Environmental importance of Hybrid and Electric Vehicles	6	1	LM/ IM	CO5	T1/T2	https://youtu.be/V76lKFm_gYI?si=yAxugdFePHTyMTva
52	Description of Electric Vehicles, operational advantages, present performance and applications of Electric Vehicles	6	1	LM/ IM	CO5	T1/T2	https://youtu.be/XkuVUUnscjw?si=07K5VxLuyMKc-93E



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53	Description of Electric Vehicles, operational advantages, present performance and applications of Electric Vehicles	6	1	LM/ IM	CO5	T1/T2	https://youtu.be/XkuVUnscajw?si=07K5VxLuyMKc-93E
54	Battery for Electric Vehicles, Battery types and fuel cells	6	1	LM/ IM	CO5	T1/T2	https://youtu.be/nrxmQhbZUTc?si=UB_lc9JKAzvLqe6U
55	Hybrid vehicles, Types of Hybrid and Electric Vehicles: Parallel, Series, Parallel and Series configurations	6	1	LM/ IM	CO5	T1/T2	https://youtu.be/47U1g4ChVkm?si=aIwWf6Xf00JFdYhV
56	Hybrid vehicles, Types of Hybrid and Electric Vehicles: Parallel, Series, Parallel and Series configurations	6	1	LM/ IM	CO6	T1/T2	https://youtu.be/47U1g4ChVkm?si=aIwWf6Xf00JFdYhV
57	Drive train	6	1	LM/ IM	CO6	T1/T2	https://youtu.be/EpsomwgHOGE?si=Pq5aLpC8xm7LIal4
58	Solar powered vehicles	6	1	LM/ IM	CO6	T1/T2	https://youtu.be/qPENum9DFFA?si=pQPHyiXjb3zD0ubs
59	Quiz test	6	1	LM/ IM	CO6	T1/T2	https://youtu.be/qPENum9DFFA?si=pQPHyiXjb3zD0ubs
60	Previous year question discussion.	6	1	LM/ IM	CO6	T1/T2	https://youtu.be/6rsvc4D4iCc

LM: Learner Mode: Chalk & Talk, Lecture

IM: Interactive Mode: PPT, VIDEO and Animation

T1: A textbook of Mechatronics by R.K.Rajput

T2: Mechatronics , W. Bolton, Pearson education india

T3: CAD/CAM/CIM, R. RADHAKRISHNA, S,SUBRAMANIAN, NEW AGE INTERNATIONAL PVT.LT



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Signature of the Faculty

Signature of the HOD