

**COLLEGE OF ENGINEERING & TECHNOLOGY** 

(AUTONOMOUS)

Accredited by National Board of Accreditation, AICTE, New Delhi, Accredited by NAAC with "A" Grade – 3.32 CGPA, Recognized under 2(f) & 12(B) of UGC Act 1956, Approved by AICTE, New Delhi, Permanent Affiliation to JNTUK, Kakinada Seetharampuram, W.G.DT., Narsapur-534280, (Andhra Pradesh)

### DEPARTMENT OF MECHANICAL ENGINEERING

#### **LESSON PLAN**

Course Code	Course Title	Sem	ester	Branches	Conta Period /Weel	ls Acad	A STATE OF THE RESERVE AS	Date of commencem ent of Semester
16ME7E02	AUTOMOBILE ENGINEERING	VII		Mechanical Engineering 5		202	2021-22	
COURS	SE OUTCOMES							
1	CO1: Identify the components of automobile, types of drives and engine specifications. [K2]							[K2]
2	CO2: Describe the w							
3								
	CO3: Describe the s	teering geo	ometry,	steering mechani	isms and s	ef an autom	or an aut	21
4	CO4: Describe the d	lifferent br	aking a	nd suspension an	ia systems	or an automo	Jone. [K	
5	CO5: Describe the starting system and electrical accessories of electrical system of an automobile. [K2]							
6	CO6: Describe the e	ngine luhr	rication s	system and use o	f safety sy	stems of an a	utomobi	le. [K2]
UNIT	Out Comes / Bloom's Level	Topics No.		Topics/Activit	v	Text Book / Referenc e	Contac Hour	
		1	. INT	RODUCTION				
	components of automobile, ngine specifications. [K2]	1.1		ction to automobil ering, Classificatio bbiles		T1,R2	1	
		1.2	automo	components of fou bbile – chassis and plant, power trans	body,	T1,T2,R1	2	
I		1.3		of drives - Rear wi Front wheel drive, drive		T1,R1	2	Chalk & Talk, PP
		1.4	Car bo	dy styles		T1,T2,R1	1	and video
	the	1.5		chargers		T1,R1	1	
	ify es a	1.6		chargers		T1,R1,	1	
	enti riv	1.7		case ventilation		T1,R1, R2	1	
4	COI: Identify the types of drives and e	1.8	to pow of cyli lubrica	e Specifications with er, speed, torque, inders and arrange ation and cooling s	number ment, systems	Т1	1	
		1.9		nd syllabus) Defe		= 1	1	
						Total	11	



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#### **LESSON PLAN**

Course Code	Course Title	Sem	ester	Branches	Conta Perio /Wee	ds Aca	demic ear	Date of commencem ent of Semester	
16ME7E02 AUTOMOBILE ENGINEERING		V	/II	I Mechanical Engineering		20:	21-22	04-08-21	
- T	SE OUTCOMES								
1	CO1: Identify the co	mponents	of autor	nobile, types of c	Irives and	engine speci	fications.	[K2]	
2	CO2: Describe the v	vorking of	differen	t elements of aut	omobile t	ransmission	system. [I	(2]	
	CO3: Describe the s								
4	CO4: Describe the c	lifferent br	aking a	nd suspension an	d systems	of an autom	obile. [K	21	
5	CO5: Describe the [K2]	starting sy	/stem an	d electrical acce	ssories of	electrical sy	ystem of	an automobil	
6	CO6: Describe the e	engine lubi	rication	system and use of	f safety sy	stems of an	automobi	le. [K2]	
UNIT	Out Comes / Bloom's Level	Topics No.	-	Topics/Activit	y	Text Book / Referenc e	Contac Hour	t Delivery Method	
	တ်		200	RODUCTION			•		
	tomobil. 3. [K2]	1.1	Franciscontinues proposition	ction to automobilering, Classification biles		T1,R2	1		
	is of au	1.2	automo	components of four bile – chassis and plant, power transr	body,	T1,T2,R1	2		
I	components of automobile,	1.3		of drives - Rear wheren wheel drive, drive		T1,R1	2	Chalk & Talk, PP	
	o co	1.4	Car boo	dy styles		T1,T2,R1	1	and video	
	the	1.5	Super o	chargers		T1,R1	1		
	fy es a	1.6		chargers	najha Pilikana Inconstruction de	T1,R1,	1		
	rivî rivî	1.7		case ventilation		T1,R1, R2	1		
	COI: Identify the types of drives and er	1.8	to power	Specifications with er, speed, torque, and arrangen tion and cooling sy	number nent, ystems	T1	1	1 2	
·	=	1.9	(Beyon	d syllabus) Defec	ets in		1		
1		***	4	13,11		Total	11	Th.	



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	s of		2.TRANSMISSION	I SYSTEM	n	
. 7	working of different elements ion system. [K2]	2.1	Clutches – Single and Multi plate clutches	T1, R1,R2	1	
	9	2.2	Magnetic Centrifugal	T1, R2,R2	1	
	cut.	2.3	Semi centrifugal clutches	T1, R2	1	
	ffer	2.4	Fluid fly wheel	T1, R2	1	-
	of dil [K2]	2.5	Gear boxes – Sliding mesh and Constant mesh gear box	T1, R1	1	
YY	ii c	2.6	Synchromesh gear box	T1, T2,R2	1	CI 11 0
II	king	2.7	Epicyclic gear box	T1, R1	1	Chalk &
	orł n sy	2.8	Torque converter, Propeller shaft	T1, R1	1	Talk, PPT and videos
	the w	2.9	Universal joint, differential, rear axle	T1, R1	1	and videos
	Describe the	2.10	Rear axle drives – Hotchkiss drive, Torque tube drive	T1, R1	1	
	CO2: Describe the working of di automobile transmission system. [K2]	2.11	Rear axle shaft supporting – semi Floating, full floating, and three quarter floating axles.	T1, R1	1	
	ant CC	2.12	(Beyond syllabus) Over drive	T1, R1	1	
		2,12	(Deyona synabas) ever arre	Total	12	
	<u> </u>					
	y, ars		3.STEERING			
	geometr ering ge	3.1	Function and requirements of steering system and general arrangement of steering system	T1,T2,R2	1	
Ш	O3: Describe the steering geometry, eering mechanisms and steering gears f an automobile. [K2]	3.2	Steering geometry – camber, castor, king pin rake, Combined angle toe-in, toe-out, Center point steering.	T1,T2,R2	2	Chalk & Talk, PPT
	<b>33.</b> Describe the stering mechanisms a an automobile. [K2]	3.3	Steering mechanism – Ackerman steering mechanism	T1,T2,R2	1	and videos
	esc me on	3.4	Davis steering mechanism,	T1,T2,R2	1	
	D aut	3.5	Steering gears.	T1,T2,R2	2	
	O3: eerin f an a	3.6	Steering linkages	T1,T2,R2	1 - 1	
	CO stee of a	3.7	Power steering(Beyond syllabus)	T1, R1	1	
	<b>U</b> 0, U	3.1	1 ower steering (beyond synabus)	Total	09	
			4 DDAIZING	SYSTEM	1 07	
				SISIEM		
	npare I braking Ie. [K2]	CO4: Describe and compare different suspension and braking systems of an automobile. [K2]	Function and Requirements of Braking system, Types of Brakes, Drum Brakes and Mechanical brakes	T1, R1	1	4
	coı anç obi		Disc Brakes			Challe 0-
IV	e and nsion iutomo	4.2	Hydraulic brakes –working Principle, Master cylinder	T1, R1	1	Chalk & Talk, PPT and video
	escrib suspe of an a	4.4	wheel cylinder, Tandem master cylinder	T1, R1	1	and videos
	04: D ferent tems (	4.5	bleeding of hydraulic brakes, Pneumatic brakes	T1, R1	1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	S EE S	4.6	Vacuum brakes	T1, R1	1	



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			CHEDENCION EVETE	M		
			Object of suspension systems,	M		
			Types of suspension springs,			
		4.9	Steel springs – Leaf springs,	TI, RI	1	
			Tapered leaf spring			
		4.10	Coil spring and Torsion bar	T1, R1	1	
		4.11	Telescopic shock absorber	T1, R1	1	Total control of the
		4.12	Rigid axle suspension system, independent axle suspension system –	T1, R1	1	
		4.13	Wishbone type, Mac Pherson strut type	T1, R1	1	
		4.14	vertical guide type and swinging half axle type.	T1 ,R1	1	
		4.15	Hill holder (Beyond syllabus)	T1, R1	1	
	-1		(= 0, = 0, = 0, = 0, = 0, = 0, = 0, = 0,	Total	13	
	PE		5. ELECTRICAL			
	m and m of an	5.1	Requirements of charging circuit, generator circuit	T1,R1	1	
	CO5: Describe the starting system and electrical accessories of electrical system of an automobile. [K2]	5.2	Need for cut-out, cutout relay, combined current voltage regulator	TI, RI	1	
V	starting of electrica	5.3	Starting System, requirements, standard, Folo through type Bendix drive mechanism	T1, R1	1	Chalk &
	Describe the al accessories obile. [K2]	5.4	compression spring type drives, over running clutch type and dyer type drives	T1, R1	1	Talk, PPT and videos
	SSCI SSCI SSCI SSCI SSCI SSCI SSCI SSCI	5.5	Solenoid switch, Horn	T1, R1	1	
	De al a bile	5.6	Wiper,Fuel gauge indicator	T1, R1	1	
	ric nol	5.7	Lighting system.	T1, R1	1	
	CO5: Describe electrical accesso automobile. [K2]	5.8	Vehicle Electrical System: Alternator (Beyond syllabus)	TI, RI	1	Superior State of Technical
				Total	08	
			6.ENGINE LUBRICATION &		YSTEMS	
Annual control of the	ntion of an	6.1	Engine lubrication- splash pressure lubrication system	T1,R1	1	
	ubrica iems c	6.2	Oil filters: Cartridge, edge type and centrifugal type	TI, RI	1	All property and a control of the co
X75	CO6: Describe the engine lubrication system and use of safety systems of an automobile. [K2, K3]	6.3	Oil pumps – Gear Pump, Rotor Pump, Vane Pump and Plunger Pump.	TI, RI	1	Chalk &
VI	be the se of s nobile	6.4	Safety systems - Introduction, seat belt, air bags	TI, RI	1	Talk, PPT and videos
	Descri and us autor	6.5	bumper, anti lock brake system (ABS)	TI, RI	1	
	CO6: 1	6.6	Wind shield, suspension sensors, traction control, mirrors	TI, RI	ı	Tibus contraction of the contrac
	, , , , , , , , , , , , , , , , , , ,	6.7	central locking and electric windows, speed control.	TI,RI	1	- Partition of Continues



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		6.11	Cars: Adaptive Cruise Control, (Beyond syllabus)	TI, RI	1				
		I		Total	8				
	CUMULATIVE PROPOSED PERIODS 61								
Text B	Books:								
S.No	TO A DESCRIPTION								
TI	Dr Vissal Singh Auton	Dr. Vissal Singh, Automobile Engineering Volume L&II 13th Edition, Standard Publications, New Deini, 2014.							
	R.K.Rajput. R. K, A Textbook of Automobile Engineering.,2 <sup>nd</sup> edition, Lakshmi publications (P) Ltd., New								
T2	Delhi, 2017.								
Refere	Reference Books:								
R1	R.B. Gupta, Automobile Engineering, 2 <sup>nd</sup> edition, Satya Prakashan Publications, 2016.								
R2	S. Narang "Automobile Engineering "2 <sup>nd</sup> edition Khanna Publishers, 2012								
R3	P.S Gill "Automobile Engineering", 3 <sup>rd</sup> edition S.K. Kataria & Sons, 2011.								
	Web Details								
1	http://nptel.ac.in/courses/107/106/107106088/								
2	http://nptel.ac.in/courses/107/106/107106080/								
3	http://nptel.ac.in/courses/107/106/107106087/								
4	http://nptel.ac.in/courses/107/106/107106082/								

		Name	Signature with date
i.	Faculty	Dr.R LALITHA NARAYANA	Le 39821
ii.	Faculty II (for common Course)	Mr. B. SRINIVAS	03/08/21
iii.	Course Coordinator	DrR. LALITHA NARAYANA	10- 384
iv.	Module Coordinator	DrR. LALITHA NARAYANA	12 3/21
v.	Programme Coordinator	Dr. A. GOPICHAND	Afect

Principal