SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY

Department of Automobile Engineering	LP: OE22102 Rev. No: 00 Date:28 -06-2024
B.E/~~B.Tech/M.E/M.Tech~~ : **Automobile Engineering** Regulation: 2022 PG Specialisation : NA Sub. Code / Sub. Name : **OE22102 / FUNDAMENTALS OF AUTOMOBILE ENGINEERING** Unit : I	

Unit Syllabus: VEHICLE STRUCTURE AND ENGINES

Types of automobiles, vehicle construction and different layouts, IC engines –working of four stroke and two stroke Spark Ignition & Compression Ignition engines, Engine emission control techniques, Emission norms (Euro and BS), Layout of Electric and Hybrid vehicle.

Objective:In the end, the student get familiarize in the engine construction and working.

Session No *	Topics to be covered	Ref	Teaching Aids
1	Types of automobiles	1-Ch 1, Pg 2-5 5-Ch 35, Pg 915-923	PPT
2	Vehicle construction	1-Ch 1, Pg 2-5 5-Ch 35, Pg 915-923	PPT
3	Different layouts of the Vechicle	3-Ch.16; Pg.246-257 5-Ch 35, Pg 915-923	PPT
4	IC engines	7- Ch.1; Pg. 3-6 3- Ch.2; Pg. 16-25	PPT
5	Working of four stroke and two stroke Spark Ignition Engines	7- Ch.1; Pg. 8-10 5- Ch.9; Pg. 326-348	PPT
6	Working of four stroke and two stroke Compression Ignition Engines	5- Ch.1; Pg. 8-11 7- Ch.1; Pg. 8-11	PPT
7	Engine emission control techniques	5- Ch.14; Pg. 516-538 6- Ch.5; Pg. 91-96 7- Ch.14; Pg. 417-450	PPT
8	Emission norms (Euro and BS)	5- Ch.14; Pg. 516-538 7- Ch.14; Pg. 417-450	PPT
9	Layout of Electric and Hybrid vehicle	5- Ch.20; Pg. 655-668	PPT
Content beyond syllabus covered (if any):			

* Session duration: 50 minutes

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Sub. Code / Sub. Name: **OE22102 / FUNDAMENTALS OF AUTOMOBILE ENGINEERING**
Unit : II

Unit Syllabus : FUEL INJECTION AND IGNITION SYSTEM

Carburetor types, Theory of simple carburetor, Petrol injection, Electronic fuel injection, Types of injection systems, fuel pump, Types of fuel injectors, and types of nozzles, Ignition system, Battery coil ignition system, Electronic ignition system.

Objective: To understand the construction and working principle of carburetor, injection and ignition systems.

Session No *	Topics to be covered	Ref	Teaching Aids
10	Principle of Carburetion, Carburetor types,	3-Ch.7; Pg.113-121	PPT
11	Theory of simple carburetor	3-Ch.7; Pg.121-127	PPT
12	Petrol injection	5-Ch.12; Pg.424-479 7-Ch.9; Pg.271-298	PPT
13	Electronic fuel injection	5-Ch.12; Pg.424-479 7-Ch.9; Pg.271-292	PPT
14	Types of injection systems	3-Ch.7; Pg.121-127 7-Ch.8; Pg.241-245	PPT
15	Fuel pump, Types of fuel injectors, and types of nozzles	7-Ch.8; Pg.246-267	PPT
16	Ignition system	7-Ch.9; Pg.295-298	PPT
17	Battery coil ignition system	7-Ch.9; Pg.297-305	PPT
18	Electronic ignition system	7-Ch.9; Pg.309-319	PPT

Content beyond syllabus covered (if any):

* Session duration: 50 mins

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Sub. Code / Sub. Name: **OE22102 / FUNDAMENTALS OF AUTOMOBILE ENGINEERING**
Unit : III

Unit Syllabus : TRANSMISSION SYSTEMS

Clutch-types and construction, gear boxes- manual and automatic, gear shift mechanisms, Over drive, fluid flywheel, torque converter, propeller shaft, slip joints, universal joints, differential and rear axle, Hotchkiss Drive and Torque Tube Drive.

Objective: To have the practice for assembling and dismantling of engine parts and transmission system.

Session No *	Topics to be covered	Ref	Teaching Aids
19	Clutch-types and construction	3-Ch.12; Pg.188-207 5-Ch.24; Pg.720-745	PPT
20	Gear boxes	3-Ch.13; Pg.208-210 5-Ch.25; Pg.750-755	PPT
21	Manual and automatic, gear shift mechanisms	3-Ch.13; Pg.208-210 5-Ch.25; Pg.751-760	PPT
22	Over drive, fluid flywheel, torque converter	3-Ch.13; Pg.211-220 5-Ch.27; Pg.792-805 5-Ch.28; Pg.806-840	PPT
23	Universal joints	3-Ch.14; Pg.230-232 5-Ch.30; Pg.864-875	PPT
24	Differential	1-Ch 34, Pg 907-912 3-Ch.15; Pg.240-224 5-Ch.31; Pg.875-745	PPT
25	Rear axle construction	3-Ch.15; Pg.235-245 5-Ch.33; Pg.900-906	PPT
26	Hotchkiss Drive and Torque Tube Drive	1-Ch 6, Pg 158-1593- Ch.14; Pg.227-230	PPT

Content beyond syllabus covered (if any): Introduction to Ignition system

* Session duration: 50 mins

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Sub. Code / Sub. Name: **OE22102 / FUNDAMENTALS OF AUTOMOBILE ENGINEERING**

Unit : IV

Unit Syllabus : SUSPENSION SYSTEMS AND STEERING SYSTEMS

Types of suspension Springs, Leaf spring, coil spring, Torsion bars, Rubber spring, Telescopic type shock absorber, Independent suspension, Steering geometry and types of steering gear box, Power Steering, steering linkages, steering gears, Types of Front Axle.

Objective:To make the students to understand the importance of steering and suspension system in vehicle.

Session No *	Topics to be covered	Ref	Teaching Aids
28	Types of suspension Springs	3-Ch.16; Pg.292-298 5-Ch.40; Pg.1050-1055 6-Ch.15; Pg.285-288	PPT
29	Leaf spring, coil spring	3-Ch.16; Pg.292-298 5-Ch.40; Pg.1050-1055	PPT
30	Torsion bars, Rubber spring	3-Ch.16; Pg.292-298	PPT
31	Telescopic type shock absorber,	5-Ch.43; Pg.1144-1150 6-Ch.15; Pg.288-290	PPT
32	Independent suspension	3-Ch.16; Pg.300-307 6-Ch.15; Pg.290-296	PPT
33	Steering geometry	3-Ch.16; Pg.246-257	PPT
34	Types of steering gear box	1-Ch 14, Pg 227-234 3-Ch.16; Pg.246-257	PPT
35	Power Steering, steering linkages, steering gears	3-Ch.16; Pg.261-262	PPT
36	Types of Front Axle.	3-Ch.16; Pg.255- 257 5-Ch.40; Pg.1043-1045	PPT
Content beyond syllabus covered (if any):			

* Session duration: 50 mins

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Sub. Code / Sub. Name: **OE22102 / FUNDAMENTALS OF AUTOMOBILE ENGINEERING**

Unit : V

Unit Syllabus : WHEELS TYRES AND BRAKES

Types of wheels, Compare different types of wheel, Types of tyre, Compare different types of tyres, Tyre materials, Electric brake, Servo brake system, Power brake, Disc brake, Drum Brake, Air brake,, ABS.

Objective:In the end the students will gain knowledge on different types of wheels and brake used in the vehicle.

Session No *	Topics to be covered	Ref	Teaching Aids
37	Types of wheels	3-Ch.19; Pg.313-314 6-Ch.16; Pg.303-305	PPT
38	Compare different types of wheel	3-Ch.19; Pg.313-314	PPT
39	Types of tyre	3-Ch.19; Pg.318-323 6-Ch.16; Pg.-305-308	PPT
40	Compare different types of tyres	3-Ch.19; Pg.322-324	PPT
41	Tyre materials	3-Ch.19; Pg.325-326	PPT
42	Disc brake, Drum Brake	3-Ch.17; Pg.265-266 6-Ch.18; Pg.-337-339	PPT
43	Power brake, Electric brake, Servo brake system	1-Ch 10, Pg 347-349 3-Ch.17; Pg.274-278 6-Ch.17; Pg.-340-332	PPT
44	Air brake,	3-Ch.17; Pg.280-286	PPT
45	ABS	1-Ch 10, Pg 380 5-Ch.39; Pg.1015-1020	PPT

Content beyond syllabus covered (if any):

* Session duration: 50 mins

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REFERENCES:

1. Kirpal Singh, "Automobile Engineering", Vol 1 & 2, Seventh Edition, Standard Publishers, New Delhi, 2017.
2. Rahman MD Arafat, "A Text Book of Automobile Engineering", VDM Verlag Publisher, 2011.
3. Jain K.K. and Asthana .R.B, "Automobile Engineering", Tata McGraw Hill Publishers, 2002.
4. Joseph Heitner, "Automotive Mechanics", Second Edition, East-West Press, 2017.
5. K Newton , W Steeds and T K Garrett, "The Motor Vehicle", Butterworth Publishers,1989.
6. Martin W, Stockel and Martin T Stockle, "Automotive Mechanics Fundamentals", The Good heart –Will Cox Company Inc, USA ,1978.
7. Ganesan V., "Internal Combustion Engines", Tata McGraw Hill, 2007

	Prepared by	Approved by
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Designation	ASSISTANT PROFESSOR	PROFESSOR & HEAD
Date	28-06-2024	28-06-2024
Remarks *:		
Remarks *:		

* If the same lesson plan is followed in the subsequent semester/year it should be mentioned and signed by the Faculty and the HOD