SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY

Department of AUTOMOBILE ENGINEERING	LP: AE18501 Rev. No: 0 Date: 22/06/2020
B.E/~~B.Tech/M.E/M.Tech~~ : B.E Regulation: 2018 PG Specialisation : NA Sub. Code / Sub. Name : **AE18501/AUTOMOTIVE ELECTRICAL, ELECTRONICS AND MICROCONTROLLER SYSTEMS** Unit : 01	

Unit Syllabus: **INTRODUCTION TO ELECTRICAL AND ELECTRONICS ACCESSORIES**

Basic electrical principles, electronic components and circuits, digital electronics, microprocessor systems, electrical wiring, terminals and switching, multiplexed wiring systems, circuit diagrams and symbols, dashboard instruments, horn, trafficator.

- Objective: It is essential to know the working of electrical and electronic systems.

Session No *	Topics to be covered	Ref	Teaching Aids
1	Basic electrical principles	4, Ch. 2, Pg. 11-55	PPT/Online
2	Electronic components and circuits, digital electronics	4, Ch. 2, Pg. 11-55	PPT/Online
3	Microprocessor systems	4, Ch. 2, Pg. 11-55	PPT/Online
4	Electrical wiring, terminals and switching	4, Ch. 4, Pg. 83-91	PPT/Online
5	Horn, trafficator	4, Ch. 4, Pg. 91-97	PPT/Online
6	Multiplexed wiring systems in Automotive Wiring systems	4, Ch. 4, Pg. 82-108	PPT/Online
7	Multiplexed wiring systems circuit diagrams and symbols	4, Ch. 4, Pg. 82-108	PPT/Online
8	Dashboard instruments	4, Ch. 4, Pg. 82-108	PPT/Online
9	Dashboard instruments working	4, Ch. 4, Pg. 82-108	PPT/Online
10	Gauges and sensors	4, 4, Ch. 13, Pg. 333-345	PPT/Online
11	Driver information	4, 4, Ch. 13, Pg. 333-345	PPT/Online
12	Visual displays -Traffic information	4, 4, Ch. 13, Pg. 333-345	PPT/Online

Content beyond syllabus covered (if any):

Advanced instrumentation technology

* Session duration: 50 minutes

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Sub. Code / Sub. Name: AE18501/AUTOMOTIVE ELECTRICAL, ELECTRONICS AND MICROCONTROLLER SYSTEMS
Unit : II

Unit Syllabus :STARTING SYSTEM, CHARGING SYSTEM, LIGHTING SYSTEM
Starter motor characteristics, drive mechanisms. DC Generators, Alternators and their characteristics, electronic regulators. Vehicle interior lighting system, vehicle exterior lighting system, lighting design.
Objective:To understand the working of starting system, charging system of an engine for smooth operation.

Session No *	Topics to be covered	Ref	Teaching Aids
13	Starter motor characteristics,	4, Ch. 7, Pg. 149-168	PPT/Online
14	Drive mechanisms.	4, Ch. 7, Pg. 149-168	PPT/Online
15	Types of Drive mechanisms.	4, Ch. 7, Pg. 149-168	PPT/Online
16	Types of Drive mechanisms.	4, Ch. 7, Pg. 149-168	PPT/Online
17	DC Generators,	4, Ch. 7, Pg. 149-168	PPT/Online
18	Alternators and their characteristics,	4, Ch. 6, Pg. 128-148	PPT/Online
19	electronic regulators.	4, Ch. 6, Pg. 128-148	PPT/Online
20	Vehicle interior lighting system,	4, Ch. 11, Pg. 219-315	PPT/Online
21	vehicle exterior lighting system	4, Ch. 11, Pg. 219-315	PPT/Online
22	lighting design.	4, Ch. 11, Pg. 219-315	PPT/Online
23	Advanced starting system technology	4, Ch. 11, Pg. 219-315	PPT/Online
24	New developments in starting systems	4, Ch. 11, Pg. 219-315	PPT/Online

Content beyond syllabus covered (if any):
Case studies

* Session duration: 50 mins

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Sub. Code / Sub. Name: AE18501/AUTOMOTIVE ELECTRICAL, ELECTRONICS AND MICROCONTROLLER SYSTEMS
Unit : III

Unit Syllabus :ELECTRONIC IGNITION AND INJECTION SYSTEM
Spark plugs, advance mechanisms, different types of ignition systems, Electronic fuel injection systems, mono and multi point fuel injection system.

Objective: To understand the working of ignition and injection system of an engine.

Session No *	Topics to be covered	Ref	Teaching Aids
25	Working of Spark plugs	4, Ch. 8, Pg. 170-197	PPT/Online
26	Centrifugal advance mechanisms	4, Ch. 8, Pg. 170-197	PPT/Online
27	Retard advance mechanisms	4, Ch. 8, Pg. 170-197	PPT/Online
28	Different types of ignition systems	4, Ch. 8, Pg. 170-197	PPT/Online
29	Electronic ignition system	4, Ch. 8, Pg. 170-197	PPT/Online
30	Electronic fuel injection systems	4, Ch. 9, Pg. 199-238	PPT/Online
31	Mono fuel injection system	4, Ch. 9, Pg. 199-238	PPT/Online
32	Multi point fuel injection system	4, Ch. 9, Pg. 199-238	PPT/Online
33	GDI & CRDI	4, Ch. 9, Pg. 199-238	PPT/Online
34	**Advanced ignition** technology	4, Ch. 8, Pg. 170-197	PPT/Online
35	Advanced fuel control technology	4, Ch. 9, Pg. 199-238	PPT/Online
36	New developments	4, Ch. 9, Pg. 199-238	PPT/Online
Content beyond syllabus covered (if any):			

* Session duration: 50 mins

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Unit : IV

Unit Syllabus : SENSORS AND MICROPROCESSORS IN AUTOMOBILES

Basic sensor arrangements, Types of sensors – oxygen sensor, hot wire anemometer sensor, vehicle speed sensor, detonation sensor, accelerometer sensor, crank position sensor, Microprocessor and microcomputer controlled devices in automobiles such as voice warning system, travel information system, keyless entry system, electronic steering system.

Objective: To enhance the knowledge of sensor and microprocessor applications in vehicle control system.

Session No *	Topics to be covered	Ref	Teaching Aids
37	Basic sensor arrangements in vehicles	4, Ch. 2, Pg. 11-55	PPT/Online
38	Types of sensors – oxygen sensor	4, Ch. 2, Pg. 11-55	PPT/Online
39	hot wire anemometer sensor	4, Ch. 2, Pg. 11-55	PPT/Online
40	vehicle speed sensor,detonation sensor	4, Ch. 2, Pg. 11-55	PPT/Online
41	accelerometer sensor,crank position sensor	4, Ch. 2, Pg. 11-55	PPT/Online
42	Microprocessor and microcomputer controlled devices in automobiles	4, Ch. 15, Pg. 370-401	PPT/Online
43	GPS	4, Ch. 15, Pg. 370-401	PPT/Online
44	voice warning system	4, Ch. 15, Pg. 370-401	PPT/Online
45	keyless entry system, electronic steering system	4, Ch. 15, Pg. 370-401	PPT/Online
46	Advanced instrumentation technology	4, Ch. 13, Pg. 346-50	PPT/Online
47	New developments in instrumentation	4, Ch. 13, Pg. 346-51	PPT/Online
48	Advanced telematics and communications systems	4, Ch, 13, Pg 348-353	PPT/Online
Content beyond syllabus covered (if any):			

* Session duration: 50 mins

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Unit : V

Unit Syllabus :SAFETY SYSTEMS

Antilock braking system, air bag restraint system, voice warning system, seat belt system, road navigation system, anti theft system.

Objective: To gain knowledge in modern safety systems.

Session No *	Topics to be covered	Ref	Teaching Aids
49	Antilock braking system	4, Ch. 16, Pg. 403-441	PPT/Online
50	air bag restraint system	4, Ch. 16, Pg. 403-441	PPT/Online
51	voice warning system	4, Ch. 16, Pg. 403-441	PPT/Online
52	Seat belt system,	4, Ch. 16, Pg. 403-441	PPT/Online
53	Anti theft system	4, Ch. 16, Pg. 403-441	PPT/Online
54	road navigation system	4, Ch. 16, Pg. 403-441	PPT/Online
55	Highway Safety Systems	4, Ch. 16, Pg. 403-441	PPT/Online
56	ACC	4, Ch. 16, Pg. 403-441	PPT/Online
57	Other safety and comfort systems	4, Ch. 16, Pg. 403-441	PPT/Online
58	Noise control	4, Ch. 16, Pg. 403-441	PPT/Online
59	Rover electric windows	4, Ch. 16, Pg. 403-441	PPT/Online
60	Jaguar 'S' type audio, communications and telematics	4, Ch. 16, Pg. 403-441	PPT/Online

Content beyond syllabus covered (if any):

* Session duration: 50 mins

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REFERENCES:

1. Crouse W.H, "Automobile Electrical Equipment", Mc Graw Hill Book Co Inc. NewYork, 2005
2. Robert N Brady, "Automotive Computers and Digital Instrumentation", A Reston Book, Prentice Hill, Eagle Wood Cliffs, New Jersey, 1988.
3. Spreadbury F.G, "Electrical Ignition Equipment", Constable & Co Ltd., London, 1962.
4. Tom Denton, "Automotive Electrical and Electronics Systems", 5th edition, Routledge, 2017.

	Prepared by	Approved by
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Date	22/6/2020	22/06/2020
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

The Same lesson plan is followed for the Academic year 2021-22

The Same lesson plan is followed for the academic year 2022-23