



GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Diploma in Engineering

Level: Diploma

Branch: Automobile Engineering

Course / Subject Code: DI02C02011(Only for C to D Students)

Course / Subject Name :Auto Trade Practice

w. e. f. Academic Year:	2024-2025
Semester:	2 nd
Category of the Course:	ESC

Prerequisite:	NA
Rationale:	<p>This course is designed to provide students with a comprehensive understanding of automotive systems and the essential skills required in the automotive industry. By identifying key components, materials, and fasteners used in vehicles, students will gain foundational knowledge crucial for any automotive professional. The course further explores various roles and responsibilities within the sector, preparing students for diverse career paths. Practical skills are emphasized through hands-on use of tools, testing equipment, and measuring instruments commonly found in automotive workshops. Students will also engage in field studies, promoting analytical thinking and report-writing skills, which are vital for problem-solving and communication in the field. A strong focus on safety practices, energy conservation, and waste management ensures that students are prepared to work in an environmentally conscious manner. Additionally, the course covers essential vehicle maintenance procedures, equipping students with the technical expertise needed for effective vehicle care and troubleshooting. Overall, this course aims to build a solid foundation for students aspiring to thrive in the dynamic and evolving automotive industry.</p>

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level
01	Recognize various components of automotive assemblies and systems, including materials and fasteners, along with their general specifications.	R
02	Demonstrate the diverse roles and responsibilities in different areas of the automotive sector.	U



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03	Proficiently use common hand tools, testing equipment, and measuring instruments specific to automobile workshops or garages.	U
04	Perform tasks adhering to safety protocols, while incorporating energy-saving techniques and waste management practices within the automotive industry.	A
05	Prepare a study report after collection and analysis of field data.	A

**Revised Bloom's Taxonomy (RBT)*

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
L	T	PR	C	Theory		Tutorial / Practical		
				ESE (E)	PA / CA (M)	PA/CA (I)	ESE (V)	
0	0	6	3	00	00	20	30	50

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
	Not Applicable		
	Total		

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks (in %)					
R Level	U Level	A Level	N Level	E Level	C Level
Not Applicable					

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

(a) Books:

S.No.	Title of Book	Author	Publication with place, year and ISBN
1	Automobile Mechanics	William Crouse	Tata Mc-Graw Hill Publication ISBN-13:978-0-07-063435-0



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2	Automotive engine Theory and servicing	James D Halderman	Pearson Education ISBN-13: 978-0134654003
3	Automobile Engg Vol-3	Anil Chhikara	Satya Prakasan ISBN: 81-7684-359-8
4	Automobile engineering	R B Gupta	Satya Prakashan, New Delhi ISBN: 9788176848589,8176848581
5	Vehicle maintenance and garage practice	Jigar A Doshi Dhruv U Panchal Jayesh P Maniar	PHI Learning ASIN : B00LPGBTG2
6	Sustainable Management of Automobile Waste in developing countries	Forbid George Teke	VDM Verlag ISBN-13 : 978-3639254969
7	Automobile Engineering	Jain K K Asthana	McGraw Hill Education, New Delhi ISBN: 978-0-07-044529-1

(b) Open source software and website:

1. <https://www.howacarworks.com>
2. <https://jameshalderman.com>
3. <https://swayam.gov.in>
4. <https://auto.howstuffworks.com>
5. <https://www.instructables.com>
6. <https://en.wikipedia.org>
7. Software : Auto-cad (Auto desk)

Suggested Course Practical List:

S. No	Practical Outcomes (PrOs)	Approx. Hrs. required
1	Identify various parts/ components of an automobile engine.	6
2	Identify various parts/ components of an automobile transmission system.	6
3	Identify various parts/ components of an automobile electrical system.	6
4	Identify various fasteners and other hardware used in making an automobile.	4
5	List various materials used in vehicle with giving (two to three) reasons for using them for particular application.	4
6	List work/ responsibilities of a junior automotive engineer working in government/ defense sector.	4



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7	List work/ responsibilities of an automobile engineer as an engineer in private transport companies or as a garage owner.	4
8	Demonstrate features and use of various types of common hand tools used in automobile garage with safety measures.	4
9	Demonstrate features and use of various types of common testing equipment's used in automobile garage with safety.	4
10	Demonstrate features and use of various types of common power tools used in automobile garage with safety measures. Suggested list for hands on practice are as follows (1) Practice on using different jacks to remove wheels from vehicle (2) Practice on High pressure washing technic / method of different vehicles. (3) Practice on removal of tyre from wheel disc and mending the punctured tubes using hot patch and cold patch.	6
11	Demonstrate features and use of various types of common measuring instruments used in automobile garage with safety measures. Suggested list for hands on practice are as follows (1) Measuring the wheel base, wheel track and ground clearance of LMV/available vehicle in the workshop. (2)Practice on cleaning and adjustment of spark plug gap	6
12	Prepare and present study report on energy saving methods in automotive sector. (eg. At manufacturing unit / at garage / at office / during transportation)	4
13	Prepare and present study report on waste management methods in automotive sector. (e.g. At manufacturing unit / at garage / at office)	4
14	List out safety features and precautions associated with major tools and machinery used in automotive workshop.	4
15	Prepare and present study report on actual data collection and analysis of any item related to vehicle. (e.g. Fuel, lubricant, component of vehicle, labor cost for doing given work, hardware items)	6
16	Presentation and Report writing on following topics 1. Core idea of industry 4.0 2. Understanding of Industrial Internet of Things 3. Artificial Intelligence	6
17	Draw layout of authorized automobile workshop considering important points to be taken care of, rules and safety aspects.	6



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18	Read user manual of your two wheeler & four wheeler and explain each and every details.	6
Total Hrs.		90

List of Laboratory/Learning Resources Required:

S. No.	Equipment Name with Broad Specifications
1	Tool kits include Screwdrivers, Wrenches (spanners), Pullers, Surface tables, Hammers, Pliers, Bench vice
2	Hydraulic jack Head Capacity (Ton)1 Lifting Capacity (min.) (Ton)3 Working Pressure (bar)700-750 Lifting Stroke (mm)117 Automatic tyre changer Machine Tyre puncture Kit (Tubeless and Tube tyre) Heavy Duty High Pressure Washer for Car, Bike (Min Pressure 280 bar)
3	Vehicle lift Type of mounting Surface mounted Lift Type2 Post Driver Type Electro-hydraulic Lifting capacity3.5 ton Lifting height with load (Maximum)1800 millimeter.
4	Lubricating equipment's like oil pan to drain oil, grease gun, grease/lubricant oil pump
5	Piston ring compressor Capacity, mm53-175
6	Piston ring expander Size in mm80-120 Nominal capacity (mm)100-250
7	Measuring tools like Steel Rule, Dial Gauge, Calipers, Thickness gauge, Wire gauge, Micrometer, Vernier, Feeler Gauge.
8	Battery load tester Unit for testing all size of vehicle batteries under operating condition and will analyses charging/starting circuits. These range voltmeter and ammeter and color-coded push button coded push button selection are mounted on it.



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9	Engine Compression Gauge compression tester of 0-21 bar and 0-300 psi
10	various types of testing instruments and equipment like battery load tester, engine compression gauge, battery hydrometer set, brake tester, Pressure gauge, engine vacuum test gauge, nozzle tester

Suggested Project List:

Suggested Activities for Students: If any

1. Visit any one automobile garage or manufacturing unit to understand role of automobile engineer in field then prepare a report.
2. Expert lecture from RTO-inspector/ vehicle surveyor /sales and marketing person of automobile industry to understand role of automobile engineer in field then prepare a note on it.
3. Group discussion on topics covered in this course or any other branch specific.

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