



MASTER COPY
Gujarat Council of Vocational Training
Gandhinagar



1. Name of Course:

Automobile Engine Diagnosis & Testing

N.C.O. No. for Skills Covered:
 (Please refer National Classification of
 Occupations -2004 available
 on www.dget.nic.in)

2. Engineering OR Non-engineering: **Engineering**

3. No. of students per batch: **10**

4. Duration in Hours. : **176 hrs.**

5. Duration in Month: **2 Month @ 22 hours/Week.**

Duration in Month: **NA @ 20 hours/Week**

6. Examination Scheme:

No.	Name of Subject	Teaching Hours during full course.	Maximum Marks. (Excluding Sessional)	Minimum Marks required for Passing (Excluding Sessional).	Sessional Marks if any.
Subject-1	Trade Theory	32 Hrs	100	40	
Subject-2	Trade Practical	144 Hrs	300	180	

7. Entry qualification for Trainee:

Minimum entry qualification (Essential):	1. 8 th Pass with 1 year Automobile experience or 2. 10 th pass or 3. ITI certificate in Automobile Sector
---	--

8. Minimum qualification for Trainer:

Minimum qualification (Essential):	1) Diploma in Automobiles 2) Diploma mechanical with Auto industry experience
Desirable:	1) Diploma in Automobiles 2) Diploma mech. Eng. With Auto industry experience...

J. B. Sharma

Seel





**Gujarat Council of Vocational Training
Gandhinagar**



9. Syllabus Committee Member:

Sr.	Name	Organization	Designation	Technical Qualification	Experience in Years	Signature
1.	A.K MEHTA	CET - Gujarat	DY.DIRECTOR	D.A.E	36	
2.	T. N. BHAVSAR	ITI, RADHANPUR	PRINCIPAL	D.A.E	23	
3.	C. B. ZALA	ITI, PATAN	PRINCIPAL	D.A.E	22	
4.	A. N. AGRAVAT	ITI, BHAVNAGAR	S.I. C.o.E Auto (ADVANCE)	D.A.E	25	
5.	A. S. TRIVEDI	ITI, RAJKOT	S.I - MECH..DIESEL	D.A.E	23	
6.	PARAS SHAH	ITI, TARSALI, VADODRA	S.I. C.o.E Auto (ADVANCE)	D.A.E	21	
7.	K. K. TRIVEDI	ITI, PALANPUR	S.I - MECH..DIESEL	D.A.E	7	
8.	H. B. PRAJAPATI	ITI, PATAN	S.I - MECH..DIESEL	D.A.E	7	
9.	PRAVIN PATEL	Mahindra Shivam sales Corporation, Palanpur	Workshop Manager	D.A.E	16	
10.	B.J. GOHIL	Tanu Motors Pvt. Ltd. Palanpur	General Manager	B.E Mechanical	10	

10. Skills Achievement of Trainee:

(Should be well defined and having reference to NCO):

The trainee, after successful completion of training, will have following skills...

The successful candidate would be able to

1. Trace out the problem with the help of Vehicle Scanner.
2. Repair and Overhauling of Engine Systems.





Gujarat Council of Vocational Training
Gandhinagar



11. Approximate cost of Tools
/ Equipments / Machinery for
Starting one batch of the course:

Rupees
39, 92,000/-

Reference
Year 2011

12. Area required for practical / Workshop for one batch.

42 Sq. Meter

13. Minimum Power connection required

01. K.W.approx

14.1 No of items in Standard list of Machinery:

07

14.1.1. Page NO 04

14.2 No of items in Standard list of Shop outfit:

30

14.2.1. Page NO from 05 to 06

14.3 No of items in Standard list of Trainee Toll-Kit:

05

14.1.1. Page NO 07

***** FOR OFFICIAL USE *****

Approved by GCVT in ~~Governing Body meeting~~ on:

06-09-2013

Syllabus implemented w.e.f. admission session :

Next session

Revision History :

1. Revision No. 01 Revision Date. 02/08/2013
2. Revision No..... Revision Date.
3. Revision No..... Revision Date.

J. Bhandari

S. K. J.





**Gujarat Council of Vocational Training
Gandhinagar**



**Standard List of Machinery - Equipment
for Trade of Automobile Engine Diagnosis & Testing**

Sr. No.	Description of Item with detailed specifications	Item type i.e. Machinery / Equipment OR Shop Outfit OR Trainee Toolkit	Quantity Required per one Batch of Students	Quantity Required per one Batch of Students for Instructor	Total Quantity Required (Total of previous two columns)
1.	Latest Diagnostics tester with Software or latest engine analyzer	Machinery	0	01	01
2.	Exhaust gas analyzer (universal use)	Machinery	0	01	01
3.	2 post hoist (Electro hydraulic free floor- 4 ton capacity)	Machinery	0	01	01
4.	MPFI 4 Cylinder engine	Machinery	0	01	01
5.	CRDI 4 Cylinder engine	Machinery	0	01	01
6.	Mock up wiring harness of MPFI system with ECM & all Sensors, actuators & ignition system (engine management system)	Machinery	0	01	01
7.	4 Cylinder scrap engine (petrol or diesel)	Machinery	0	01	01

T. Chavan

Self





Gujarat Council of Vocational Training
Gandhinagar



Standard List of Shop-outfit

for Trade of Automobile Engine Diagnosis & Testing

Sr. No.	Description of Item with detailed specifications	Item type i.e. Machinery / Equipment OR Shop Outfit OR Trainee Toolkit	Quantity Required per one Batch of Students	Quantity Required per one Batch of Students for Instructor	Total Quantity Required (Total of previous two columns)
1	PC, Printer with latest system	Shop Outfit	0	01	01
2	Work tables	Shop Outfit	0	01	01
3	Pneumatic wrench (for socket spanner) 2.5 kgm torque	Shop Outfit	0	01	01
4	Pneumatic wrench (for socket spanner) 3.5 kgm torque	Shop Outfit	0	01	01
5	Tool cabinet (180cm high x 90cm wide x 50cm depth) with 5 rack (3 part per rack)	Shop Outfit	0	01	01
6	Piston Ring compressors	Shop Outfit	01	01	02
7	Valve spring lifter	Shop Outfit	01	01	02
8	Vacuum gauge to read 0 to 760 mm of Hg.	Shop Outfit	0	01	01
9	Battery 12 V(65 amp)	Shop Outfit	0	01	01
10	Vernier Calliper 250 or 200 mm inside, outside & depth	Shop Outfit	01	01	02
11	Torque wrench set of 3 Nos.	Shop Outfit	0	01	01
12	Cleaning Trays 45 x 30 cm.	Shop Outfit	02	01	03
13	Micrometer outside 0-25 mm, 25-50 mm, 50- 75mm, 75-100 mm	Shop Outfit	0	01	01
14	Micrometer inside 25-50,50-75, 75-150 mm with extension rod	Shop Outfit	0	01	01
15	Compression testing gauge to read 0 to 115 kg/sq cm	Shop Outfit	0	01	01
16	Cylinder bore gauge capacity 50 to 150 mm	Shop Outfit	0	01	01

Handwritten signature

Handwritten signature





Gujarat Council of Vocational Training
Gandhinagar



17	Bearing puller screw powered/hydraulic with attachments Max spread 80, 200 and 300 mm	Shop Outfit	0	01	01
18	Engine lifting hoist (3000 kg capacity)	Shop Outfit	0	01	01
19	Spanner, adjustable 20 cm	Shop Outfit	02	01	03
20	Nylon hammer (500 grm)	Shop Outfit	01	01	02
21	Box spanner set(6 to 32 mm)	Shop Outfit	01	01	02
22	Steel rule 30cm	Shop Outfit	01	01	02
23	Hand file 20 cm. second cut	Shop Outfit	01	01	02
24	Centre punch 10mm dia x100m	Shop Outfit	01	01	02
25	Chisel cold flat 20 mm	Shop Outfit	01	01	02
26	Feeler gauge 20 blades (metric)	Shop Outfit	01	01	02
27	Allen Key set of 12 pieces (2 mm to 14 mm)	Shop Outfit	01	01	02
28	Phillips Screw Driver Type set of 5 pieces 100 mm to 300 mm 04 Sets 34 Spanner, ring offset set	Shop Outfit	01	01	02
29	Pneumatic spark plug spanner	Shop Outfit	01	01	02
30	5 Drawer roller cabinet with bottom compartment	Shop Outfit	02	0	02

T. Shrivastava

Self





Gujarat Council of Vocational Training
Gandhinagar



Standard List of Trainee Toolkit

for Trade of Automobile Engine Diagnosis & Testing

Sr. No.	Description of Item with detailed specifications	Item type i.e. Machinery / Equipment OR Shop Outfit OR Trainee Toolkit	Quantity Required per one Batch of Students	Quantity Required per one Batch of Students for Instructor	Total Quantity Required (Total of previous two columns)
1	Screw driver 20 cm. x 9 mm blade	Tool Kit	10	01	11
2	Screw driver 30 cm x 9mm blade	Tool Kit	10	01	11
3	Spanner D E set of 12 pieces (6mm to 32 mm)	Tool Kit	10	01	11
4	Pliers combination (150mm)	Tool Kit	10	01	11
5	Ring spanner set of 12 pieces (6mm to 32 mm.)	Tool Kit	10	01	11

T. Chauhan

[Signature]





Syllabus for Automobile Engine Diagnosis & Testing

Week No	Theory	No of Hrs.	Practical	No of Hrs.	Remarks
1	<ul style="list-style-type: none">▪ Knowledge on health & safety precautions to be observed in the workshop / garage / trade & opportunities▪ Introduction of tools and Machinery.▪ Introduction of Automobile engine with different types	04	<ul style="list-style-type: none">▪ Admission Formalities.▪ Safety Training & demonstration of hand tools & power tools.▪ Study of engine working by Demonstration	18	
2	<ul style="list-style-type: none">▪ Definition of important terms related to automotive engine▪ Construction of cylinder head And cylinder block▪ Construction of Piston assembly, crank-shaft & fly wheel	04	<ul style="list-style-type: none">▪ Dismantling engine,▪ Check / test – compression pressure, cylinder head & block warpage, valve leak , bearing) clearance, measure bore & piston assy. piston ring end gap & side clearance, crank and cam shaft bend and wear,▪ Assembling engine	36	
3	<ul style="list-style-type: none">▪ Standard procedure for disassembling and assembling the engine	04			
4	<ul style="list-style-type: none">▪ Difference between Carburettor and MPFI.▪ Details of MPFI system & Petrol fuel supply system with carburettor▪ Details of CRDI system & Diesel fuel supply system	04	<ul style="list-style-type: none">▪ layout of MPFI engine▪ layout of CRDI fuel supply system	18	

T. B. Bhasani

S. J. J.





Gujarat Council of Vocational Training Gandhinagar



5	<ul style="list-style-type: none"> ▪ Fundamental of electric principle , wiring principle & wiring colour code of engine electric system ▪ Describe electronic ignition system and engine management system ▪ Working principle of sensors & actuators 	04	<ul style="list-style-type: none"> ▪ Remove, clean, check & overhaul electrical components and wiring harness on make up wiring board ▪ Remove, clean, check & overhaul electronic ignition system and engine management system, sensors & actuators on make up wiring board 	18	
6	<ul style="list-style-type: none"> ▪ Use and operating process of vehicle scanner/engine analyser ▪ Latest emission norms ▪ Exhaust gas recirculation and inter cooling system ▪ Automotive emission, its causes & rectification ▪ Describe working of ECR & catalytic convertor 	04	<ul style="list-style-type: none"> ▪ Trouble shooting and diagnosis with vehicle scanner software and scanning of engine management system 	18	
7	<ul style="list-style-type: none"> ▪ Industrial visit 	04	<ul style="list-style-type: none"> ▪ Industrial visit 	18	
8	<ul style="list-style-type: none"> ▪ Describe the lubricating , cooling & lighting system ▪ Revision ▪ Test 	04	<ul style="list-style-type: none"> ▪ Testing the vehicle for exhaust emission. ▪ Preventive maintenance of the engine system ▪ Further practice of engine ass.& diagnosis by scanner ▪ Test 	18	

J. Bhawan

