

# **BANGLADESH TECHNICAL EDUCATION BOARD**



## **SYLLABUS FOR THE SHORT COURSE**

**ON**

## **AUTO MECHANICS (GRADE-1)**

**Total Duration: 360 hours**

## **Course Title: Auto Mechanics (Grade -1)**

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## INTRODUCTION

This course is designed to enhance the knowledge and skill of a trainee in the field of automotive repair and maintenance according to the demand of automotive job market. This course has three competencies such as: basic, common and core competencies. The core competency covers the repairing and maintenance of engine and other vital part of automobile.

This course is also designed to enhance the basic, and common knowledge and skill of a trainee in the field of automotive repair work.

## OBJECTIVES

1. To provide clear conception about conventional automobile its different systems.
2. To provide knowledge & skill on proper use is tools & equipment.
3. To develop skill on automotive repairing & maintenance work.
4. To develop skill on shop safety & house keeping.
5. To develop skill on first aid application.
6. To provide knowledge & skill on making an estimate of a job.
7. To provide basic knowledge & skill on basic electricity

## COURSE OUT LINE

Name of Course	Duration of Course		Entry Qualification
Auto Mechanics (Grade -1)	Total 360 hrs	5 days per week, Per day 3 hrs	Minimum Eight Pass.
	Theory= 60 hrs Practical= 240 hrs.	Theory = 1 hr, per lesson Practice = 2 hrs. per practice	
	Basic Competency & Communicative English= 60 hrs	Total = 3 hrs, per working day	

## LIST OF COMPETENCIES

### Basic Competencies: Contents:

#### a) (i) Basic Competencies - 30 hours

Period	Topics	hours
1. Receive and Respond, Participate and Lead to workplace communication:		
1	a) Explain & follow routinary speaking & messages in a workplace.	1
2	b) Follow routinary Speaking & message.	1
3	c) Perform work duties following written notices.	1
2. Work with others, Team Environment and Lead small Teams:		
3	a) Develop effective workplace relationship.	1.5
4	b) Contribute to work group activities.	1.5
3. Demonstrate work values, Practice career professionalism and Develop & Practice Negotiation skills		
5	a) Define the purpose of works.	1
6	b) Apply work values/ethics.	1
7	c) Deal with ethical problems.	1
8	d) Maintain integrity of conduct in the workplace.	1
4. Practice housekeeping procedures, Occupational health and safety procedure and Solve problems related to work Activities:		
9	a) Sort and remove unnecessary items.	1
10	b) Arrange items.	1
11	c) Maintain work areas, Tools and Equipments.	1
12	d) Follow standardizes work process and procedures.	1
13	e) perform work spontaneously.	1

14	a. Use Mathematical Concepts & Techniques and Use Relevant Technologies:	3
6. Personal Manner:		
15	a) Show good Manner.	2
16	b) Respect honorable person (Sir, Senior, Trainees).	2
17	c) Cooperate & Thinking to each and other about practical works.	2
18	d) Maintain sequence in practical works.	2
19	e) Own Responsibility & Duties of practical works.	2
20	f) Observation of all practical works.	2

**a) (ii) Communicative English - 30 hours**

Related Subject-10 hours and General Subject- 20 hours 1 hour/period

On the completion of this course trainees will be able to:

1. Speak in English with confidence
2. Communicate with target persons effectively.
3. Understand the speech of English users.
4. Achieve better professional performance.

No. of period	Tropics- Conversational Situation	hours
01	Speaking English – Getting Information & Finding one’s way	1
03	Speaking English – About Tools and Equipments	1
02	Speaking English – About meeting some one & participating in class.	1
04	Speaking English – Daily Activities & Asking About Activities	1
05	Speaking English – Evening Activities and about theoretical contents.	1
06	Speaking English – Meeting at the Train station & Asking Question at the Train station.	1
07	Speaking English – Meeting at the Airport & Getting information at the Airport’s	1
08	Speaking English – About different type of Measuring Tools and Cutting Tools	1
09	Speaking English – Getting to the Hotel & Asking direction.	1
10	Speaking English – Asking about Buses & Traveling by bus.	1
11	Speaking English - About Practical Class.	1
12	Speaking English – Going by Taxi and Asking the time.	1
13	Speaking English – Arriving early or late and Time and the calendar.	1
14	Speaking English – Living in an Apartment.	1
15	Speaking English – Using the Telephone.	1
16	Speaking English – Getting help in stores and talking about shopping.	1
17	Speaking English – Sending and Receiving Letters.	1
18	Speaking English – Talking about the Weather & Trips and sight seeing.	1
19	Speaking English – Talking about Eating & Dinner Conversation.	1
20	Speaking English – About Machines and Materials.	1
21	Speaking English – Common Health problem and Quitting & Finding Jobs.	1
22	Speaking English – Office Details and Office Conversation.	1
23	Speaking English – About Practical Job.	1
24	Speaking English – On a specific situation & Public speaking.	1
25	Speaking English – About Exchanging view with a Persons & Introducing oneself.	1
26	Speaking English – Describing and Narrating events, place, Objects etc.	1
27	Speaking English – About different type of computer, operating system, system and operating software, add remove software, DBM, Email and internet .	4

## **Practical:**

1. Speaking on a specific Situation.
2. Public Speaking.
3. Exchanging views with target persons.
4. Introducing one self.
5. Describing & Narrating events, places, objects etc.
6. Producing the meaning of given words (by the teachers)-Vocabulary.
7. Prepared speech.

## **b. Common Competencies:**

1. Identify the parts of SI engine.
2. Identify the components of different systems of SI engine.
3. Identify the different tools & equipment.
4. Identify the different automotive tools & equipment.
5. Perform proper use of tools & equipment.
6. Identify the special service tools (SST).
7. Perform proper use of special service tools.
8. Identify the components of power Transmission system.
9. Identify the components of brake system.
10. Identify the components of brake system.
11. Identify the components steering system.
12. Identify the components diesel fuel system
13. Perform house keeping and safety practices.
14. Perform Safety practice on hand tools use.
15. Perform basic electric works.
16. Maintain tools & equipment.
17. Read and follow the instructions of manuals.
18. Prepare an estimate of a job.
19. Perform first aid practice

## **c. Core competencies:**

1. Disassemble and assemble the 81 engine
2. Perform testing the engine parts
3. Find out the problem~ of engine parts.
4. Perform repairing and servicing of petrol fuel system.
5. Perform repairing and servicing of lubricating system.
6. Perform repairing and servicing of cooling system.
7. Perform servicing of air cleaner.
8. Perform repairing and servicing of Exhaust system.
9. Perform repairing and servicing of ignition system.
10. Perform repairing and servicing of overhauling of running engine.
11. Perform repairing and servicing of clutch assembly.
12. Perform repairing and servicing of gear box.
13. Perform repairing and servicing of differential.
14. Perform of removing & installing of axle.
15. Perform repairing and servicing of brake system.
16. Perform repairing and servicing of steering system.
17. Perform repairing and servicing of diesel fuel system.
18. Perform repairing and servicing of servicing of complete automobile

## THEORY

Sl. No	Topics	Time (hrs)
01	Introduction with automobile	1
02	Shop safety & House keeping	2
03	Type it automobile	1
04	Operating principle of SI engine	2
05	Operating of 2-stroke & 4-stroke engine	2
06	Moving and stationary parts of engine	1
07	Function of each parts of engine	2
08	Function of different system of engine	1
09	Operation of petrol fuel system	1
10	Operation of petrol fuel pump	1
11	Operation of carburetor and its circuit	3
12	Operation of Lubricating system	1
13	Operation of Lubricating oil pump	1
14	Operation of engine cooling system	1
15	Operation of water pump	1
16	Operation of thermostat valve	1
17	Operation of air cleaner and air induction system	1
18	Operation of Exhaust system	1
19	Operation of conventional ignition system	2
20	Operation of conventional ignition distributor	3
21	Operation of spark plus	1
22	Type, necessity & symptoms of engine overhauling	1
23	Operation of coil spring clutch	2
24	Operation of Gear box	3
25	Operation of propeller shaft universal &	1
26	Operation of differential	2
27	Operation of axles	1
28	Operation of hydraulic & vacuum brake system	4
29	Operation of manual steering system	1
30	Operation of steering gear box	2
31	Operation of inline & distributor type diesel fuel pump	4
32	Operation of diesel injector	2
33	Current, Voltage & resistance	1
34	Series & parallel circuit	2
35	The components of electrical circuit and its importance	2
36	Making estimate of a Job	2

## Practical

Sl. No.	Topics	Time (hrs)
01	Identification of common hand tools & equipment	
02	Identification of use of common hand tools & equipment	
03	Identification of the parts of SI engine	
04	Identification of the components of different systems of SI engine	
05	Identification of the automotive tools & equipments	
06	Proper use of the automotive tools & equipments	
07	Identification of special service tools (SST)	
08	Proper use of special service tools (SST)	
09	Disassembling & assembling of SI dead engine (several times)	
10	Testing of engine parts	

11	Troubling of engine parts	
12	Disassembling, testing & assembling of the components of petrol fuel system	
13	Disassembling, testing & assembling of the components of lubricating system	
14	Disassembling, testing & assembling of the components of cooling system	
15	Disassembling, testing & assembling of the components of air cleaner	
16	Disassembling, testing & assembling of the components of the exhaust system	
17	Disassembling, testing & assembling of the components of ignition distributor	
18	Connecting & completing electrical circuit of ignition system	
19	Disassembling, assembling & starting of a running engine	
20	Disassembling, testing & assembling of clutch assembly	
21	Disassembling, testing & assembling of gear box	
22	Disassembling, testing & assembling of differential	
23	Removing & installing the axles	
24	Disassembling, testing & assembling of the master cylinder & wheel cylinder	
25	Servicing of brake system	
26	Disassembling, testing & assembling of steering gear box & linkage	
27	Servicing of manual steering system	
28	Series & parallel circuit connection	
29	Voltage, current & resistance measurement with AVO meter	
30	Disassembling, testing & assembling of the components of diesel fuel system	
31	Servicing of diesel fuel system	
32	Servicing of complete automobile	

**MINIMUM REQUIREMENTS OF TOOLS & EQUIPMENT FOR AUTO-MECHANICS (Grad-1) COURSE**

A.

01	Open ended wrench	1 set
02	Box wrench	1 set
03	Socket wrench	1 set
04	Pipe wrench (Medium Size)	1 pc
05	Adjustable wrench (different size)	1 pc each
06	Torque wrench	1 pc
07	Flat screw driver (Small, Medium & Heavy duty type)	1 pc each
08	Phillips head screw driver	1 pc each
09	Combination pliers (Medium size)	1 pc each
10	Ball peen Hammer	1 pc each
11	Flat file (Medium type)	1 pc
12	Triangle File (Medium type)	1 pc
13	Hacksaw	1 pc
14	Flat chisel	1 pc
15	Center punch	1 pc
16	Puller (3 leg/medium size)	1 pc
17	Valve spring compressor (small & size)	1 pc
18	Piston ring compressor	1 pc
19	Snap ring remover	1 pc
20	Multimeter	1 pc
21	Micrometer (outside)	1 pc
22	Filler Gauge	1 pc
23	Wheel Wrench	1 pc

24	Tyre Leuer	1 pc
25	Tyre pressure Gauge	1 pc
26	Wheel Jack	1 pc
27	Hydrometer	1 pc
28	Steel Tape	1 pc

B.

01	Complete chassis	1
02	Running Engine	1
03	Dead Engine	2
04	Gear box assy.	2
05	Clutch assy.	2
06	Differential assy.	2
07	Ignition Distributor (Conventional)	2
08	Alternator	2
09	Starter motor	2
10	Dash board instruments	1 set
11	Fuses & Relay	3 per each
12	Old Lead Acid Battery	02 pcs

## EMPLOYMENT OPPORTUNITIES

- |                       |   |
|-----------------------|---|
| I. As auto mechanic   | - In different Govt., Semi- Govt., Autonomous and Non-Govt. Organizations |
| II. As auto mechanic  | - In abroad.  |
| III. As auto mechanic | - Self employment within country.   |

## BOOK REFERENCE

- |                             |                |
|-----------------------------|----------------|
| I. Automotive Mechanics     | - W. H. Crouse |
| II. Automotive Mechanics    | - Michel       |
| III. Automotive Mechanics   | - Stokel       |
| IV. Automotive Fundamentals | - F. Nash.     |

**THE END**