

DEBRA THANA S.K.S. MAHAVIDYALAYA
BACHELOR OF VOCATIONAL
MAJOR IN AUTOMOBILE
(Under CCFUP, 2024)

Level	YR.	SEM	Course Type	Course Code	Course Title	Credit	L-T-P	Marks				
								CA	ESE	TOTAL		
B.Voc	1 st	I	SEMESTER-I									
			Major-1	MJ101	T: Basic ofAutomobile ; P: Practical			4	3-0-1	15	60	75
			SEC	SEC01	P: Welding Technology			3	0-0-3	10	40	50
			AEC	AEC01	Communicative English -1 (<i>common for all programmes</i>)			2	2-0-0	10	40	50
			MDC	MDC01	Multidisciplinary Course -1 (<i>to be chosen from the list</i>)			3	3-0-0	10	40	50
			VAC	VAC01	ENVS (<i>common for all programmes</i>)			4	2-0-2	50	50	100
		Semester-I Total					16				325	
		II	SEMESTER-II									
			Major-2	MJ102	T: Automotive Engine 1; P: Practical			4	3-0-1	15	60	75
			SEC	SEC02	P: Engineering Drawing			3	0-0-3	10	40	50
			AEC	AEC02	MIL-1 (<i>common for all programmes</i>)			2	2-0-0	10	40	50
			MDC	MDC02	Multi Disciplinary Course-02 (<i>to be chosen from the list</i>)			3	3-0-0	10	40	50
			VAC	VAC02	Value Added Course-02 (<i>to be chosen from the list</i>)			4	4-0-0	10	40	50
		Summer Intern.	CS	Community Service			4	0-0-4	-	-	50	
		Semester-II Total					20				325	
		TOTAL of YEAR-1					44				650	

MJ = Major, MI = Minor Course, SEC = Skill Enhancement Course, AEC = Ability Enhancement Course, MDC = Multidisciplinary Course, VAC = Value Added Course; CA= Continuous Assessment, ESE= End Semester Examination, T = Theory, P= Practical, L-T-P = Lecture-Tutorial-Practical, MIL = Modern Indian Language, ENVS = Environmental Studies

SEMESTER-I

BACHELOR OF VOCATIONAL
MAJOR IN AUTOMOBILE
AUTOMOBILE MAJOR 1

MJ-1 : Basic of Automobile

MJ-1T: Basic of Automobile

Unit-I: Introduction to Automobiles

- 1.1 An introduction with Automobile [2L]
- 1.2 History of Automobile [2L]
- 1.3 General classification of Automobile [2L]
- 1.4 Anatomy of an Automobile [3L]
- 1.5 Engine operating system[3L]

Unit –II: Introduction to the Automobile Engines

- 2.1 Air Standard cycles[3L]
- 2.2 Engine operations[2L]
- 2.3 Details of construction in I.C Engine. [2L]
- 2.4 Classification of I.C Engine. [2L]
- 2.5 Two stroke Engine [2L]
- 2.6 Four stroke Engine. [2L]
- 2.7 Engine performance. [2L]
- 2.8 Engine troubles[2L]

Unit –III: Workshop Safety

- 3.1 Abbreviation & Symbols used in Automobile Technology[2L]
- 3.2 Introduction with Automotive Workshop & its Equipment [2L]
- 3.3 Safety Precaution [3L]
- 3.4 fire and fire fighting [2L]

Unit –IV : Workshop Tools & Equipment

- 4.1 Introduction with tools used in automotive workshop[3L]
- 4.2 Introduction with special tools and its uses[2L]
- 4.3 Basic function of workshop equipment [2L]

Total credit - 3

Contact Hours - 45

Suggested Readings:

1. AUTOMOBILE ENGINEERING –R.B GUPTA
2. AUTOMOBILE ENGINEERING – C.P.NEKRA
3. AUTOMOBILE ENGINEERING - Dr . KRIPAL SING.
4. Workshop technology-(vol.1& vol.2)-Gupta +Khurmi

Reference Reading:

1. Automobile engineering – G.B.S Nagra
2. A 2 Z AUTOMOBILE ENGG. -Dr . KRIPAL SING.
3. Automobile Engineering – A.K Babu & Sing Ajit Pal
4. AUTOMOBILE MECHANICS – N.K GIRI
5. Automobile engineering –K.K JAIN
6. Automobile engineering – S.K. Gupta

MJ-1P: Basic of Automobile(Practical)

Course Outline:

1. Safety precaution of Automobile workshop [2P]
2. Identification of various workshop tools and equipments [2P]
3. To practice the dismantling and reassembling of the parts of the crank shaft. [2P]
4. To practice fitting of the valves and to adjust tappet clearance. [2P]
5. To practice of piston and connecting rod in cylinder bore using piston ring compressor. [2P]
6. To practice decarbonisation of cylinder head by taking it out from the engine . [2P]
7. To practice dismantling of the cylinder head valve. [2P]
8. Measure the cylinder bore by bore gauge or vernier caliper. [2P]
9. To measure diameter of the piston. [1P]
10. To measure the flatness of cylinder head. [1P]
11. To practice of dismantling of engine for cleaning and reassembling all the parts of the engine after inspecting . [2P]
12. To learn and uses of various fire extinguisher. [1P]
13. To measure the capacity of an engine . [3P]
14. To measure the engine vacuum using a vacuum gauge [1P]
15. To measure the wheel base and wheel track by using a measuring tape [1P]
16. To practice the cutting of thread on bolt , nut and stud. [2P]
17. To measure the engine compression using a compression gauge [2P]

Total credit - 1

Contact Hours – 30(15)

Suggested Readings:

1. Mechanic Motor Vehicle Practical- Manish Sharma
2. Automobile engineering practical – N K Malhotra
3. Automotive Mechanics-Crouse & Angline

BACHELOR OF VOCATIONAL

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AUTOMOBILE

SKILL ENHANCEMENT COURSE (SEC) SEC 1

SEC 1: Welding Technology

1. Study on welding technology [5P]
2. Join the metal sheet by various welding process. [5P]
3. Practice on arc welding . [7P]
4. Gas welding process. [7P]
5. Study on various welding equipment. [5P]
6. Introduction to MIG welding [5P]
7. Special practice class [6P]

Total credit - 3

Contact Hours - 40

Suggested Readings:

1. Workshop technology 1(Manufacturing proces)- Hazra & Chowdhuri
2. Workshop technology 1(Manufacturing proces)- Khurmi & Gupta
3. Welding technology – NIMI / Asian

Reference Book :

1. Machine – B.S. Raghubanshi

SEMESTER-II

BACHELOR OF VOCATIONAL MAJOR IN AUTOMOBILE

MAJOR 2

MJ-2: Automotive Engine I

MJ-2T: Automotive Engine I

Unit-I: Petrol Engine Construction and its Operating System

- 1.1 Basic petrol engine components [2L]
- 1.2 Cylinder Block , Gaskets & Oil Seals, Cylinder Head [2L]
- 1.3 Function of piston, piston rings, connecting rod, and piston pins, measurement and fitting of piston rings [2L]
- 1.4 Crankshaft, Camshaft and Rocker arm, Cam chain, Connecting Rod, Engine Bearing [2L]
- 1.5 Valve & valve trains, trouble shooting of excess smoke, overheating, knocking, timing chain noise etc [2L]

Unit –II: Ignition System

- 2.1 Introduction with components of ignition system [2L]
- 2.2 Battery ignition system and magneto ignition system [2L]
- 2.3 Introduction with electronic ignition system [2L]

Unit –III: Lubrication System

- 3.1 Introduction & Purpose of Lubrication [2L]
- 3.2 Properties of Lubrication & Types of Lubricants [2L]
- 3.3 Parts of Lubricating System[2L]
- 3.4 Engine Lubricating System [2L]

Unit –IV : Cooling System

- 4.1 Properties and Method of Cooling System [2L]
- 4.2 Air Cooling System and Water Cooling System [2L]
- 4.3 Components of Water Cooling [2L]
- 4.4 Liquid and Steam Cooling [2L]

Unit –V : Engine Fuel Feed System

5.1S I Engine Fuel System [2L]

5.2 C I Engine Fuel System [2L]

5.3 Fuel Tank, Filtration Arrangement, & Fuel lines[2L]

5.4 Fuel Injection Pump [2L]

5.5 Fuel Gauges [1L]

5.6 Carburetor& Its Operation System and its different circuits [1L]

5.7 MPFI system with new EFI (ELECTRONIC FUEL IGNITION SYSTEM) [1L]

5.8 Difference between carburattor & EFI System[1L]

5.9 introduction of sensors, actuator and ECM[1L]

Total credit - 3

Contact Hours - 45

Suggested Readings:

1.AUTOMOBILE ENGINEERING –R.B GUPTA

2.AUTOMOBILE ENGINEERING – C.P.NEKRA

3.AUTOMOBILE ENGINEERING(vol 1 & vol 2) - Dr . KRIPAL SING.

Reference Reading:

2. 1.Automobile engineering – G.B.S Nagra

3. 2.A 2 Z AUTOMOBILE ENGG. -Dr . KRIPAL SING.

4. 3.Automobile Engineering – A.K Babu & Sing Ajit Pal

5. AUTOMOBILE MECHANICS – N.K GIRI

6. 5.Automobile engineering –K.K JAIN

7. 6.Automobile engineering – S.K. Gupta

MJ-2 P: Automotive Engine I (Practical)

Course Outline:

1. To identify different components of four stroke petrol engine . [2P]
2. Assemble and disassemble of petrol engine . [2P]
3. To inspect the leakage of valve seat. [1P]
4. To disassemble the rocker arm , inspect the gap and fit them again.. [2P]
5. To inspect and measure the cam shaft. [1P]
6. To inspect and clean the cylinder block. [1P]
7. Measure the compression of each cylinder by using compression gauge . [1P]
8. To practice and overhauling of engine lubrication pump. [1P]
9. To practice servicing of oil filter . [1P]
- 10.To practice setting the oil pressure relief valve for correct pressure. [1P]
11. To practice changing the engine oil. [1P]
12. Identify the all components of engine lubrication system. [1P]
13. Identify the all components of engine water , air and steam cooling system. [2P]
- 14.To inspect the pressure cap by using special tools. [1P]
15. To inspect the coolant by refractometer. [1P]
- 16.To study testing of thermostate valve and ECT sensor. [1P]
- 17.To practice the dismantling of water pump. [1P]
- 18.To study dismantling the radiator for cleaning ,checking leakage and repair. [1P]
- 19.To practice removing the fuel feed pump from fuel tank and inspect it [2P]
20. To practice of replacement of fuel filter. [1P]
21. To disassemble and assemble the carburetor and inspect it. [2P]
22. To identify the all components of ignition system. [1P]
- 23.To check and replace the spark plug from engine . [1P]
- 24.To practice the correct ignition timing after checking.. [1P]

Total credit - 1

Contact Hours – 30(15)

Suggested Readings:

- 1.Mechanic Motor Vehicle Practical- Manish Sharma
- 2.Automobile engineering practical – N K Malhotra

BACHELOR OF VOCATIONAL

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SKILL ENHANCEMENT COURSE (SEC) SEC 2

SEC 2: Engineering Drawing

SEC2 P: Engineering Drawing

1. Scale [5P]
2. Line [5P]
3. Projection – orthographic[5P], plane surface[5P], 1st angle[5P], solid projection[5P], section & development[5P].
4. Isometric projection[5P]
5. Special practical class [5P]

Total credit - 3

Contact Hours - 45

Suggested Readings:

1. Engineering Drawing – Bhatt & Panchal
2. Engineering Drawing – M. L. Mathur & R.S.Vaishwanar
3. Engineering Drawing – Basant Agarwal & C.M.Agarwal