

MODEL CURRICULUM



Qualification Name:

JR. TECHNICIAN-AUTOMOBILE ASSEMBLY & SERVICE

Qualification Code:Version: 2.0
NSQF Level: 4.0

Model Curriculum Version: 2.0

Submitted By:

MSME TECHNOLOGY CENTRE
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NOS / MODULE TEMPLATE

NOS /Module: Automobile Technology

NOS /Module Code: MSME/CCAAS/64/01

Outcomes:

After completion of course Trainee should be able to:

- Understand processes and equipment requirement to complete the task.
- Maintaining 5'S in the work premises.
- Perform the mechanical assembly operation.
- Understand inspection, quality check and operational testing of the component and vehicle.
- Understand productivity & its importance.
- Understand occupational, safety, health & environment.
- Know about over haul and repairing of various vehicle components.
- Know & application of different quality tools.

1st YEAR

THEORY HOURS: 120

PRACTICAL HOURS: Nil

THEORY MARKS: 100

PRACTICAL MARKS: Nil

Unit No.	Unit Name	Unit level outcomes	Contents (chapters/topics)	TH hours	Th Marks
UNIT-I	To Describe Automobiles.	After completion of this unit the candidate should be able to : Explain types of automobile. Describe history automobile. List types of Automobile Industry. List Indian Automobile Industry Explain various types of Vehicles.	• Definition of automobile , different names of automobile, types of automobile – purpose, capacity, fuel used, number of wheels, Drive of the vehicle, Specification of automobile • History of the automobile ,car manufacturing, Indian manufacturing of scooters, Indian manufacturing of motor cycles ,Indian manufacturers of moped, Indian manufacturers of buses, Indian manufacturers of trucks, Indian manufacturers of tractors - World's leading manufacturers of motor vehicles ,automobile industry	14	10
UNIT-II	To explain Chassis & Body Engineering.	After completion of this unit the candidate should be able to : Explain various types of Chassis. Label about various types layout of Chassis. Classify about various types of Frame. Explain Vehicle body and their	• Function of chassis, types of chassis, full forward, semi forward, bus chassis • Function of frame ,types of frame-channel section, box section, tubular section ,car frame, truck frame, construction of frame	15	15

		construction. Describe Safety aspects of vehicles. Define location of engine. 2.7 Differentiate front wheel and rear wheel drive. 2.8 Explain four wheel drives.	,sub frame ,body ,body construction and repairs ,floor assembly ,cowl assembly ,roof assembly ,quarter panels, front end assembly, engine hood ,front and rear seats, miscellaneous interior fittings, glass, body paints • engine in front, engine in centre • Function of front wheel drive ,advantage and disadvantage of front wheel drive, function of rear wheel drive ,advantage and disadvantage of rear wheel drive • Function of four wheel drive ,parts of four wheel drive ,advantage and disadvantage of four wheel drive		
UNIT-III	To define Steering System	After completion of this unit the candidate should be able to : 3.1 Define steering system. 3.2 Explain about Steering Construction. Explain about Steering Function. Describe about importance of steering geometry. Perform troubleshooting in steering.	• Introduction of steering function, construction of • Steering gears –worm and sector steering gear, worm and roller steering gears, cam and double lever steering gear, worm and ball bearing nut steering gear, cam and roller steering gear, re-circulating ball steering gear, rack and pinion steering gear • Steering Linkage –power steering , steering arm, drag link, steering stop, integral power steering linkage power steering Camber, king pin inclination or steering axle inclination caster ,toe-in and toe out	15	15

UNIT-IV	To describe Brakes	After completion of this unit the candidate should be able to: 4.1 Define Brakes. 4.2 Arrange various types of Brakes. Define working Principle of brakes. Report about adjustment of brakes.	• Introduction of brake, function, classification of brake • Parts of Hydraulic brakes - master cylinder, wheel cylinder, brake pipes, brake shoes, brake drums, brake pedal, brake lining, brake fluid • Air brake parts - compressor, DDU, reservoir tank, brake	18	15
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		4.5 Recognize about faults, care & maintenance.	chamber ,relay valve ,magnetic switch, spring break actuator, hose pipe • Mechanical brake parts • Engine exhaust brake		
UNIT-V	To explain Clutch System	After completion of this unit the candidate should be able to: Explain function and type of clutch. Describe adjustment of clutch. Analyze faults, care & Maintenance.	• Introduction of clutch, function of clutch, requirement of clutch • Main parts of clutch like- driven plate, clutch facing, cushion segments • Different types of clutch • Clutch fluid • Clutch troubles and their cause • Clutch faulty –diagnosis and remedy	18	15
UNIT-VI	To analyze Transmission System	After completion of this unit the candidate should be able to: Describe transmission system. Explain various types of Transmission. Describe working 6.4 Principle of Transmission. 6.5 Report on adjustment of Transmission. 6.6 Analyze about faults, care & maintenance.	• Introduction of transmission ,purpose of transmission, types-sliding mesh gear box, constant mesh gear box, synchromesh gearbox • Different types of gears- spur gear, helical gear, hypoid gear, bevel gear, double helical gear • Different parts of transmission-main shaft, counter shaft, dog clutch, bearing transfer case, PTO, top cover, bottom cover • Lubrication of gear box, gear ratio • Transmission troubles and their cause • Transmission faulty – diagnosis and remedy	20	15
UNIT-VII	To define Engine	After completion of this unit the candidate should be able to: 7.1 Define engine. 7.2 Differentiate types of Engine. 7.3 Describe the working Principle of Engine.	Definition of engine, I.C. engine and steam engine, types of engine , petrol engine working principal (two stroke and four stroke) , diesel engine working principal (two stroke and four stroke), comparison	20	15

		Explain various engine components. Describe about fuel Supply& ignition system. Discuss about intake system. Discuss about exhaust system. Explain engine cooling system. Describe engine lubrication system. Perform engine troubleshooting.	between two stroke and four stroke, comparison between petrol engine and diesel engine • Function and construction of each part of an internal combustion engine like-cylinder block, cylinder head, crankshaft, piston, piston ring, connecting rod, crankshaft, flywheel, camshaft, rocker arm, accessories and other parts. • Power, torque, bore, stroke, engine displacement, compression ratio, volumetric efficiency. • Different parts used in fuel feed system – fuel tank, fuel pump, fuel filter, carburetor, intake manifold, gauges. • Fuel injection requirements, methods of fuel injection, various types of fuel filters, fuel injection pumps, injector, test and adjustment of injectors, fuel feed pump. • Air intake system, intake manifold, compressor, exhaust manifold, exhaust pipe, muffler, tail pipe. • Purpose of cooling ,method of cooling, advantage and disadvantages of cooling ,cooling fins ,component s of water cooling method like –radiator, thermostat, pump, fan, water jacket. • Engine lubrication and engine oils • Engine maintenance • Engine troubles and their cause • Engine faulty –diagnosis and remedy		
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IInd Year

THEORY HOURS: 90

PRACTICAL HOURS: Nil

THEORY MARKS: 100

PRACTICAL MARKS: Nil

UNIT-VIII	To describe Front Axle	After completion of this unit the candidate should be able to : Explain construction of front axle. Define about working Principle of front axle. Classify various types of front axle. Perform troubleshooting of front axle.	• Introduction of front axle ,function of front axle ,material of front axle • Types of front axle ,front axle assembly ,various parts of front axle • Function of stub axle ,types of stub axle • Checking the axle beam and stub axle after accident • Trouble shooting and their causes • Axle faulty –diagnosis and remedy	15	20
UNIT-IX	To analyze Rear axle and Differential system	After completion of this unit the candidate should be able to: 9.1 Define rear axle. 9.2 Describe types of rear axle. 9.3 Explain working principle of Rear axle. Analyze faults, care & maintenance. describe function of differential system. Explain PTO. Analyze troubleshooting.	• Introduction of rear axle, function of rear axle, loads on a rear axle • Types of rear axle ,various parts of rear axle • Function of axle housing , material of rear axle, various parts of axle housing • Causes of noise in rear axle • Trouble shooting ,fault, cause and remedies • Four wheel drive ,function of four wheel drive • Working of differential ,function of differential ,sun gear function, star gear function ,crown wheel and pinion contact and function of crown wheel and pinion wheel ,self-locking differential • Differential trouble shooting	15	20
UNIT-X	To describe Suspension, Wheels & Tyres	After completion of this unit the candidate should be able to : Explain suspension system. Construct list of suspension components.	• Concept of suspension system, function of suspension system, requirement of suspension system • Front end suspension ,independent suspension ,advantages & disadvantages	15	20

		Describe leaf spring & coil suspension system. Explain Tyre and its Parts. 10.5 Define tire Rating. Investigate tyre wear patterns. Perform troubleshooting of suspension, wheel & tyres.	of independent suspension ,rigid axle front suspension , advantages & disadvantages of rigid suspension system, air suspension ,hydro elastic suspension, rear end suspension • Torque rod ,stabilizer, function of suspension spring, types of suspension spring, shackles, shock absorbers • Function of wheel ,requirement of wheel ,general definitions • Wheel assembly • Types of wheel-disc wheel, wire wheel • Wheel alignment ,factors of wheel alignment ,checking of wheel alignment • Trouble shooting their causes and remedy		
UNIT -XI	To explain Electrical Equipment's	After completion of this unit the candidate should be able to: 11.1 Explain common electrical terms & their units. 11.2 Demonstrate ammeter, voltmeter and multimeter. 11.3 Describe function of Lead acid battery. Explain self-starter, dynamo/alternator and regulator. Report on troubleshooting of electrical equipment's.	• Function of battery ,requirement of battery • Types of battery, Lead acid battery, component of lead acid battery, chemicals in battery, chemical reaction ,chemical reversibility ,specific gravity ,recharging of battery ,charging procedure ,checking the state of charge, battery voltage, battery capacity, battery rating ,battery life ,factors affecting battery life ,battery testing • Principle of generator, D.C. and A.C. generator ,rectifiers , • Principle of starting motor ,motor construction ,types of starting motors	15	10

			,checking of starting motor • Function and requirement of ignition system ,types of ignition system, battery and magneto ignition system • Function and requirement of lighting system ,components of lighting system ,head light, parking light ,tail light, stop light ,roof light ,interior lights ,wiring circuit, horn circuit ,colour coding of wire ,main feed colour ,motor vehicle wiring ,circuit tracing ,tracing faults in wiring ,cable sizes • Gauges ,speedometer ,wiper and washer system Troubleshooting ,maintenance and causes		
UNIT - XII	To demonstrate Vehicle driving & Field operation	After completion of this unit the candidate should be able to : Describe motor Vehicle Act & Driving Rules. Explain various types of vehicle operated equipment. 12.3 Report on vehicle Inspection.	• Vehicle act ,preliminary – driving licence, age limit, vehicle ,registration ,registration mark, traffic signs ,informatory signs, police signals ,traffic lightsignals • Inspection and its types, inspection cards, repair inspection, accident inspection ,diagnosing engine faults and their removal, excessive consumption ,laboratory and road testing of vehicles ,engine test	15	15
UNIT - XIII	To define Emission Standards and Pollution Control	After completion of this unit the candidate should be able to: Explain Indian standard of automobile vehicles. Describe Euro-I, Euro-II, Euro-III and Euro-IV norms. Discuss on Fuel quality	• Steps taken by government of India for emission control ,Indian Standards for emission for petrol engine and diesel engine ,Bharat – II, Bharat –III ,Bharat – IV • European Union Research	15	15

		standard. Explain environment management systems for automobile vehicles. Define Catalytic converters, Fuel additives. 13.6 Explain modern trends in automotive engine efficiency. 13.7 Describe emission control.	Organisation standard EURO –I ,EURO –II ,EURO III, EURO –IV • Mass emission standards for petrol and diesel engine • Catalytic convertor ,3-way catalytic convertor ,fuel additives ,basic requirements of an additives ,fuel factors affecting diesel smoke ,Various systems of emission control ,evaporative emission control system ,crankcase emission control system, exhaust emission control system • Air pollution in India ,automobile caused pollution ,automobile emitting pollutants		
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COURSES / MODULE TEMPLATE

NOS /Module: **MANUFACTURING TECHNOLOGY**

NOS /Module Code: MSME/CCAAS/64/02

Outcomes:

After completion of course Trainee should be able to:

- Understand the Manufacturing techniques,
- Know about Basic fitting operation and perform them
- Understand & capable to do the Lathe Machine Operation
- Know & perform Milling operation
- Understand various Grinding operation and perform them
- Know about the Jig, fixture & gauge
- Know about the Nonconventional machines
- Understand CNC machines

Ist Year

THEORY HOURS: 60

PRACTICAL HOURS: Nil

THEORY MARKS: 100

PRACTICAL MARKS: Nil

Unit No.	Unit Name	Unit level outcomes	Contents (chapters/topics)	TH hours	Th marks
UNIT-I	To describe Manufacturing Techniques	After completion of this unit the candidate should be able to : Describe various types of manufacturing techniques. Explain advantage & disadvantage of each technique. Summarize about safety precautions.	• Different manufacturing technique ,conventional machining ,non-conventional machining ,tool room machining • Comparison of various technique • Various Manufacturing Operations • Safety Precautions	12	20
UNIT-II	To classify and perform Basic Fitting operations	After completion of this unit the candidate should be able to : 2.1 Describe fitting operation. Classify various type of hand tools. Define drilling, tapping, riming, countersinking, counter boring.	• Fitting operation, vice ,construction of vice parts, points to be required while fixing a bench vice ,adjustment of bench vice height, effects of bench vice height, types of vice ,precautions • Hammer, classification	12	20

		Explain various joining methods like soldering brazing and riveting. Perform basic fitting operation	of hammer, hammer handle, holding of hammer handle ,method of fitting hammer handle ,precautions, C-clamp, uses of C-clamp ,size ,Parallel-clamp, spanners, specifications, types ,defects in spanners, screw driver, material and types of screw driver ,pliers ,parts of pliers, types of plier • File ,material of file ,parts of file ,classification of file ,special file ,filling operation ,precaution ,drill ,material of drill, types of drill ,parts of twist drill ,shank types of shanks ,work holding devices, drill machine ,types of drill machine –hand drill machine ,power drill machine, methods of controlling feed, common drilling operation, speed and feed, drilling ,methods of drilling ,reamer, material of reamer ,types of reamer, method of reaming by hand and machine ,tap ,type of types ,taping operation ,tap drill size, tap wrench ,method of hand taping ,lubricants for tapping ,die ,types of die ,method of threading with die, scraper ,parts of scraper ,types of		
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			scraper Welding ,types of welding ,welding tools ,safety equipments, joints ,types of joints ,various welding positions, soldering and brazing		
UNIT-III	To define and perform Lathe Machine Operation	After completion of this unit the candidate should be able to : 3.1 Explain lathe machine. 3.2 Define about function of lathe machine. 3.3 Classify types of lathe machine. 3.4 Identify parts of lathe machine. Describe lathe Accessories and attachments. Classify lathe operations. Demonstrate various basic lathe machine operations	- Lathe machine ,history of lathe machine - Types of lathe machine –Centre lathe ,bench lathes'.& S.C. lathe ,production lathe ,capstan lathe ,turret lathe ,special lathe - Main parts of lathe like – bed ,headstock ,tailstock, carriage, lead screw ,lathe chuck ,tool post - Lathe centers ,lathe steady ,lathe carrier ,driving plate ,face plate ,lathe mandrel - Common lathe operation –facing ,parallel or straight turning ,step turning ,form turning , taper turning, eccentric turning, under cutting ,knurling ,parting off ,boring ,threading ,reaming ,tapping cutting tools ,different shapes of cutting tools ,Lathe cutting angles	12	20
UNIT-IV	To define and perform Milling Operation	At the end of this unit the candidate should be able to : Explain milling machine. Define function of milling machine. Classify various types of milling machine. Identify parts of	Introduction of milling machine ,various types of milling machine :- column & knee type milling machine, fixed bed type milling machine ,universal milling machine, ram type milling machine, universal ram type, swivel cutter head ram	12	20

		milling machine. 4.5 Explain various milling accessories and attachments. Classify milling operations. Demonstrate various basic Milling machine operations	type milling machine, special purpose milling machine • Various milling operations • Parts of milling machine –Spindle ,Knee, Arbor, Arbor Supports ,Milling head ,Ram, Base ,Work table, Cross transverse • Milling attachments:- vertical milling attachment, universal milling attachment, slotting attachment ,rack milling attachment, universal spiral milling attachment, rotary table attachment ,dividing head attachment, universal indexing head attachment • Milling operation :- peripheral milling, slab milling ,slotting ,side milling, straddle milling, up milling ,down milling ,face milling, end milling, pocket milling ,surface milling		
UNIT-V	To define and perform Grinding Operation	After completion of this unit the candidate should be able to : 5.1 Explain grinding machine. Describe the function of grinding machine. Classify various types of grinding machine. Identify parts of grinding machine. 5.5 Classify grinding operations. 5.6 Demonstrate	• Grinder , Use of grinder ,grinding wheels ,manufacturing of grinding wheel ,abrasive ,types of abrasives ,bond ,type of bonds ,grain size ,grade ,structure ,shape ,size of wheel ,standard grinding wheel marking ,selection of grinding wheel • Grinding machines –bench grinding machine ,pedestal	12	20

		various basic grinding machine operations	grinding machine ,portable grinding machine ,surface grinder ,external cylindrical grinder ,internal cylindrical grinder ,centre less grinder , tool & cutter grinder • Parts of various types of grinder and their types ,material of grinder parts		
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IInd Year

THEORY HOURS: 30

PRACTICAL HOURS: Nil

THEORY MARKS: 100 PRACTICAL MARKS: Nil

UNIT-VI	To describe Jig ,Fixture & Gauge	At the end of this unit the candidate should be able to: 6.1 Summarize importance of jig, fixture & gauges. Describe Jigs and its classification. Describe fixture and its classification. 6.4 Explain gauge and its Classification.	- Importance of jigs and fixtures in mass production ,difference of jigs and fixtures - Advantage of jigs and fixtures - Jig ,elements of jig ,types of jigs - advantages of jigs and uses of jigs - Fixture ,types of fixtures ,advantages of fixture and uses - Gauge ,Material of gauge ,advantage of gauge ,classification of gauge and its uses	9	30
UNIT-VII	To define Non-conventional machining	After completion of this unit the candidate should be able to : 7.1 Explain need of non-conventional machining. 7.2 Describe various types of non-conventional machining.	- Concept of non-conventional machining ,important of non-conventional machining - Classification of non-conventional machining –electric discharge machining ,electro chemical machining ,ultrasonic machining ,wire cut machining ,E.D. machining ,Laser beam machining - Advantage and disadvantage of various types of non-conventional machining ,their particular uses and limitation	9	30

UNIT-VIII	To explain and perform operation on CNC machines	After completion of this unit the candidate should be able to : 8.1 Define CNC machine. Summarize advantages & disadvantages of CNC. 8.2 Explain classification of CNC machines. Describe Specification of CNC machines. Demonstrate various basic CNC machine operations.	• Concept of C.N.C. machine ,history of C.N.C. machine ,N.C. machine • Advantages and disadvantage of C.N.C. machine ,limitation of C.N.C. machine • Classification of C.N.C. machines • Specification of C.N.C. machines according to bad length , according to axis • Various Preparatory codes “G” codes and miscellaneous functions “M”	12	40
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COURSES / MODULE TEMPLATE

NOS /Module: ENGINEERING METROLOGY

NOS /Module Code: MSME/CCAAS/64/03

Outcomes:

After completion of course Student should be able to

- Understand the Scope of metrology
- Do basic linear measuring instruments
- Understand precision linear measuring tools
- Understand the basic angular measuring tools
- Do precision angular measuring tools
- Understand Limit , fits, and tolerance
- Understand Gauges
- Understand Error
- Know about the ISO 9000
- Understand statistical quality control

1st Year

THEORY HOURS: - 30

PRACTICAL HOURS: Nil

THEORY MARKS: - 100

PRACTICAL MARKS: Nil

Unit No.	Unit Name	Unit level outcomes	Contents (chapters/topics)	TH hours	Th marks
UNI T-I	To define scope of Metrology	After completion of this unit the candidate should be able to: 1.1 Define metrology. 1.2 Describe scope and need of metrology. 1.3 Explain need of inspection. 1.4 Illustrate measuring instruments. 1.5 Analyze proper selection of instrument	- Definition & concept of metrology , advantages of metrology in industry - Need of inspection , principle of measurement , process of measurement	6	20
UNI T-II	To explain and measure through basic linear measuring instruments	After completion of this unit the candidate should be able to : Explain basic linear measurement. Define & demonstrate steel Rule. Define & demonstrate surface plates. Define & demonstrate	- Measurement and Measuring tool, importance of measurement and measurement, methods of measuring –direct measurement –linear measurement, angular measurement, radial measurement, plain s - Important of steel rule and scale ,types of rules and	6	20

		angle plates. 2.5 Describe V-Block. 2.6 Define & demonstrate straight edges. Define & demonstrate radius gauge. Define & demonstrate feeler gauge. Explain & demonstrate angle gauge. Define & demonstrate wire and thickness gauge.	scale ,difference between rule and scale - Marking or layout table ,surface table ,types of surface plate according to material ,types of surface plates on the basis of uses and accuracy ,uses of surface plate - Importance of angle plate and its types Importance of V-block ,types of V- block ,accuracy of V-block ,Precautions - Uses of try square ,material ,size ,types		
UNI T-III	To describe and measure through precision linear measuring tools	After completion of this unit the candidate should be able to- Define & demonstrate Vernier Caliper. Explain & measure with Vernier height Gauge. 3.3 Explain & measure with Vernier Depth Gauge. 3.4 Explain & measure with Micrometer.	- Vernier caliper, parts of Vernier caliper ,Least count of vernier caliper ,precautions - Concept of height gauge , parts of height gauge , precaution during measurement by height gauge - Concept of vernier depth gauge , parts of vernier depth gauge ,parts and their material ,precaution during measurement - Concept of micrometers , types of micrometer ,least count , precaution during measurement	6	20
UNI T-IV	To define and measure through basic angular measuring tools	After completion of this unit the candidate should be able to : Describe angular measurement. Define & demonstrate vernier and optical bevel protector. Define & demonstrate angle gauges. Define & demonstrate caliper.	- Combination set , Size of combination set, parts of combination set - Concept of vernier optical bevel protector ,parts and precaution during measurement ,uses of vernier bevel protractor - Uses of angle plate , material ,size grade ,specification of angle plate ,types of angle plate - Uses of calipers,	6	20

			material ,size ,types of joints ,types of calipers ,precautions		
UNI T-V	To explain and measure through Precision angular measuring tools	After completion of this unit the candidate should be able to : Define & demonstrate Sine Bar. Explain optical instruments for angular measurement.	• Concept of sine bar , parts of sine bar ,uses of sine bar ,sources of error in sine bars ,limitation of sine bars Important of optical instruments in metrology ,types of optical instrument for angular measurement ,dial test indicator ,types of dial test indicator ,taper • measurement , optical square	6	20

UNI T-VI	To differentiate Limit, fits & tolerance	After completion of this unit The candidate should be able to : Describe limit, fit and tolerance. Explain various types of fits. 6.3 Illustrate various types of tolerance.	• Concept of Limit ,importance of limit in drawing ,interchangeability ,types of limit ,advantages of limit ,limit as per B.I.S. system • Concept of fit ,types of fits ,Fit as per B.I.S. system ,hole basis system ,shaft basis system ,method of indicating fits • General principle of tolerance ,geometric tolerance ,recommended symbols for geometrical tolerance ,application of geometrical tolerance symbols ,allowance	6	20
UNI T-VII	To explain Gauges	After completion of this unit the candidate should be able to : 7.1 Explain requirement of gauges. 7.2 Describe classification of gauges. 7.3 Describe Taylor principal for gauge design.	• Principle of gauges ,material ,advantages • Classification of gauges – workshop gauge ,inspection gauge ,reference gauge • Types of gauges – Radius gauge ,fillet gauge ,feeler gauge ,screw pitch gauge , wire gauge ,bevel gauge ,drill angle gauge ,limit gauge ,centre gauge ,ring gauge ,plug gauge • Concept of Taylor principle for gauge design	6	20
UNI T-VIII	To describe Error	After completion of this unit the candidate should be able to : 8.1 Describe reason of errors. 8.2 Explain classification of errors. 8.3 Show precautions during measurement	• Definition & concept of errors ,errors in measurement ,absolute error ,relative error • Types of errors –static error ,reading error ,characteristic error ,environmental error	6	20

			,instrument loading error ,dynamic error ,comparison between systematic error and random error • Precaution during measurements ,errors likely to creep in precision measurements ,effects of supports, effect of alignment ,contact pressure ,parallax error ,errors due to vibration ,errors due to location		
UNI T-IX	To describe ISO9000	After completion of this unit the candidate should be able to : 9.1 Explain importance of ISO 9000 in a organization. 9.2 Describe seven tools for TQM	• Definition & concept about ISO system, ISO9000, ISO series, main benefits of implementing ISO • Concept about seven tools of TQM, Types of seven tools of TQM ,cause and effect diagram, check sheet, control chart • Benefits of TQM tools	6	20
UNI T-X	To define Statistical Quality control	After completion of this unit the candidate should be able to : 10.1 Describe need of quality and quality control. 10.2 Define statistical quality control.	Concepts of statistical quality control methods, methodology & tools of quality ,descriptive statistics, statistical process control, acceptance sampling	6	20

COURSES / MODULE TEMPLATE

NOS /Module: INDUSTRIAL LEGISLATION AND SAFETY

NOS /Module Code: MSME/CCAAS/64/04

Outcomes:

After completion of course Trainee should be able to :

- Understand general introduction industrial safety and legislation
- Knowledge about factory act 1948
- Knowledge about law related to wages and welfare
- Knowledge about the law related to association
- Uses of supervision and leadership
- Knowledge about national family welfare programs
- Understand energy conservations
- Understand awareness and privation from accidents
- Understand the pollution and pollution controls

1st Year

THEORY HOURS: -30

PRACTICAL HOURS: NIL

THEORY MARKS:- 100

PRACTICAL MARKS:NIL

Unit No.	Unit Name	Unit level outcomes	Contents (chapters/topics)	TH hou r's	Th marks
Unit-I	To describe general Introduction of Industrial Safety and Legislation	After completion of this unit the candidate should be able to : 1.1 Illustrate importance of Industrial safety. 1.2 Describe the Importance of Industrial Legislation for employees.	• Industrial safety ,Causes of accidents and safety measures ,theories of accident prevention ,medical first aid, selection & use of personal protection equipment of different types ,use of fire safety equipment • Industrial Legislation for employees, Important of industrial Legislation ,safety legislation	8	25
Unit-II	To define Factory act 1948	After completion of this unit the candidate should be able to : 2.1 Define objective and scope of factory act. Explain workmen's compensation Act 1923 & 1984. Use and apply administration	• Factory act 1948, importance of factory act 1948, factories act 1948 relating to hours of work, health, safety and welfare, occupational disease ,employment of young persons and women • Main objective of workmen's compensation act 1923, objective of the act ,rate of compensation	7	25

		and settlement of claims.	,workers compensation (amendment)act,1948 , categorized of workers compensation act, • Jurisdiction of the act		
Unit-III	To explain Law related to wages and welfares	After completion of this unit the candidate should be able to : 3. 1 Describe workman 3.2 compensation Act1923. 3.3 Explain payment of Wages Act, 1936. 3.4 Use and apply employee's Provident fundand Gratuity Act, 1952.	• Main objective of workmen's compensation act 1923,objective of the act ,rate of compensation • Objective and scope and main provisions of the payment of wages act ,1936,fixation of wage period ,time of payment of wages, deductions, deduction of income tax • Objective ,scope and terms of implementation of employees provident fund and miscellaneous provision act ,1952 • ,deduction for subscription of provident fund	8	25
UNIT-IV	To describe Law related to association	After completion of this unit the candidate should be able to ; 4.1Explain trade union Act, 1926. 4.2 Illustrate Responsibility and dutiesof workmen. Describe 'X' and 'Y' principals of Duglas Mac-Grager. Illustrate Trade Unions-Purpose and functions under Act.	• Trade union ,scope and objective of trade union act ,1926 ,provision under the trade union ,application for registration ,advantage and disadvantage of trade union • Duties and responsibilities of work men to wards Society and organization • Types of workers and properties of "X" and "Y"type workers • Purpose of trade union , function of trade union	7	25

IInd Year

THEORY HOURS:-30

PRACTICAL HOURS: NIL

THEORY MARKS:- 100

PRACTICAL MARKS:NIL

UNIT -V	To demonstrate Supervision and Leadership	After completion of this unit the candidate should be able to : 5.1 Define personal management. 5.2 Explain inventory control. Describe product and site selection. Importance of skill in industries.	- Personal management, objective and scope of personal management ,advantage of personal management ,Criteria for exports Inventory control, advantage and ways for the management of its problem - Project preparation and financial facilities to entrepreneurs - Importance of skill, main categories of skill	8	25
UNIT-VI	To explain NATIONAL FAMILY Welfare PROGRAMS	After completion of this unit the candidate should be able to : 6.1 Explain the National Population Policy. 6.2 Explain "Health for all by 2000 A.D." 6.3 Explain community health volunteers. 6.4 Define urban health and F.W. services.	- Population problem in India ,population policy ,background of family planning - Health for all by 2000 A.D., services to achieve the objective of health for all by 2000 ,measures to strengthen health services - Control of communicable & non communicable diseases ,community health volunteers and dais - Urban health and F.W. services , objective of urban health and F.W. services ,Oral rehydration therapy	7	25

UNIT-VII	To illustrate Awareness And privation from accidents	After completion of this unit the candidate should be able to : 8.1 Illustrate the causes of Industrial accidents. 8.2 Define Occupational Hazards & safety. Use First aid equipments. Use Fire-Safety Equipment. Describe Safety	• Good working habits, electric equipments and precautions ,lifting of heavy weight, cause of fire ,precautions in using hand tools • Medical first aid • Fire safety ,cause of fire ,precaution of fire accident	8	25
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		Legislation.			
UNIT-VIII	To describe Pollution And pollution controls	After completion of this unit the candidate should be able to : 10.1 Describe Elements of Environmental Planning and Management. 10.2 Classify various types of Pollution and its Resources.	• Environmental laws, special laws • Concept of pollution control, types of pollution control, air pollution, water pollution, chemical pollution, noise pollution, remedial steps.	7	25

COURSES / MODULE TEMPLATE**NOS /Module: EMPLOYABILITY SKILL****NOS /Module Code: MSME/CCAAS/64/05****Outcomes:**

After completion of course Trainee should be able to :

- Understand about employability .
- Knowledge about basic English skill .
- Knowledge about Communication Skills
- Knowledge about Diversity & Inclusion
- Uses of Digital Skills
- Knowledge about Financial and Legal Literacy

Ist Year**THEORY HOURS:-60****PRACTICAL HOURS: NIL****THEORY MARKS:- 100****PRACTICAL MARKS:NIL**

Unit No.	Unit Name	Unit level outcomes	Contents (chapters/topics)	TH hou r's	Th marks
Unit-I	Introduction to Employability Skills	After completing this programme, participants will be able to: 1. Discuss the Employability Skills required for jobs in various industries 2. List different learning and employability related GOI and private portals and their usage.	• Introduction to Employability Skills • Employability Skills required for jobs in various industries • employability related GOI and private portals and their usage	4.5	15

Unit-II	Constitutional values - Citizenship	After completion of this unit the candidate should be able to : 1.Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen 2. Show how to practice different environmentally sustainable practices.	• Introduction OF Constitutional values – Citizenship. • Civic rights towards society • Duties, citizenship & responsibility towards society	4.5	15
Unit-III	Becoming a Professional in the 21st Century	After completion of this unit the candidate should be able to : 1. Discuss importance of relevant 21st century skills. 2.Exhibit 21st century skills like Self-Awareness, Behavior Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn etc. in personal or professional life. 3. Describe the benefits of continuous	• Need of Professional in the 21st Century • Professional skill about Self-Awareness, Behavior Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn etc . • Process and benefits of continuous learning	7.5	15

		learning.			
UNIT-IV	Basic English Skills	After completion of this unit the candidate should be able to ; 1.Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone 2.Read and interpret text written in basic English 3.Write a short note/paragraph / letter/e -mail using basic English	• Greetings and Introduction. • Office hospitality • Telephone skill • Practice on describing People • Job Application and resume writing • Group Discussion • Report Writing • Survey Report • Accident report	30	15
UNIT-V	Career Development & Goal Setting	After completion of this unit the candidate should be able to ; 1. Create a career development plan with well-defined short- and long-term goals	• Career Development • Goal Setting • Short term and long term goal	6	20
UNIT-VI	Diversity & Inclusion	After completion of this unit the candidate should be able to ; 1. Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PWD 2. Discuss the significance of escalating sexual harassment issues as per POSH act.	• Explain Diversity • Explain Inclusion • Sexual harassment issues	7.5	20

THEORY HOURS:-120

PRACTICAL HOURS: NIL

THEORY MARKS:- 100

PRACTICAL MARKS:NIL

UNIT -VII	Communication Skills	After completion of this unit the candidate should be able to : 1. Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette. 2.Explain the importance of active listening for effective communication 3.Discuss the significance of working collaboratively with others in a team	• Communication Skills • Practice on Communication Skills • Oral and written communication • Listening Skills • Practice on Listening Skills • Barriers to communication • Motivation	15	15
UNIT -VIII	Financial and Legal Literacy	After completion of this unit the candidate should be able to : 1.Outline the importance of selecting the right financial institution, product, and service 2. Demonstrate how to carry out offline and online financial transactions, safely and securely. 3. List the common components of salary and compute income, expenditure, taxes, investments etc. 4.Discuss the legal rights, laws, and aids	• Introduction Financial Literacy • Types Financial Literacy • Introduction Legal Literacy • Types Legal Literacy • offline and online financial transactions, safely and securely • Introduction of list the common components of salary. • Types of Taxes • Types of Investments.	15	15
UNIT -IX	Essential Digital Skills	After completion of this unit the candidate should be able to : 1. Describe the role of digital technology in today's life 2.Demonstrate how to operate digital devices and use the associated applications and features, safely and securely	• Introduction of Digital Skill • Types of digital skill • Introduction of E-mail • Introduction of excel ,word and pdf.	30	15

		3. Discuss the significance of displaying responsible online behavior while browsing, using various social media platforms, e-mails, etc., safely and securely 4. Create sample word documents, excel sheets and presentations using basic features 5. utilize virtual collaboration tools to work effectively			
UNIT-X	Entrepreneurship	After completion of this unit the candidate should be able to : 1. Explain the types of entrepreneurship and enterprises 2. Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan 3. Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement 4. Create a sample business plan, for the selected business opportunity	• Introduction of Entrepreneurship. • Types of Entrepreneurship • Need of Entrepreneurship • Difference between Entrepreneurship and employee. • Market Survey • Site selection.	21	15
UNIT -XI	Customer Service	After completion of this unit the candidate should be able to : 1. Describe the significance of analyzing different types and needs of customers 2. Explain the significance of identifying customer needs and responding to	• Introduction of Customer service • significance of analyzing different types and needs of customers • Professional manner for handling customer . • Introduction of maintaining hygiene and dressing appropriately	15	20

		them in a professional manner. 3. Discuss the significance of maintaining hygiene and dressing appropriately			
UNIT -XII	Getting Ready for apprenticeship & Jobs	After completion of this unit the candidate should be able to : 1. Create a professional Curriculum Vitae (CV) 2. Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals respectively 3. Discuss the significance of maintaining hygiene and confidence during an interview 4. Perform a mock interview 5. List the steps for searching and registering for apprenticeship opportunities	• Introduction of apprenticeship • Types of jobs for apprenticeship • Need to Create a professional Curriculum Vitae (CV). • Mock Interview	24	20

COURSES / MODULE TEMPLATE

NOS /Module: Automobile Practice

NOS /Module Code: MSME/CCAAS/64/06

Outcomes:

After completion of course Trainee should be able to :

- assemble various parts of engine (four wheeler like truck, bus and tractor)
- assemble various parts of axle (four wheeler like truck, bus and tractor)
- assemble various parts of chassis (four wheeler like truck, bus and tractor)
- assemble various parts of cabin (four wheeler like truck, bus and tractor)
- assemble various parts of transmission (four wheeler like truck, bus and tractor)

IstYear

THEORY HOURS:-Nil

PRACTICAL HOURS: 300

THEORY MARKS:- Nil

PRACTICAL MARKS:00

Unit No.	Unit Name	Unit level outcomes	Contents (chapters/topics)	Pr Hr's	Pr Marks
Unit-I	Engine	After completion of this unit trainees should be able to do assemble various parts of engine (four wheeler like truck, bus and tractor)	Identify the various components of engine. -Select the right component. -Fix parameter of machine and equipment. -Perform assembly operation like –piston dropping, piston ring fitting, FIP fitting ,flywheel fitting ,gear fitting ,cylinder head and block assembly etc. - Do Test engine like- Engine speed, Torque, Blow by, FIP ,engine heating ,engine leakage etc.	225	125
Unit-II	Axle	After completion of this unit trainees should be able to do assemble various parts of axle (four wheeler like truck, bus and tractor)	Identify the various components of Axle. -Select the right component of axle. - Check correct quality parameters like –tooth patterns, end play and clearance between crown and pinion and star gear and sun gears. -Fix assembly parameters of machine and equipment's.	225	125
Unit-III	Chassis	After completion of this unit trainees should be able to do assemble various parts of chassis (four wheeler like truck, bus and tractor)	-Identify the various components of chassis. -Select the right component of chassis.	225	125

			- Fix assembly parameters of machine and equipments. - Perform battery fitting, clutch & break assembly fitting. - Do Test like –toe in, toe out, king pin inclination, vehicle speed testing, break testing.		
UNIT-IV	Cabin	After completion of this unit trainees should be able to do assemble various parts of cabin (four wheeler like truck, bus)	- Identify the various components of cap trim. - Select the right component for fitting. - Fix assembly parameters of machine and equipment's. • -Perform harness fitting, door fitting and other cabin making operations.	225	125

IInd Year

THEORY HOURS:-Nil

PRACTICAL HOURS: 300

THEORY MARKS:- Nil

PRACTICAL MARKS:400

UNIT -V	Transmission	After completion of this unit trainees should be able to do assemble various parts of transmission (four wheeler like truck, bus and tractor)	- Identify the various components of transmission. - Select the right component for gear assembly. - Fix parameters of machine and equipment's for transmission assembly. - Perform Assembly operation like main shaft assembly, counter shaft assembly, bearing fitting, interlock mechanism, cable setting. - Do Test Transmission like-gear shifting, unusual noise, transmission slip • out of gear, speed and oil leakage.	300	400
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