

2021 Annual Teaching Plan Term 1: Mechanical Technology: Automotive Grade 10

TERM 1 (45 days)	Week 1 27 - 29 January (3 days)	Week 2 1 - 5 February	Week 3 8 - 12 February	Week 4 15 - 19 February	Week 5 22 - 26 February	Week 6 1 - 5 March	Week 7 8 - 12 March	Week 8 15 - 19 March	Week 9 23 - 26 March (4 days)	Week 10 29 - 31 March (3 days)	
CAPS Topics	Safety (Generic)	Safety (Generic)	Tools (Generic)	Tools (Generic)	Engines (Generic)	Engines (Generic)	Engines (Specific)	Engines (Specific)	PAT Consolidation Revision Assignment		
Topics /Concepts, Skills and Values	First Aid HIV/Aids Awareness Understand the OHS Act Learners must be fully aware of all the safety precautions when using the following tools: • Hand tools • pedestal drill • Bench grinder	First Aid HIV/Aids Awareness Understand the OHS Act Learners must be fully aware of all the safety precautions when using the following tools: • Compressors • Fire extinguisher • Lifts, jacks & trestles.	Basic tools and equipment: • Spanners: ring-, flat- and combination- • Sockets and accessories • Pliers: • Hammers • Chisels, hacksaws, • Screwdrivers • Allen keys • Files • Stocks & dies.	Application of measuring and marking-off instruments: • Steel Rule • Square • Scriber • Tape measure • Combination set ➤ Punches	Operating principles of 2 and 4 stroke internal combustion engines. (Single cylinder spark ignition engines only): • Stroke • Dead centre • Cycle	Operating principles of 2 and 4 stroke internal combustion engines. (Single cylinder spark ignition engines only): • Stroke • Dead centre • Cycle	Identification and function of engine components: Pistons, piston rings, crankshaft, connecting rod, bearings, gudgeon pin, camshaft, valves, flywheel, cylinder head, engine block, oil pump, manifolds, carburettors, etc.	Conventional layouts: • Engine in front with front- and rear-wheel drives • Engine at rear with rear-wheel drive • Advantages and disadvantages of each position			
Requisite pre-knowledge	HIV/Aids Safety in General and Basic Hand Tools										
Resources (other than textbook) to enhance learning	OHS act, Safety signs in workshop, First aid manuals & Hand tools & Equipment	OHS act, Safety signs in workshop, First aid manuals & Hand tools & Equipment	Tools and equipment as mentioned above.	Tools and equipment as mentioned above.	Engines assemblies, You-tube videos, etc..	Engines assemblies, You-tube videos, etc.	Engines with the above mentioned components, You-tube videos, etc.	Vehicles with different layouts, You-tube videos			
Assessment	Informal Assessment: Remediation	Classwork/case studies/worksheets/homework/class tests (Theory and practical work)									
	SBA & PAT (Formal)	<p style="text-align: center;">Assignment PAT</p> <p>The legislation governing workplaces in relation to COVID – 19 is the Occupational Health and Safety Act, Act 85 of 1993, as amended, read with the Hazardous Biological Agents Regulations. Section 8 (1) of the Occupational Health and Safety (OHS) Act, Act 85 of 1993, Safe work practices are types of administrative controls that include procedures for safe and proper work used to reduce the duration, frequency, or intensity of exposure to a hazard. Examples of safe work practices for SARS-CoV-2 include. Requiring regular hand washing or using of alcohol-based hand rubs. Learners and teachers should always wash hands when they are visibly soiled and after removing any PPE. Keep safe distances and wear a mask at all times. See the document on the workshop safety measures</p>									

2021 Annual Teaching Plan Term 2: Mechanical Technology: Automotive Grade 10

TERM 2 (51 days)	Week 1 13 – 16 April (4 days)	Week 2 19 – 23 April (5 days)	Week 3 28 – 30 April (3 days)	Week 4 3 – 7 May (5 days)	Week 5 10 – 14 May (5 days)	Week 6 17 – 21 May (5 days)	Week 7 24 -28 May (5 days)	Week 8 31May - 4 June (5 days)	Week 9 7 – 11 June (5 days)	Week 10 14 – 18 June (4 days)	Week 11 21 – 25 June (5 days)	
CAPS Topics	Joining methods (Generic)	Joining methods (Generic)	Forces (Generic)	Forces (Generic)	Maintenance (Generic)	Maintenance (Generic)	Maintenance (Generic)		Revision and PAT Consolidation			
Topics /Concepts, Skills and Values	Calculations on the size of drills and key dimensions: • Drill sizes for screw cutting • Width, thickness and length of keys Semi-permanent joining methods: • Bolts • Studs • Locking devices • Nuts • Split pins • Rivets	Semi-permanent joining methods: • Keys – Identification, fitting and uses of the following types: ➢ Parallel key ➢ Taper key, ➢ Gib-head key ➢ Woodruff key	Forces: Different types of forces found in engineering components: • Pulling force (Tensile) • Compressive force • Shearing force	Moments: Moments found in engineering components (basic calculations). Definition: Moment = force x perpendicular distance (Spanner used to tighten a nut or bolt)	Properties of lubricants: • Viscosity • Pour point, etc. Grading of oil according to viscosity: (SAE standards) • Transmission oil • Engine oil • Differential oil • Cutting fluid • Grease	Friction: • Characteristics Application Define the following types of maintenance: • Preventive • Predictive • Reliability centred maintenance	Lack of maintenance on equipment • Excessive wear • Overheating/seizing; and distortion • Failure					
Requisite pre-knowledge	Grade 9 Force											
Resources (other than textbook) to enhance learning	Bolt, nuts, etc. as mentioned above. Instructional videos, You-tube videos, etc.	Bolt, nuts, etc. as mentioned above. Instructional videos, You-tube videos, etc.	Testing equipment to demonstrate different types of forces. Calculators	Testing equipment to demonstrate different types of forces. Calculators	Different types of oils Instructional videos, You-tube videos, etc.	Instructional videos, You-tube videos, etc. Old question papers	Instructional videos, You-tube videos, etc. Old question papers					
Assessment	Informal Assessment: Remediation	Classwork/case studies/worksheets/homework/class tests (Theory and practical work)										
	SBA & PAT (Formal)	<p style="text-align: center;">Assignment PAT Any maintenance task (e.g. changing disc pads or any oil change) and radiator pressure test (Any ONE)</p> <p>The legislation governing workplaces in relation to COVID – 19 is the Occupational Health and Safety Act, Act 85 of 1993, as amended, read with the Hazardous Biological Agents Regulations. Section 8 (1) of the Occupational Health and Safety (OHS) Act, Act 85 of 1993, Safe work practices are types of administrative controls that include procedures for safe and proper work used to reduce the duration, frequency, or intensity of exposure to a hazard. Examples of safe work practices for SARS-CoV-2 include. Requiring regular hand washing or using of alcohol-based hand rubs. Learners and teachers should always wash hands when they are visibly soiled and after removing any PPE. Keep safe distances and wear a mask at all times. See the document on the workshop safety measures</p>										

2021 Annual Teaching Plan Term 3 Mechanical Technology: Automotive Grade 10

TERM 3 (52 days)	Week 1 13 – 16 July (4 days)	Week 2 19 – 23 July (5 days)	Week 3 26 – 30 July (5 days)	Week 4 2 - 6 Aug (5 days)	Week 5 10 - 13 Aug (4 days)	Week 6 16 – 20 August (5 days)	Week 7 23 – 27 August (5 days)	Week 8 30 Aug - 3 Sept (5 days)	Week 9 6 - 10 Sept (5 days)	Week 10 13 - 17 Sept (5 days)	Week 11 20 - 23 Sept (4 days)	
CAPS Topics	Terminology (Specific) Drive trains			Maintenance (Specific)			Systems & Control (Specific)		Revision Consolidation of PAT	Controlled Test		
Topics /Concepts, Skills and Values	Function, construction and operation of the single-plate clutch assembly: <ul style="list-style-type: none"> • Flywheel • Diaphragm pressure plate • Clutch Plate • Clutch couplings, etc. • Hydraulic: Master & slave cylinders, pipes • Fault finding 	Identify and investigate the various components of the constant mesh manual gearbox and define the construction, function, operation and power flow of: <ul style="list-style-type: none"> • Gears • Shafts • Synchronising unit, • Selector mechanism. 	Function, construction and operation of drive shafts: <ul style="list-style-type: none"> • The Slip Joint • Universal Joint • Constant Velocity Joint • Flexible coupling 	Lubrication Systems: <ul style="list-style-type: none"> • Splash feed, Pressure Feed and Full pressure feed Oil: <ul style="list-style-type: none"> • Oil purity, oil dilution, Crankcase ventilation • Oil Filtration systems: Full-flow and by-pass systems 	Temperature Control: <ul style="list-style-type: none"> • Factors generating heat Cooling systems: <ul style="list-style-type: none"> • Direct air • Indirect air cooling Components: <ul style="list-style-type: none"> • Radiators, Radiator pressure cap, Water pumps, thermostat, by-pass system, etc. 	Practical: <ul style="list-style-type: none"> • Do a visual inspection on a cooling system • Do a pressure test Check and maintain all fluid levels: <ul style="list-style-type: none"> • Water • Oil • Brake fluid 	Basic carburetion: <ul style="list-style-type: none"> • Function of a carburettor • Basic principle of operation, etc. Air filters: Purpose and types.	Hydraulic brake system: <ul style="list-style-type: none"> • Master Cylinder (function) • Wheel Cylinders Hydraulic brake system: <ul style="list-style-type: none"> • Disc brake assembly • Brake shoe assembly • Hand brake assembly. 				
Requisite pre-knowledge												
Resources (other than textbook) to enhance learning	Clutch components: (as above). You-tube, CDX educational videos, etc.	Manual gearboxes and components: (as above) You-tube, CDX educational videos, etc.	Drive shafts and components (as above) with relative specifications.	Engines with different lubrication systems, Hand tools. You-tube, CDX educational videos, etc.	Vehicle or running engines, You-tube, CDX educational videos	Vehicle or running engines to do pressure testing and for servicing.	Carburettors, air filters, hand tools & educational videos.	Braking systems components, hand tools & educational videos.				
Assessment	Informal Assessment: Remediation	Classwork/case studies/worksheets/homework/class tests (Theory and practical work)										
	SBA & PAT (Formal)	<p style="text-align: center;">Controlled Test</p> <p style="text-align: center;">Any maintenance task (e.g. changing disc pads or any oil change) and radiator pressure test (Any ONE)</p> <p>The legislation governing workplaces in relation to COVID – 19 is the Occupational Health and Safety Act, Act 85 of 1993, as amended, read with the Hazardous Biological Agents Regulations. Section 8 (1) of the Occupational Health and Safety (OHS) Act, Act 85 of 1993,</p> <p>Safe work practices are types of administrative controls that include procedures for safe and proper work used to reduce the duration, frequency, or intensity of exposure to a hazard. Examples of safe work practices for SARS-CoV-2 include. Requiring regular hand washing or using of alcohol-based hand rubs. Learners and teachers should always wash hands when they are visibly soiled and after removing any PPE. Keep safe distances and wear a mask at all times.</p> <p>See the document on the workshop safety measures</p>										

2021 Annual Teaching Plan Term 4: Mechanical Technology: Automotive Grade 10

TERM 4 (47 days)	Week 1 5 - 8 Oct (4 days)	Week 2 11 – 15 Oct (5 days)	Week 3 18 – 22 Oct (5 days)	Week 4 25 – 29 Oct (5 days)	Week 5 26 - 30 Oct (5 days)	Week 6 1 - 5 Nov (5 days)	Week 7 8 - 12 Nov (5 days)	Week 8 15 - 19 Nov (5 days)	Week 9 - 11 22 Nov – 8 Dec (15 days)	
CAPS Topics	Systems & Control (Specific)		PAT: Maintenance			Revision and Consolidation of PAT and moderation			Examination	
Topics /Concepts, Skills and Values	Electricity: • Electron theory – basic electrical principles: ➢ Electron movement ➢ Electrons and conductors ➢ Pulse with modulation ➢ Digital & analogue signal ➢ Effects of electricity • Characteristics of magnetism • Electromagnets	• Ohm’s Law • Electrical units and measurements: ➢ Volts ➢ Amps ➢ Ohms • Use of the Multi-meter • Basics series and parallel circuits • Battery – lead acid type	Changing disc pads or any oil change or radiator pressure test							
Requisite pre-knowledge										
Resources (other than textbook) to enhance learning	Instructional videos, You-tube videos, etc.	Multi-meters, Batteries, Instructional videos, You-tube videos, etc.								
Assessment	Informal Assessment: Remediation	Classwork/case studies/worksheets/homework/class tests (Theory and practical work)								
	SBA (Formal)	FINAL EXAMINATION								