

2023/24 ANNUAL TEACHING PLANS: MECHANICAL TECHNOLOGY (AUTOMOTIVE): GRADE 12 (TERM 1)

TERM 1		WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10	WEEK 11
CAPS TOPICS		SAFETY (GENERIC) (2%)	SAFETY (GENERIC) (3%)	SAFETY (GENERIC) (5%)	TOOLS (SPECIFIC) (10%)	TOOLS (SPECIFIC) (15%)	TOOLS (SPECIFIC) (20%)	ENGINES (SPECIFIC) (30%)	ENGINES (SPECIFIC) (38%)	PAT CONSOLIDATION AND REVISION ASSIGNMENT		
TOPICS/CONCEPTS, SKILLS AND VALUES		First Aid HIV/Aids Awareness Knowledge of basic first aid measure Analyse the OHS Act and regulations where applicable to the following machines: Grinding machines (portable, bench and surface) Cutting (drilling machines, power saw, band saw)	Analyse the OHS Act and regulations where applicable to the following machines: Shearing machines (manual and power driven) Press machines Joining (arc, gas) Handling and usage of gas cylinders	Knowledge and application of basic workshop layouts: Process layout Product layout Referring to the OHS Act Analyse the responsibilities of the: Employer Employee	Identification and application of diagnostic equipment: Compression tester Cylinder leakage tester	Identification and application of diagnostic equipment: Gas analyser Computerised diagnostic scanner	Identification and application of diagnostic equipment: • Wheel balancer • Wheel alignment equipment	Crankshafts: Balancing of crankshafts Vibration damper Cylinder layouts Crank arrangements Firing orders	Describe the operating principles and construction of: • Turbochargers • Super chargers Describe the operating principles and construction of: • Turbochargers • Super chargers			
REQUISITE PRE-KNOWLEDGE		Gr 11: Basic first Aid HIV/Aids Awareness OHS Act Machine specific safety measures	Gr 11: Basic first Aid HIV/Aids Awareness OHS Act Machine specific safety measures	Grade 11: Basic first Aid HIV/Aids Awareness OHS Act Machine specific safety measures	Tools Purpose made tooling and equipment	Tools Purpose made tooling and equipment	Tools Purpose made tooling and equipment	Identification and function of engine components	CI engines Injectors Valve assemblies	CI engines Injectors Valve assemblies		
RESOURCES (OTHER THAN TEXTBOOK) TO ENHANCE LEARNING		OHS Act Safety signs in workshop First aid training manuals	OHS Act Safety signs in workshop First aid training manuals	OHS Act Safety signs in workshop First aid training manuals	Compression testers Cylinder leakage tester Workshop manuals with specifications	Gas analyser Computerised diagnostic scanner Workshop manuals with specifications	Wheel balancer Wheel alignment equipment Workshop manuals with specifications	Engines (stripping) Sub-assemblies Workshop manuals with Specifications	Turbochargers Super chargers Hand tools Old question papers	Turbochargers Super chargers Hand tools Old question papers		
ASSESSMENT	INFORMAL ASSESSMENT: REMEDIATION	Classwork/case studies/worksheets/homework/class tests (theory and practical work)										
	SBA & PAT (FORMAL)		Assignment PAT: Phase 1									

2023/24 ANNUAL TEACHING PLANS: MECHANICAL TECHNOLOGY (AUTOMOTIVE): GRADE 12 (TERM 2)

TERM 2		WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10	WEEK 11
CAPS TOPICS		MATERIALS (GENERIC) (44%)	MATERIALS (GENERIC) (49%)	FORCES (SPECIFIC) (52%)	FORCES (SPECIFIC) (60%)	MAINTENANCE (SPECIFIC) (63%)	MAINTENANCE (SPECIFIC) (68%)	DRIVE TRAINS (SPECIFIC) (72%)	DRIVE TRAINS (SPECIFIC) (75%)	CONSOLIDATION OF PAT, REVISION PAT SIMULATION		
TOPICS/CONCEPTS, SKILLS AND VALUES		Identify materials by: Sound test Bending test Filing test Machining test	Methods of enhancing the properties of steel (only heated temperature and cooling apply): <ul style="list-style-type: none">• Tempering• Case hardening• Hardening• Annealing• Normalising	Application of the following automotive calculations: <ul style="list-style-type: none">• Work• Power• Torque• Compression ratio	Application of the following automotive calculations: <ul style="list-style-type: none">• Indicated power• Brake power• Mechanical efficiency	Diagnose faults by using and reading test equipment: <ul style="list-style-type: none">• Gas analysing• Compression test	Diagnose faults by using and reading test equipment: Cylinder leakage Pressure test	Describe the operational purpose and functions of the automatic gearbox: Torque converters Epicyclical gear trains	Describe the operational purpose and functions of the automatic gearbox: Brake bands/locking devices Control body (purpose only) Gear ratios			
REQUISITE PRE-KNOWLEDGE		Properties of engineering materials	Properties of engineering materials	Automotive calculations and application	Automotive calculations and application	Purpose made tooling and equipment	Purpose made tooling and equipment	Purpose and layout of drive systems	Purpose and layout of drive systems			
RESOURCES (OTHER THAN TEXTBOOK) TO ENHANCE LEARNING		Hand tools and testing equipment	Instructional videos, YouTube videos, etc.	Workshop manuals including specifications	Workshop manuals including specifications	Motor vehicle or running engines (petrol) Gas analyser Compression tester	Motor vehicle or running engines (petrol) <ul style="list-style-type: none">• Cylinder leakage tester• Radiator pressure test	Automatic gearboxes <ul style="list-style-type: none">• Torque converters• Epicyclical gear trains Hand tools	Automatic gearboxes Hand tools Old question papers			
ASSESSMENT	INFORMAL ASSESSMENT: REMEDIATION	Classwork/case studies/worksheets/homework/class tests (Theory and practical work)										
	SBA & PAT (FORMAL)		Mid-year Examination PAT: Phase 2									

2023/24 ANNUAL TEACHING PLANS: MECHANICAL TECHNOLOGY (AUTOMOTIVE): GRADE 12 (TERM 3)

TERM 3		WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10	WEEK 11
CAPS TOPICS		SYSTEMS & CONTROL (SPECIFIC) (80%)	SYSTEMS & CONTROL (SPECIFIC) (85%)	SYSTEMS & CONTROL (SPECIFIC) (90%)	SYSTEMS & CONTROL (92%)	SYSTEMS & CONTROL (94%)	SYSTEMS & CONTROL (96%)	SYSTEMS & CONTROL (100%)	CONSOLIDATION OF PAT	PREPARATORY EXAMINATION		
TOPICS CONCEPTS, SKILLS AND VALUES		Steering Geometry: <ul style="list-style-type: none"> Alignment to manufacturers specifications Toe-in and toe-out Castor and camber 	Steering Geometry: <ul style="list-style-type: none"> Alignment to manufacturers specifications Kingpin inclination Ackerman principle 	Application of wheel balancing: <ul style="list-style-type: none"> Static Dynamic 	Electricity: Purpose and operation of engine management: <ul style="list-style-type: none"> Petrol 	Electricity: Purpose and operation of engine management: <ul style="list-style-type: none"> Diesel Catalytic converter 	Electricity: Purpose and operation of engine management: Speed control systems	Electricity: Purpose and operation of engine management: Charging systems (alternator) Electrical fuel pump Purpose and operation Pressure control (basic)	Completion of PAT that was done throughout the year			
REQUISITE PRE-KNOWLEDGE		Steering control Suspension layouts	Steering control Suspension layouts	Steering control Suspension layouts	Electricity conventional ignition systems	Electricity conventional ignition systems	Functions of engine components – battery and alternator	Functions of engine components – battery and alternator	Functions of engine components – Electric fuel pump			
RESOURCES (OTHER THAN TEXTBOOK) TO ENHANCE LEARNING		Wheel alignment equipment & a motor vehicle	Wheel alignment equipment & a motor vehicle	Wheel balancer and the necessary tooling – wheels	Motor vehicle or running engines (petrol)	Motor vehicle or running engines (diesel)	Speed control systems Hand tools YouTube videos	Alternators Hand tools YouTube videos	Electrical fuel pumps YouTube videos			
ASSESSMENT	INFORMAL ASSESSMENT: REMEDIATION	Classwork/case studies/worksheets/homework/class tests (theory and practical work)										
	SBA & PAT (FORMAL)		Preparatory examination PAT: Phase 3 and 4									

2023/24 ANNUAL TEACHING PLANS: MECHANICAL TECHNOLOGY (AUTOMOTIVE): GRADE 12 (TERM 4)

TERM 4		WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10
CAPS TOPICS		REVISION	REVISION	REVISION	EXAMINATIONS						
ASSESSMENT	INFORMAL ASSESSMENT: REMEDIATION		Classwork/case studies/worksheets/homework/class tests (theory and practical work)								
	SBA (FORMAL)	Final Examination									