

Annual Teaching Plan: Term1Mechanical Technology: Fitting &Machining Grade 12										
TERM 1 (48 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	Safety	Safety	Terminology (Machining Specific)	Tools (Specific)	Terminology (Machining Specific)				
Topics /Concepts, Skills and Values	First Aid HIV/Aids Awareness OHS act Machine specific safety measures	First Aid HIV/Aids Awareness OHS act Machine specific safety measures	First Aid HIV/Aids Awareness OHS act Machine specific safety measures	Lathe: • Safety measures • Taper turning • Screw cutting	Milling machine: • Safety measures • Calculations on: ➤ Centring of cutter ➤ Cutting of keyways	Indexing: Dovetail slides: • Calculation for internal and external dove tail with precision rollers	Write a Digital Read Out (DRO) Program to incorporate cutting a recess on a work piece:	Manufacturing of spur gear: • Involute gear tooth form with a module of no more than 3	Principles and functions of engineering equipment. Calculations on depth and screw thread micrometers	
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 Lathe work, Taper turning & Screw cutting	Milling machine safety and parts Milling operations	Milling machine safety and parts Milling operations	Lathe work Milling operations	Milling operations	Purpose made tooling and equipment	
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	Lathes and tooling, Instructional videos, You-tube videos, etc.	Milling machines and tooling, Instructional videos, You-tube videos, etc.	Milling machines with dividing head and tooling, Instructional videos, You-tube videos, etc.	Lathes & milling machines with electronic DROs	Lathes & milling machines with necessary tooling Old question papers.	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 -Phase 1</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>								

Annual Teaching Plan: Term 2 Mechanical Technology: Fitting & Machining Grade 12

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 31 May - 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	Forces (Specific)				Maintenance (Specific)		Joining methods (Specific)		PAT Consolidation and Revision Assignment		
Topics /Concepts, Skills and Values	Forces: Basic calculations: • System of forces (maximum of four forces) • Resultant and equilibrant	Moments: A simple supported beam with two vertical point loads and one uniformly distributed load (UDL) acting on the beam including reactions at the supports (only two)	Stress/Strain: Basic calculations on: • Stress, • Strain (Stress/Strain diagram only for mild steel), • Safety factor, • Modulus of elasticity and • Change in length.	Stress/Strain: Basic calculations on: • Stress, • Strain (Stress/Strain diagram only for mild steel), • Safety factor, • Modulus of elasticity and • Change in length.	Suitable preventative maintenance in operating systems for: Gear, Belt and Chain drives. The use of the following materials for bushes and gears: • Thermoplastic composites • Thermo-hardened composites	Minimum and maximum coefficient of friction for the following different materials: • Copper, • Cast iron, • Thermo-composites, • Stainless steel, • White metal, and • Rubber	Use basic calculations on the size of drills for bolts and nuts (ISO metric): • Root diameter • Crest diameter • Effective diameter • Pitch • Lead for multi-start screw threads	Use basic calculations on the size of drills for bolts and nuts (Square thread) • Crest diameter • Effective diameter • Pitch • Lead for multi-start screw threads • Helix angle • Following angle – cutting tool – support by means of a clear drawing • Leading angle – cutting tool - support by means of a clear drawing • Clearance angle - support by means of a clear drawing			
Requisite pre-knowledge	Effects of forces Moments Basic calculations on stress Old Gr. 12 text book, N3 & N4 Engineering Science and Strengths of Materials text book Beam tester, Shear tester and tensile tester				Causes of malfunction on lathes, milling machines and power tools Vehicle workshop manuals, Assorted books on different materials, You-tube videos, etc.		Drill and key sizes Semi-permanent joining Old question papers Old question papers				
Resources (other than textbook) to enhance learning											
Assessment	Informal Assessment: Remediation	Classwork/case studies/worksheets/homework/class tests (Theory and practical work)									
	SBA & PAT (Formal)	<p style="text-align: center;">Practical Simulation PAT - Phase 2</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 style="text-align: center;">See the document on the workshop safety measures</p>									

Annual Teaching Plan: Term 3 Mechanical Technology: Fitting & Machining Grade 12

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	Systems & Control (Specific)					Remediate, Consolidation and of PAT Revision				Preparatory Examination		
Topics /Concepts, Skills and Values	Basic power and velocity calculations on: <ul style="list-style-type: none"> • Gears – Transmission of torque and power • Gears: Angular velocity and direction of rotation – • V-belts, chains and pulleys: Linear velocity and angular velocity 			Hydraulics / pneumatics Applied calculations on: <ul style="list-style-type: none"> • Pistons and reservoirs – hydraulic jack (ram and plunger) • The force exerted in a closed circuit 	Identification and use of hydraulic components indicated by the symbols: <ul style="list-style-type: none"> • Motor • Pump • Filter • One-way valve • Spring-loaded double- action control valve • Pressure gauge, etc. 							
Requisite pre-knowledge	Velocity calculations Transfer of movement Gearboxes and engines with different drive systems			Hydraulics / Pneumatics	Pumps – Purpose and operation of various pumps							
Resources (other than textbook) to enhance learning				Hydraulics / Pneumatics testers	Instructional videos, You-tube videos, etc.							
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 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									

Annual Teaching Plan: Term 4 Mechanical Technology: Fitting & Machining Grade 12

TERM 4 (47 days)	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	PAT	Materials (Generic)		Examination						
Topics /Concepts, Skills and Values	Finalisation and Moderation of PAT	Identify materials by: <ul style="list-style-type: none"> • Sound test • Bending test • Filing test and • 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 								
Requisite pre-knowledge		Properties of engineering materials								
Resources (other than textbook) to enhance learning		Hand tools and testing equipment. Instructional videos, You-tube videos, etc.								
Assessment	Informal Assessment: Remediation	Classwork/case studies/worksheets/homework/class tests (Theory and practical work)								
	SBA (Formal)	Examination								